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Health and safety issues of employees in family firms

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Health and safety issues of employees in family firms

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Editorial: Health and safety issues of employees in family firms

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Editorial on the Research Topic
Health and safety issues of employees in family firms

Worker health and safety issues have been the subject of extensive study, including when, why, and how they arise (1, 2). However, the reasons behind the health and safety issues of the employees working in family-owned firms are still under-explored. A business or entity owned and managed by the members of a single-family is known as a "family business firm" (3). The family firms' operations and ownership are transferred from generation to generation. Usually, more than one generation is involved in the day-to-day operations and management of the business. The family firms perform with limited financial and other resources and have a small network (4). Thus, family firms have limited resources to facilitate their employees at the workplace, such as improper lighting, hygiene issues, an overfilled workplace, and the absence of facilities such as safety tools and safety instruction boards. Healthy food and clean water are also serious issues for workers at the workplace in family firms (5).

In underdeveloped and developing countries, the ratio of employees working in family firms and SMEs is very high compared to the corporate sector (6). Several studies have provided evidence of the relationships between working conditions, employees' health and safety, and productivity (7, 8). Therefore, it is vital to develop a system to address the health and safety issues at the workplace in family firms. Researchers describe the consequences of the issues regarding the health and safety of the employees, such as low performance of workers and the firm, a high rate of absenteeism, a poor rate of productivity, a high turnover rate of employees, stress, anxiety, disengagement, and psychological issues (9). In family firms, the limited focus of the managers, lack of financial resources, and absence of the workers' leadership play a significant role in the development of health and safety issues in employees. In this Research Topic, a total of 20 manuscripts were submitted; eight manuscripts were rejected due to quality issues, and 12 articles were accepted. The following paragraphs explain the themes and contributions of the articles that are published in the Research Topic with the title "Health and Safety Issues of the Family Firms' Workers."

First, the article explains the employees' performance during COVID-19 in small family firms. Post-COVID-19, these small firms tried to regain their market share, but they were not significantly successful, and a financial crisis rose in these family firms (10). Even so, these organizations failed to provide financial benefits to their workers. According to the authors, in these types of scenarios, social and psychological rewards can aid management. Therefore, the article investigated how top management can enhance employees' performance by using social and psychological rewards in the absence of financial rewards. By using a stratified sampling technique, the data were collected from 250 employees working in small family firms. The

findings confirm that psychological rewards help increase employees' performance. However, social rewards do not have a significant impact on employees' performance.

Second, drawing on the appraisal theory of emotions, the paper investigates the impact of ethical leadership behaviors on employees' negative emotions, i.e., workplace embitterment and the moderating role of core self-evaluation. Data were collected from 398 employees working in Pakistan's public sector universities using a random sampling technique. *Findings* indicate that leaders' ethical behaviors negatively impact employees' workplace embitterment, and workplace embitterment mediates this impact on employees' wellbeing (11). Moreover, employees' core self-evaluation moderates the relationship between leaders' ethical behaviors through workplace embitterment.

Third, the COVID-19 pandemic brought several changes to every field of life. The educational system is also affected by this pandemic. The educational institutions shifted their activities from a physical to an online mode. The online educational mode brought about several attitude and behavioral changes in students. Drawing on stress theory, the article investigates the impact of pandemic fear on student performance and anxiety in students as a mediator. Moreover, the article also explored the role of mindfulness as a moderator. The data was collected from HSK teachers working in China. The results confirm that fear of the pandemic negatively impacts students' performance and develops anxiety in students. However, mindfulness has failed to perform its moderating role in the article model. The article also offers several managerial implications and theoretical contributions. *Fourth*, the dynamics of family-owned firms are different from other business entities. As a result, the antecedents and outcomes of family-owned businesses may differ. The purpose of this study is to look into the effect of psychological distance between a non-family member employee and a family member on occupational mental health and psychological safety as a mediator in the relationship. In addition, a proactive personality as a potential moderator is applied in the article. Two approaches, PSL-SEM, and fsQCA are used for data analysis. The results confirm the partial mediating role of psychological safety.

Fifth, the global health emergency (COVID-19 pandemic) raised serious issues regarding health and safety issues for the employees of family-owned firms. The paper explains how Chinese family enterprises face problems regarding employees' performance, health, and safety after dynamic changes at the workplace due to COVID-19. Drawing on game theory, the article researched Chinese family-owned firms. The data were collected from the firms in the list provided by a 3rd party CSR rating agency (SynTao Green Finance). According to the article's findings, family businesses are less likely than non-family businesses to fulfill workers' health and safety responsibilities. From the operational perspective, family business firms are gradually improving facilities for their workers; this process, however, is "U" shaped. The results indicate that more effective policies and stakeholder monitoring are required to solve the health and safety issues of the employees. It is also important to provide awareness to the workers regarding their legal and professional rights.

Sixth, the paper examines the impact of testing fear and less social connectedness on employees' health. In addition, the scholars used psychological strain as a mediator between less connectedness, testing fear, and employees' health and performance. Data for the empirical investigation were collected from employees working in China's electronic industry using a convenience sampling approach. The partial least squares structural equation modeling approach (PLS-SEM) was used for data analysis with the Smartpls-3 software. The results of the article indicate that COVID-19 testing fear impacts the employees' health negatively, but social connectedness does not significantly impact employees' health. However, psychological strain significantly mediates the relationship between testing fear, less social connectedness, and employees' health. The paper also provided valuable insights for organizational management to develop a healthy and positive working environment and adopt healthy behaviors among their workers, which ultimately fosters their job performance.

Seventh, human resources play a strategic role in making or breaking a brand. The COVID-19 pandemic has made organizations and their management realize the importance of health safety. Health-oriented strategies play a significant role in boosting employees' trust and wellbeing. The paper investigates the role of organizational health-oriented strategies in improving employees' job performance using social exchange theory. The article also used employees' psychological wellbeing and trust as mediators in the above-said relationship. In addition, the article also investigated the moderating role of perceived medical mistrust. By using a random sampling technique, the authors collected the data from the employees working in the textile sector of China. The article proved that health-oriented strategies positively increase employees' trust and psychological wellbeing, leading to improved employee performance. The article also found a significant role in medical mistrust between psychological wellbeing and employees' performance but failed to moderate the relationship between trust and job performance. Moreover, the findings of the present article also serve the literature by providing important theoretical and practical implications.

Eighth, the paper evaluates the impact of employee loneliness, psychological distress, and job uncertainty on employee-based brand equity. In addition, emotional exhaustion has been used as a mediator in the above-said relationship. For empirical evidence, the data were collected from 459 employees working in clothing brands in China. Results, job uncertainty, and psychological distress negatively impact employees based on brand equity. However, employee loneliness has no impact on employees based brand equity. *Nine,* the article was conducted on the employees of 25 readymade garment factories in Dhaka, Narayanganj, and Gazipur industrial areas of Bangladesh on a random sampling basis. The impact of occupational stress on employees' health risks was measured. As the result, occupational stress has an impact on employees' health. However, female workers were more affected than male workers.

Tenth, the paper clarifies the types of hazards that exist in dental hospitals, as well as worker stress. The findings described the occurrence of ergonomic, physical, biological, and chemical hazards in the workplace. Ergonomic hazards have the highest occurrence, and chemical hazards have the least occurrence. *Eleventh,* the article is about *the janitorial staff.* The paper aims to measure the impact of occupational safety practices to prevent COVID-19 transmission and associated factors on the janitorial staff of an Ethiopian university. The results explained that occupational safety practices regarding COVID-19 were in practice among 53.9% of the janitorial staff. *Twelve,* based on university faculty members, the paper investigates the impact of the workplace environment on employee performance, with a particular emphasis on the role of employee achievement

striving ability as a mediator. The results confirm the hypotheses of the article.

Overall, this Research Topic is very helpful in understanding the antecedents and consequences of employees' health and safety issues and in providing suitable solutions. The topics in this Research Topic are constructive for human resource management students, research scholars, human resource management faculty, and professional consultants in human resource management, health, and safety.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Impact of Employees' Workplace Environment on Employees' Performance: A Multi-Mediation Model

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This study examined the impact of workplace environment on employee task performance under the mediating role of employee commitment and achievement-striving ability. For this purpose, data were collected from the academic staff under a cross-sectional research design, and they were approached through convenience sampling technique. As per recommendations of established sample size criteria, we distributed a sum of 420 questionnaires among the respondents. Among these distributed questionnaires, only 330 were received back. The returned questionnaires were checked for missing and incomplete responses and after discarding the missing responses useable responses were 314 which were used for the data analysis. Data had been analyzed through structural equation modeling (SEM) by using Smart PLS 3. The SEM was done based on measurement models and structural models. The results indicated that a positive work environment had the power to improve employee performance. Similarly, a positive work environment also improved the employee commitment level and achievement-striving ability significantly. Both employee commitment and achievement-striving ability also improved employee performance. While in the case of mediation, it had also been observed that workplace environment triggered employee commitment and employee achievement-striving ability which further improved employee performance.

Keywords: employee workplace environment, employees' performance, achievement-striving, striving for achievement, analysis

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INTRODUCTION

According to the assumptions of human resource management (HRM), improved performance is accomplished through the employees of the organization. Employees are thus viewed as a valuable asset to every firm to improve performance (1). Before the last decades of the 20th century, the performance was viewed as the result of a mix of aptitude and motivation when given adequate resources, and therefore motivating people became an important aspect of

most management. Whenever human resource (HR) is used to its greatest capacity, a business may attain limitless productivity, efficiency, and performance. All employees may not work in the same way since they have distinct working styles. Some personnel have the greatest potential regardless of the reward, whereas others benefit from a boost now and again (2, 3). The employees' performances are determined by their willingness and openness to complete their jobs. Furthermore, if employees are willing and open to accomplish their jobs, it is possible that their productivity will grow, which will contribute to improved performance (4).

Employees, equipment, and supplies, on the other hand, must be provided with the required resources to perform, independent of their talents and expertise (5). "Performance appraisal impacts directly onto highly emotional tasks in professional life, judgment of a person's commitment, and competence," (6). According to several academics, implementing a well-defined framework for analyzing employee performance is critical to a company's successful operation (7). The major difficulty for businesses, according to (8), has been focused on improving the performance of employees efficiently so that their authenticity remains on top. In other sense, how can businesses use performance evaluation procedures to increase their capacity to discern "excellent" employees (those who perform well) from "poor" employees? Furthermore, according to (9), many crucial variables in the study and implementation of a performance assessment model are still missed, which may explain why there is not currently an integrated approach for assessing employee performance.

The physical and behavioral aspects are the two facets of a healthy working climate. The prior refers to the factors which are linked with the ability of employees to remain physically associated to their workplaces. while the etiquettes of office bearers are influenced by the behavioral aspects of the environment, the workplace environment plays an important role in shaping behaviors of employees individually. Consequently, employees' motivation to work hard, their efficiency and performance are shaped by the influence of the quality of the workplace. Worker' levels of willingness to keep motivated, creative, engaged with colleagues, and loyal to job are all influenced by the factors of workplace environment (10). According to some researchers, this feature of relatedness with workplace environment have mixed beneficial and adverse impacts (11).

The majority of the workplace environments in developing countries are not up to the mark. Unfortunately, most firms consider a safe and healthy work environment to be an unnecessary expenditure and do not invest heavily in sustaining a comfortable working environment (12). For sustainable development, it is vital for any firm to have dedicated employees who are committed to their goals. When people work in groups, there is a possibility that they may behave as if they are entrepreneurs, so every group member engages in as many tasks as possible to demonstrate that he/she is the most promising person in the group. Employee commitment levels boost employee performance in firms which enhance their commitment levels. Previously, firms have given their employees job security to boost their dedication to the firm and efficiency (13). Employee performance is tied to employee commitment. Few academics have argued that each commitment element's psychological status varies from one worker to another (14).

It is supposed that affective commitment as well as employee performance have a positive relationship, suggesting that workers have a belief that their companies would be treating them positively (i.e., fair rehabilitation, involvement in choice determination) could boost interpersonal loyalty of them to the organization and, consequently, enhance their effectiveness (15). Moreover, the workers with a high sense of commitment to the company's goals feel a strong sense of ownership over their responsibilities, while the employees with a lower level of commitment to the company's targets feel no such obligation. Certain research indicates that normative commitment and performance of employees have a negative relationship (16). Employees who have a higher level of organizational commitment find themselves "stuck" in situations where they have little option to quit the organization even if they do not really want to stay. As a result, individuals take their jobs in a less serious manner, and their production suffers (16).

Eudemonia refers to working for and achieving job-related goals, as well as realizing one's maximum potential, and is based on the philosophy of eudemonia drive (i.e., achievement striving). Achievement striving, according to the notion, indicates employees' motivation to take action toward personal greatness (17). On the one hand, the social contact motivates accomplishment seeking by facilitating currently operating and combining for the purpose of fostering creativity and accomplishing work objectives. Achievement striving, on the other hand, is a performance-oriented aim that has a beneficial impact on staff performance (17). Employees are more likely to strive for an outstanding performance if they have a strong accomplishment drive. Employees who have meaningful social connections at work are more likely to be motivated to complete the assignments on time (i.e., achievement striving) (18).

Employees' performance has been evaluated before in different business sectors, leaving behind the gap for a specific sector's evaluation. Moreover, different firm level environmental factors along with job-related factors have been evaluated with specific mediation of employee-related factors such as motivation, adaptability, flexibility, proactivity, skill level, and commitment for evaluating the employees' performance (19). This kind of evaluation left a gap for assessing the specific mediating role of employees' commitment between their workplace environment and performance. Therefore, we utilized the employees' commitment as a potential mediator between employees' workplace environment and employees' performance. Similarly, the role of achievement-striving ability has been utilized as mediator previously along with occupational commitment between social interaction and job performance (18) leaving a gap for evaluating the impact of achievement-striving ability between workplace environment and employees' performance. Therefore, this study was designed to evaluate the mediating roles of employees' commitment and achievement-striving ability.

The impact of employee workplace environment has been studied previously for the evaluation of performance of the

employees at different organizational levels but has not been studied among employees of the academic institutes therefore, it posed some questions to address whether it has any impact on the performance of employees of academic institutes or not. The question stated that what role could employee commitment and achievement striving ability of employees could play in the context of academic institute job performance of employees? To answer these questions, this study focused on evaluating the impact of the workplace environment of employees on their performance. The multi-mediation analysis was also carried out in this study to evaluate the aiding role of employees' commitment and achievement-striving ability of employees between workplace environment of employees and their performance.

THEORETICAL AND HYPOTHESIS SUPPORT

Employee performance is achieved through the organization's employees, according to HR management theory (20). To increase the performance, employees are thus considered as a vital asset in any company. Previous to the later decades of the 20th century, performance was considered as a combination of ability and motivation when given sufficient resources, and therefore motivating people, became a key element of the most of the management practices (21). When HR is employed to its full potential, a company may achieve unattainable levels of production, efficiency, as well as performance (22). So, this study gets motivation from HR management theory for evaluating the performance of employees.

The willingness as well as openness of employees to fulfill their work determines their performance. Furthermore, if employees are enthusiastic and motivated to accomplish their jobs, their performance is likely to improve, contributing to increased productivity (23). All this could be achieved under the premises of HRM theory. This study also gets a support from the theory of ecological systems. This theory is also known as "individual theory." According to this theory, people in a specific environment have a dynamic relationship with their social, physiological, and physical environments. This theory also states that the workplace environments are inter-related in which the job settings are connected with each other and have an effect on activities at workplace in terms of context, time and processes (24). This theory underpins the importance of environment at workplace for the workers and individuals involved in organizational processes.

Once employees get a favorable working environment, then they become more dedicated to their assigned tasks which ultimately improves their performance. So, the ecological systems theory has a lot to offer to shape up the workplace environment. This study also gets support from social exchange theory in which favorable workplace environment provides a sort of motivation to the employees to work better. Such motivational activities in organizations take place having background support of some exchanges socially. The process of social exchange takes place between an organization and its workers indicating that the organization recognizes the contributions of its employees and ensures that they are well-cared for (25). This theory provided the basis for understanding the effect of employee performance in the context of the workplace environment.

Employees, in return, do their best to achieve the targets set by their organizations and they perform better in a given favorable working environment. Thus, a social exchange is in practice for this study. Social exchange theory also provides a basis for employees' commitment as if the workplace environment is favorable and suitable, it develops a sense of trust for the organization among the employees. The employees in exchange show more commitment toward the set targets of the organization. This trust is built as a consequence of management support, and as a result, employees are motivated, which aids in the development of a good attitude toward work, and employee commitment is increased, resulting in improved performance (26). A combination of these theories for evaluating the employees' performance has also been studied before and provided a basis for the conduct of this study.

Relationship of Employee Workplace Environment With Employees' Performance

Employees spend a major considerable amount of time at work, and their working environment has an impact on their performance in integrated ways (27). Employees who are satisfied with their work environment are more likely to have positive work output. A previous study has revealed that factors which shape up the workplace environment show their impact on the performance of employees (28). They also proposed that future studies on this kind of relationships referring to workplace environment and evaluation of performance could be conducted. A few scholars also encouraged future researchers to conduct comparison studies on private and public organizational levels for impact of workplace environments be on employee' performance (29). The researchers observed that the workplace environment is crucial since staff can work more efficiently doing their jobs in a nice workplace, which leads to higher employees' performance and organization output.

The terms "appealing climate" or "supportive atmosphere" refers to a situation which draws people and motivates them to work by giving them possibilities to accomplish (30). Workers are more willing to integrate their extraordinary use of skills, abilities, and knowledge to achieve success in a welcoming and supportive workplace environment. Employees will be motivated for a number of reasons to accomplish optimal performance and productivity inside a firm; such motivations could be endogenous or exogenous (31). Endogenous motivations help in accomplishing certain difficult tasks and exogenous motivations are the reward which are given in terms of the acknowledgments and the advanced salaries (31).

Another appropriate workplace strategy is to motivate employees to set their goals. Employees' performance improves as a result of this type of incentive program, and the productivity

of the company rises (32). Goal setting serves two main functions as follows: First, to improve the behaviors of the individuals; second, to motivate them to work so that they can work effectively and efficiently (33). Generalized objectives are less successful than a particular aim. Furthermore, in contrast to an achievable objective, excellent performance is attained through hard goals. Based on the strategies of providing a better workplace environment to the employees, a few empirical investigations have been done in recent past in different contexts. These studies hinted to explore this kind of relationship even further for establishing this association as a set parameter in achieving improved employees' performance. Therefore, we suggested the hypothesis as given in the following:

H1: Employee workplace environment has positive and significant effect on employees' performance.

Impact of Employee Workplace Environment on Employees' Commitment

According to prior study, the employees' working atmosphere in the firm is vital and also has a significant impact on employees in a variety of aspects (34). If the working environment fails to attract employees and they have a bad perception of many workplace aspects such as sick leave, performance, mental illness, and performance, their demand will ultimately be lowered to a low level, impacting the institution's growth and productivity (35). Employee commitment to the workplace, innovation, efficiency, commitment, and financial wellbeing all benefit from a nice, secure, and reliable workplace, all of which affect the institution's development (36).

When employees work in groups, the individuals behave as if they are entrepreneurs, and every person in the group engages in as many events as possible to demonstrate how he or she is the brightest in the group. Worker level of commitment boost employee productivity in firms which improve their levels of commitment. Companies have traditionally offered job protection to the workers to boost their loyalty toward the company and performance. Employee performance is linked to employee commitment, which has three facets (affective commitment, continued commitment, and normative commitment). It was previously established that the office atmosphere had a favorable influence on workers' commitment to perform (37). As a result of this literature support, we hypothesized the following:

H2: Employee workplace environment significantly affects employees' commitment.

Impact of Employee Workplace Environment on Employees' Achievement-Striving Ability

One of the most critical factors influencing employee performance in an organization is the working environment. In today's competitive corporate world, monetary benefits are insufficient to motivate employees to reach better levels of performance levels (38). A mix of monetary and non-monetary rewards, on the other hand, is more effective better levels of employee performance, which results in increasing of achievement aims of the company for an instance, and it was observed that the employees of certain sector of companies wanted a pleasant, relaxing environment, and to achieve a higher degree of performance, a cooperative working atmosphere is required.

Billings noted that the employees are the focus of organizational decisions as they are present at their workplaces most of the day (39). In contemporary organizations, justice is not always administered through the equal distribution of employment resources as well as the provision of clear and acceptable explanations for choices taken, and employees are not always treated with dignity and respect throughout policy and procedure execution (40). This leads to a worse workplace environment while, it is proven that a better workplace environment is always suitable in achieving something good for the organizations. Achievement striving is totally the drive for achieving the targeted goals by the employees. The employees who are more targeted toward the goals are more productive in terms of their performance (18). In this way, if employees are given suitable workplace environment, then it could initiate achievement-striving ability in employees. So, based on this possible logic, we devised the following hypothesis:

H3: Employee workplace environment significantly affects employees' achievement-striving ability.

Mediation Between Workplace Environment and Employees' Performance

The performance of employees is a popular issue, and this is influenced in a range of ways by the workplace. Behavioral and physical features of a typical working environment are critical. All components which are linked to an employee's ability to physically engage with the workplace are referred to as the physical setting (41). While behavioral environmental components relate workplace occupants' etiquettes with one another. The workplace atmosphere has a positive impact on individual employee behavior (42). Consequently, workplace environment quality has a significant impact on workers and their motivation, enthusiasm, creativity, and efficiency. Work motivation, innovative behavior, attendance, colleagues' engagement, and career management are all influenced by how strongly they are connected to a company (43).

Depending on the physical circumstances in the workplace, it might have a beneficial or harmful impact. The majority of the working environment in underdeveloped nations is insecure and dangerous. However, most businesses consider a safe and healthy work atmosphere to be an absolute waste of money and therefore do not invest extensively in keeping it in good shape (44). Employees working in an unstable and unhealthy atmosphere, putting them at risk for occupational sickness related to the adverse effects of the environment on their productivity, which has an impact on the organization's total productivity (45). Employees are dealing with serious environmental issues at work, particularly in the software business, which makes it difficult to provide necessary amenities to improve their performance level (46).

Scholars recently examined software house workers' performance in the presence of physical and behavioral workplace ambient variables (47). As a result, this study's major goal is to analyze and evaluate the factors of the working as well as behavioral environment that influence employee performance. To accomplish the given task of evaluating the impact of the workplace environment of employees' performance, there was a dire need to find the facilitators who could boost the relationship of workplace environment and employees' performance. Based on this need, employee's commitment and achievement-striving ability of employees, which are discussed in previous section, are used as mediators of this study. So, we proposed the following hypothesis (see **Figure 1**).

H4: Employee commitment significantly mediates the relationship between employee workplace environment and employee performance.

H5: Achievement striving significantly mediates the relationship between employee workplace environment and employee performance.

RESEARCH METHODS

This study used a cross-sectional research design to collect data from the participants. This research design was commonly used in survey research and previously the researchers have used cross-sectional research design in their studies (48, 49). This study design was most suitable to our aim of the study which was to investigate the impact of the workplace environment on employee performance. So, we had obtained the perception of the respondents through a cross-sectional research design. In this regard, teachers from the academic institutes were approached. The respondents in this study were selected based on previous studies, where academic teaching staff were approached for data collection to study the impact of workplace environment (50). Before approaching the academic teaching staff for data collection, we sought formal approval from the administration.

After getting approval from the administration, we contacted the teaching staff according to the list provided by the academic institutes. Moreover, before asking the respondents to provide their feedback, we ensured them regarding data confidentiality and their written informed consent was obtained. Additionally, to increase their motivation in the study, we offered chocolates to the respondent with the questionnaire, so that they could fill out the survey questionnaire with motivation. Before distributing questionnaires to the respondents, a suitable sample size was determined and the criteria regarding setting a reasonable sample size were consulted. In this regard, the widely used and accepted criteria for sample size devised by the study in (51), and previously used by various researchers, were followed (52).

Thus, as per the recommendations of this sample size criteria, we distributed a sum of 420 questionnaires among the respondents and of these distributed questionnaires, only 330 were received back. The returned questionnaires were checked for missing and incomplete responses and after discarding the missing responses 314 were retained. Additionally, we have employed Smart PLS software, which handles the small sample size very comfortably, so the issue of sample size does not raise any question in this study (53).

Owing to the cross-sectional nature of the study, it was likely to encounter common method bias in this study. We employed several techniques to reduce the issue of common method bias, we interchanged the place of the scales and items in the questionnaires, so that respondents could not develop a correlation among the study constructs while reporting the responses. This helped us to reduce common method biases (54, 55).

Demographic Characteristics

The first section of the questionnaires dealt with demographic characteristics related to qualification, gender, and teaching experience. From the perspective of qualification, respondents were mostly with 18 years of education and 16 years of education; however, the percentage of 18 years education among respondents was high (90%). Second, the distribution of the respondents according to gender's perspective was almost equal [i.e., 54% (male) and 46% (female)]. While most of the teaching staff were employed in service with experience of more than 3 years, very few have <1 year of experience.

Instrument Development

We followed a five-point Likert scale to collect the data for all exogenous and endogenous constructs ranging from five to one on a description of strongly agree to strongly disagree. The independent variable in this study (workplace environment) is measured through 10 items. The one-dimension of the environment (hedonic environment) is used in this study, which denotes the positive side of the workplace environment. Sample items for this scale include, "The transparency of rules in my institution is making my work easier," and "My company is a positive workplace." This scale is used in a recent study (50). This scale contains reverse coded questions, and we have also used these reverse coded questions to restrict the respondents from providing monotonic responses. The outcome variable in this study, employee performance is measured through six-items scale covering the perception of employees' task performance. This scale is developed by Koopmans et al. (56). The sample items for this scale include, "I kept in mind the results that I have to achieve in my work." Although in previous studies (50), another dimension of employee performance has also been used such as contextual and counterproductive work behavior. However, we have used task performance as a measure to assess the response regarding employee performance which denotes it well.

Employee commitment is assessed based on six items-based scale of affective commitment developed by a research team (57) with sample item, "I would be happy to work at my organization until I retire." While the second mediating variable, achievement-striving ability is assessed based on a scale developed by in a study (58) with five-items scale. A sample item for this scale, includes, "I am a very determined person when it comes to my job."

RESULTS

Assessment of Measurement and Structural Model

We have employed a multi-variate data analysis tool in this study to test the hypotheses through structural equation modeling (SEM). For this purpose, the most commonly used partial least square (PLS) approach through Smart PLS was used (59). This software deals very well with the complex nature of research frameworks/models (60). In addition to this, smart PLS has good predicting capability even with a small sample size and it deals with small sample size very well. Lastly, it does deal better with the non-normal data and the issue of normality is handled by Smart PLS very well. Assessment of SEM is based on two approaches/methods, the first one is based on the measurement model while the second one is based on structural model (61).

Table 1 illustrates the reliability and validity of the study constructs, based on the assessment of the measurement model. At this stage of reliability and validity of the study, the model has been confirmed. For the issue of reliability, the first measure in this regard that is used is Cronbach Alpha or is termed as alpha. The minimum acceptable value for this indicator of reliability is 0.60 (60, 62). Alpha statistics have been found statistically high above this benchmark; for instance, the alpha value for the construct, workplace environment is 0.929, for employee performance it is 0.745, for achievement-striving ability it is 0.839 and for employee commitment, it is 0.893. Thus, all the constructs possess good alpha reliability.

TABLE 1 | Reliability and validity of the study constructs.

Construct	Cronbach's alpha	rho_A	Composite reliability	AVE
Achievement-striving ability	0.839	0.877	0.887	0.663
Employee commitment	0.893	0.925	0.918	0.653
Employee performance	0.745	0.768	0.830	0.551
Workplace environment	0.929	0.939	0.941	0.641

Similarly, the second measure of reliability (rho-A) is also within the acceptable range (>0.60). The value of Rho-A for the workplace environment is 0.939, for the employee performance is 0.768, for the achievement-striving ability is 0.877, and for the employee commitment is 0.925. Thus, the second measure of reliability is also met. The third measure of reliability is based on composite reliability, which also shows a good level. The values for composite reliability are within a range of 0.830–0.941, illustrating good composite reliability.

In the case of validity, it has been tested through average variance extracted (AVE) and it has been found that the AVE of the respective constructs is greater than the threshold limits of the acceptable range (≥0.50). All the study constructs possess greater AVE values (≥0.50) which indicate that the convergent validity has been established (63) as illustrated through **Table 1**. The AVE values range between 0.551 and 0.663.

The second measure to assess the convergent validity is outer loadings (**Figure 2**). At this stage, each indicator was checked for outer loadings, and it was observed that outer loadings are above the threshold value of 0.708. **Table 2** illustrates the outer loadings of all study constructs. Two items have been dropped in this study due to weak or poor outer loadings. One item from the study constructs workplace environment (WE-10). Similarly, from employee performance, two items (ETP-3 and ETP-6) have been dropped due to poor outer loadings. One item from the construct achievement-striving ability (AS-4) was dropped. One item with slightly low outer loading (ETP-2) was retained in employee performance as the AVE of this construct was above the threshold value (≥0.50). Thus, all the indicators met with convergent validity criteria, and it can be referred that the model possesses convergent validity.

While testing the other side of validity (discriminant validity), we have followed two well-established criteria, the first one is Fornell and Larcker (64) and Heterotrait-monotrait (HTMT) ratio of correlations ratios (60). **Tables 3**, **4** illustrate these two criteria. The first criteria in this regard indicates that the square root of the AVE of variables is higher than the correlations among them (52, 65). For instance, the square

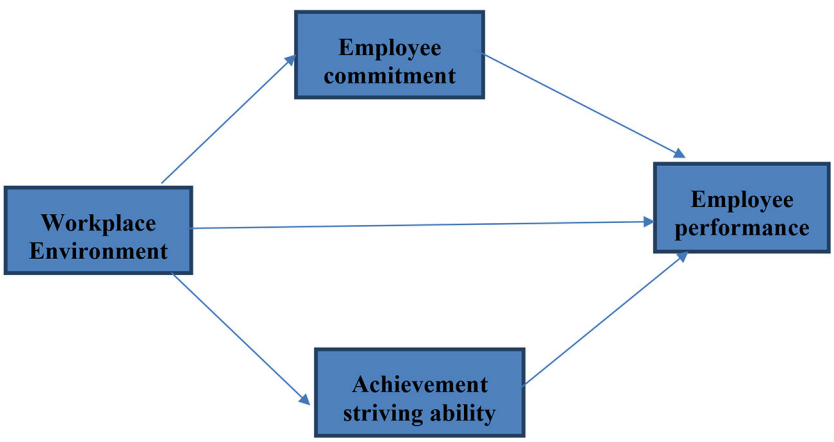

FIGURE 1 | Conceptual framework.

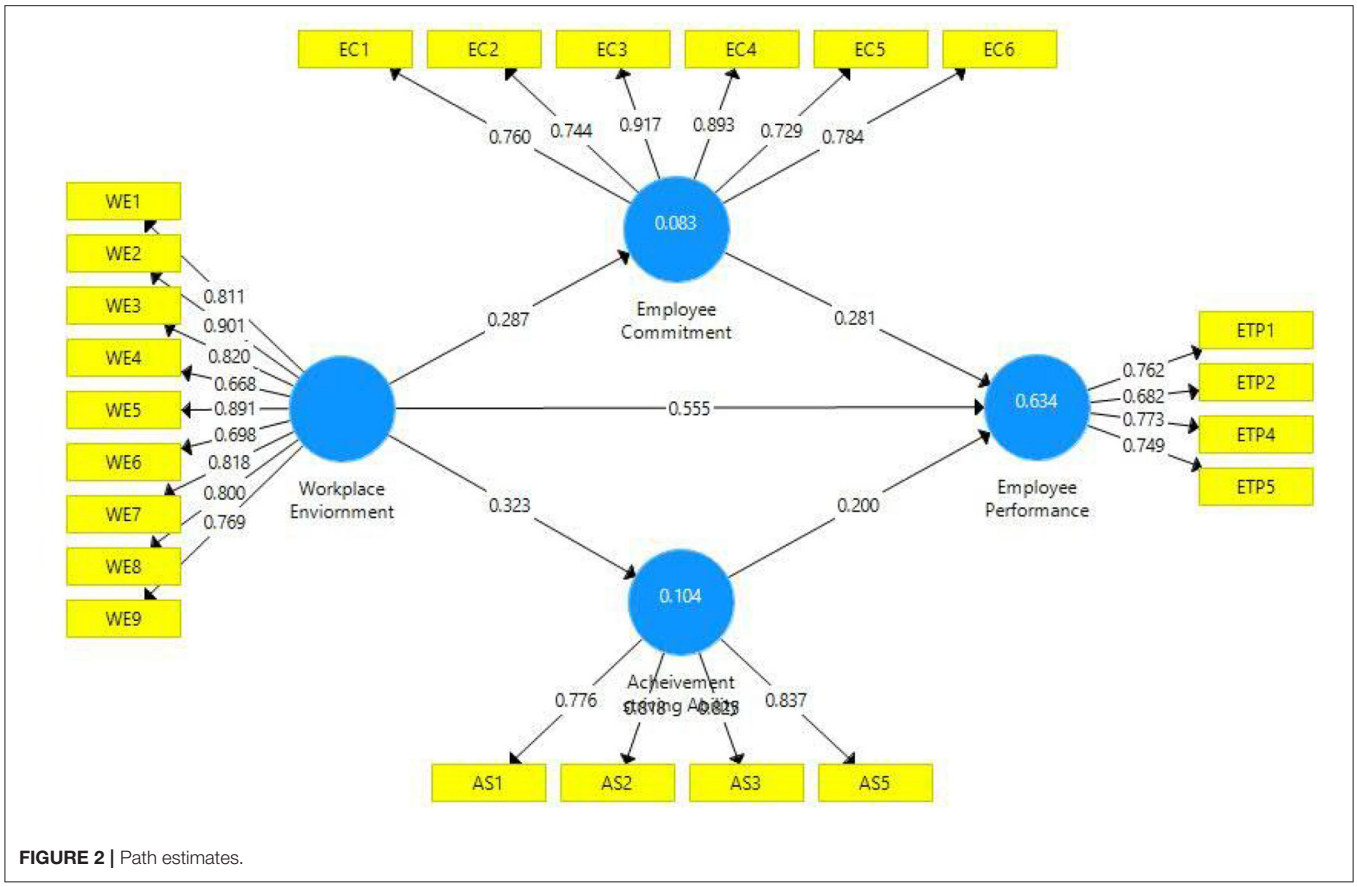

FIGURE 2 | Path estimates.

root of AVE of achievement-striving ability is 0.814 which is higher than the correlations in that column (bold and underlined values in diagonal). Similarly, the square root of AVE of employee commitment is 0.808 which is also higher in that column. Same pattern is observed for employee performance and workplace environment.

The HTMT ratio is used as the second measure to assess the discriminant validity. Two criteria were observed in this regard (liberal and conservative). Both criteria were met as the values of HTMT ratios in all columns are <0.90 and 0.85, describing that both liberal and conservative criteria are met. Liberal criteria HTMT ratio indicates that value of HTMT should not be higher than 0.90 while conservative criteria indicate that value of HTMT should not be higher than 0.85. **Table 4** illustrates the discriminant validity through HTMT ratios.

Two criteria were used to assess the model fitness, namely, the coefficient of determination (R^2) and effect size (f^2). **Table 5** illustrates the quality criteria based on coefficient of determination. Here, it has been observed that predictors (workplace environment) along with the mediators (achievement-striving ability and employee commitment) are explaining 63% variation in employee performance; thus, predicting a good and reasonable model fitness (52, 66). Similarly, 10% change is observed in achievement-striving ability and 8% change in employee commitment as a result of the workplace environment. **Figure 2** also illustrates the coefficient of determination, and it can be assumed that these values of coefficient of determination are satisfactory (60). **Table 6** illustrates the effect size in terms of f^2. All the effect sizes have been found satisfactory and depict good quality criteria (52). In addition to this, we have also tested the model predictive relevance based on Q^2 (67) and all the values of Q^2 have been found to be higher than zero, indicating model predictive relevance.

Hypotheses Testing

At the final stage, we tested hypotheses based on *t*- and *p*-statistics (See **Figures 1** and **3**). Direct hypotheses have been tested based on direct paths while hypotheses related to the mediation relations have been tested based on indirect paths (indirect effects). **Table 7** illustrates direct, indirect, and total paths while **Table 8** indicates hypotheses testing status. The first hypothesis of this study (H1) related to the relationship of the workplace environment and employee performance has been found statistically significant based on *t*- and *p*-statistics and it is accepted. The regression coefficient in this regard indicates that one unit change in the workplace environment will bring 0.55 unit change in employee performance. Moreover, this path also indicates that in the presence of positive workplace environment, employee performance (task performance) moves upward and positive change in task performance is observed.

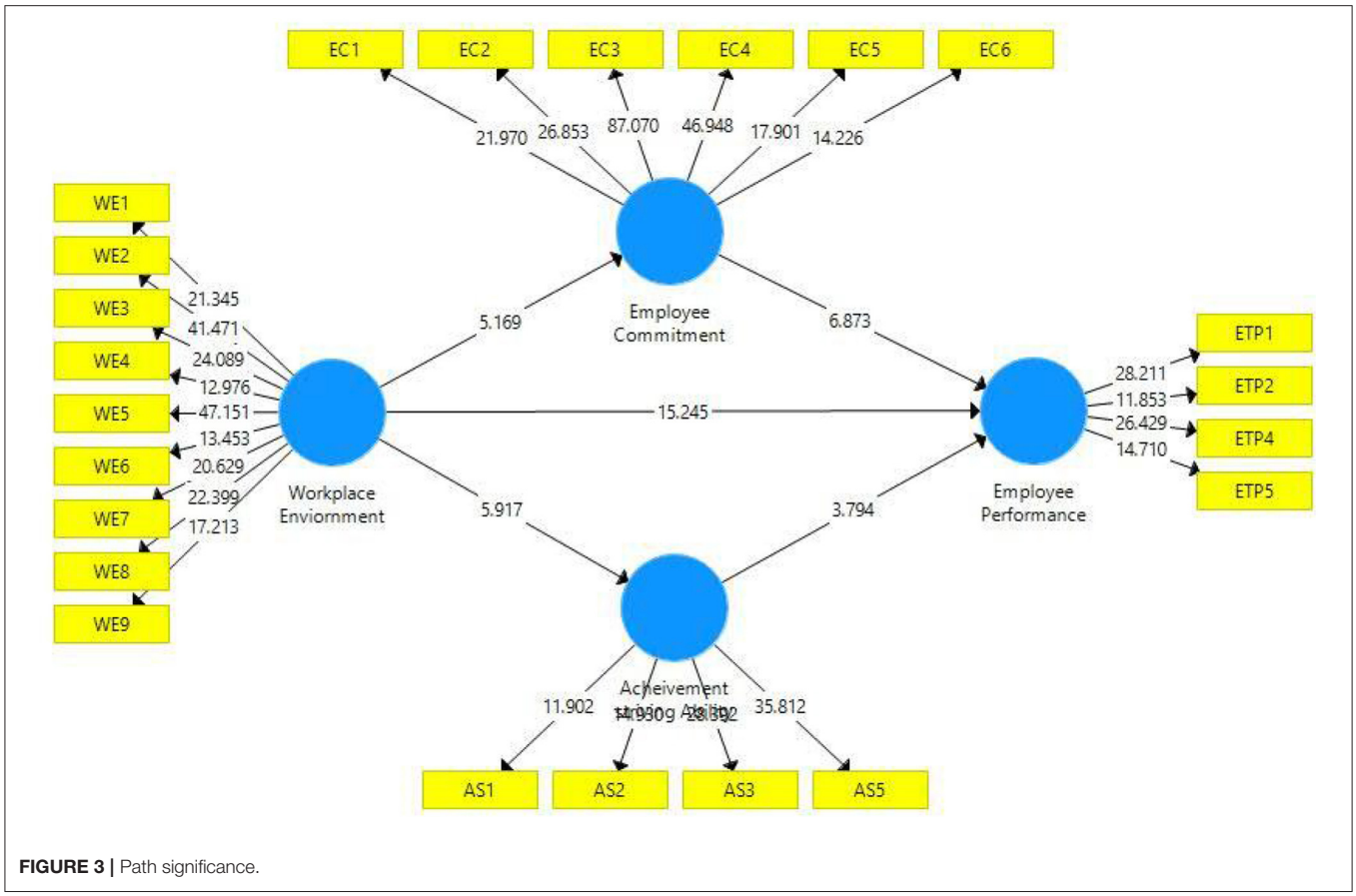

FIGURE 3 | Path significance.

Similarly, the second hypothesis (H2) of this study which is based on the relationship of the workplace environment and employee commitment has also been found statistically significant as evident from the *p*- and *t*-statistics (H2 supported). This state of affairs indicates that with the upward change in the workplace environment there will be positive change in employee commitment. It can be safely assumed that a positive workplace environment tends to promote employee commitment. The third hypothesis of this study was based on the relationship of the workplace environment and achievement-striving ability, which has also been found statistically significant as illustrated in **Table 8** (H3 is supported). Thus, a positive change in the workplace environment increases the achievement-striving ability of the employees at the workplace.

While talking to mediation hypotheses, these have been tested through the indirect effects as illustrated in **Table 7**. Indirect effect for the path Workplace Environment → Employee Commitment → Employee Performance has been found statistically significant ($p < 0.005$) which indicates that employee workplace environment positively increases the employee commitment level which further triggers employees to demonstrate a higher level of employee performance (H4 supported). Similarly, the indirect effect in H5, i.e., Workplace Environment → Achievement striving Ability → Employee Performance has also been found statistically significant ($p <$ 0.05) (H5 supported). This indicates that a positive workplace environment improves employees' achievement-striving ability which further enhances their ability to show a higher level of performance.

DISCUSSION

This study analyzed the impact of employee workplace environment on employee related factors including employee commitment and achievement-striving ability of the employees. The hypothesis of this research indicated that the workplace environment had a significant impact on shaping the performance of employees. A lot of research in the past had evaluated the similar kind of relationships in which changing environments and the factors of environments of workplace had significant contribution toward the job performance of employees (68). For instance, the work in (10) stated that with an increase in per unit variance for physical and behavioral environmental factors, employee's performance was increased which supported our argument. The possible reason behind this outcome was the psychological ability of employees which molded or reshaped the behaviors of employees in case of conducive and restrictive environments of workplace. All employees may not work in the same way since they have distinct working styles due to different workplace environments. Some personnel have the greatest potential regardless of the

TABLE 2 | Outer loadings (convergent validity).

Items	Achievement-striving ability	Employee commitment	Employee performance	Workplace environment
AS1	0.776			
AS2	0.818			
AS3	0.825			
AS5	0.837			
EC1		0.760		
EC2		0.744		
EC3		0.917		
EC4		0.893		
EC5		0.729		
EC6		0.784		
ETP1			0.762	
ETP2			0.682	
ETP4			0.773	
ETP5			0.749	
WE1				0.811
WE2				0.901
WE3				0.820
WE4				0.668
WE5				0.891
WE6				0.698
WE7				0.818
WE8				0.800
WE9				0.769

TABLE 3 | Discriminant validity (Fornell–Larker-1981 criteria).

Construct	Achievement-striving ability	Employee commitment	Employee performance	Workplace environment
Achievement-striving ability	**0.814**			
Employee commitment	0.401	**0.808**		
Employee performance	0.492	0.521	**0.742**	
Workplace environment	0.323	0.287	0.701	**0.801**

Note: Values in the diagonal and bold are square root of AVEs.

TABLE 4 | Discriminant validity (HTMT).

Construct	Achievement-striving ability	Employee commitment	Employee performance	Workplace environment
Achievement-striving ability	-	-	-	-
Employee commitment	0.450	-	-	-
Employee performance	0.573	0.635	-	-
Workplace environment	0.347	0.300	0.723	-

TABLE 5 | Coefficient of determination.

Endogenous construct	R^2	R^2 adjusted
Achievement-striving ability	0.104	0.101
Employee commitment	0.083	0.080
Employee performance	0.634	0.630

TABLE 6 | Effect size.

Construct	Achievement-striving ability	Employee commitment	Employee performance
Achievement-striving ability	-	-	0.086
Employee commitment	-	-	0.175
Workplace environment	0.116	0.090	0.729

workplace conditions, whereas others benefit from a supportive environment of the workplace (2).

The direct effects of workplace environment of employees on employee commitment and achievement-striving ability were also evaluated in this study and found significant outcomes indicating that workplace environment influences the employee-based factors as well. The direct effects on employee commitment showed that if a conducive environment at the workplace was provided, then it could develop a stronger sense of commitment in the employees toward their job and organizations. Similar kind of results were also reported by some of the previous researchers (69). In exploration of the relationship between workplace environment with employee commitment, these researchers found that if environment of workplace is suitable then it could lead to wellbeing of employees which in turn improve commitment to work by the employees. Employee commitment levels boost employee performance in firms that increase their commitment levels. Previously, companies have given their employees job security to boost their dedication to the firm and performance (13).

Another dimension to this study was exploration of the relationship between workplace environment and achievement-striving ability of employees. The results indicated similarly the positive association between workplace environment and achievement-striving ability of employees. This kind of relationship evaluation was new as no one in past had evaluated the direct association of workplace environment of employees to achievement-striving ability of employees. The majority of the workplace environment in underdeveloped countries is not safe. Unfortunately, most firms consider a safe and healthy work environment to be an unnecessary expenditure and do not invest heavily in providing a comfortable working environment (12).

TABLE 7 | Direct, indirect, and total path estimates.

	β	SD	*t*	*p*
Direct path				
Achievement-striving ability -> Employee performance	0.202	0.053	3.794	0.000
Employee commitment -> Employee performance	0.282	0.041	6.873	0.000
Workplace environment -> Achievement-striving ability	0.323	0.055	5.917	0.000
Workplace environment -> Employee commitment	0.289	0.056	5.169	0.000
Workplace environment -> Employee performance	0.555	0.036	15.245	0.000
Indirect path				
Workplace environment -> Achievement-striving ability -> Employee performance	0.065	0.020	3.172	0.002
Workplace environment -> Employee commitment -> Employee performance	0.082	0.020	3.998	0.000
Total path				
Workplace environment -> Employee performance	0.701	0.029	24.444	0.000

TABLE 8 | Hypotheses testing.

		Coefficient (*β*)	SD	*t*	*p*	Status
Hypotheses						
H1	Workplace environment -> Employee performance	0.555	0.036	15.245	0.000	Supported
H2	Workplace environment -> Employee commitment	0.289	0.056	5.169	0.000	Supported
H3	Workplace environment -> Achievement-striving ability	0.323	0.055	5.917	0.000	Supported
Mediation hypotheses						
H4	Workplace environment -> Employee commitment -> Employee performance	0.082	0.020	3.998	0.000	Supported
H5	Workplace environment -> Achievement-striving ability -> Employee performance	0.065	0.020	3.172	0.002	Supported

The indirect effects of employee commitment and achievement-striving ability between workplace environment of employees and their performance are also evaluated in this study.

Both indirect effects of employee commitment and achievement-striving ability proved to be significantly mediating the relationship of workplace environment of employees and employee performance. This indicated that if employees were more committed to their work, then association of workplace environment and employee performance would be enhanced. Similarly, if employees had good ability of achievement striving then association of workplace environment with employees' performance would also be strengthened. Few researchers have claimed that the psychological status of every commitment element differs from one employee to the other (14). It is assumed that organizational commitment and employee performance have a positive relationship, implying that employees who perceive a firm's behavior toward companions is decent (i.e., humane treatment, involvement in judgment) might very well boost their sentimental commitment with the organization and their performance in the organization (15). The results of the this study are related to the work discussed in (18) but with a limitation that they evaluated the mediating link of employee commitment along with some moderators as well.

Theoretical and Practical Implications

From a theoretical perspective, this study tends to add to the existing body of knowledge by investigating the impact of a positive work environment on employee performance which is the contribution of the study. Moreover, this study has tested two mediating mechanisms and proved that achievement-striving ability and employee commitment as a mediator increase employee task performance, which is also a unique contribution. The perception of academic staff has been documented in this study which is the contribution of the study. From the practical point of view, this study advocates that organizations should focus on the creation and provision of a positive workplace environment at the workplace to improve the task performance of the employees. Similarly, a positive work environment promotes the achievement-striving ability of the employees, so organizations should also focus on improving the achievement-striving ability of the employees through a positive workplace environment.

Limitation of the Study

Just like other studies, this study has also some limitations. The first limitation is its cross-sectional nature, which does not allow us to assume cause and effect relationships. In the future, researchers should focus on other research designs in replicating this model, which might provide deeper insights into longitudinal research design. Second, only academic staff were approached for data collection; in the future, considering other sectors can provide useful insights. Particularly, banking sector employees can be approached in future studies. Third, we have anticipated only one side of a workplace environment, while in the future, other types of workplace environments should also be tested. Further, this study in future opting larger sample size can provide more detailed and deeper insights regarding the relationship between the workplace environment and employee

performance. We have used two mediating mechanisms in this study, considering other mediating variables such as job satisfaction can also be a future avenue. This model can also be tested with the moderating phenomenon in the future such as leadership styles or cultural variables such as power distance and collectivism.

CONCLUSIONS

Based on the empirical findings of this study, it can be concluded that a positive work environment promotes employee performance within organizational circuits. More specifically, the workplace environment can improve the achievement-striving ability of the employees, and employees tend to bounce back in difficult situations. Similarly, a positive work environment provides a nurturing and pleasant work environment which promotes employee commitment and employees tend to be loyal to their organizations. In addition to this, it can also be concluded that the employee commitment has the potency to enhance the task performance of the employees; because employees show a higher level of task performance when they are committed to their employer or organization. Similarly, employees with higher achievement-striving ability tend to show a higher level of task performance even in difficult situations. Further it can be endorsed that motivational activities in organizational cultures are triggered under social exchanges, and positive behaviors at workplace are promoted in shape of employee commitment. This increased commitment can result in enhanced and improved individual and organizational performance.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

GZ: initial and final draft. SC and KK: analysis and interpretation. AN and MH: proof read, revision, and data validation. All authors contributed to the article and approved the submitted version.

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Information disclosure, practical actions and dynamics of employees' health and safety issues in Chinese family businesses—Evidence based on Chinese a-share listed companies

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Introduction: Global health emergency as COVID-19 has brought unprecedented concerns to the health and safety of employees, which is important yet long-neglected. This paper studies the mechanism and influencing factors of Chinese family enterprises performance in employees' health and safety from information disclosure, practical action and dynamic change. And based on theoretical framework and empirical model, this paper provides feasible regulatory policies on the behavior of family business.

Methods: This study construct a game theory framework and uses a sample of Chinese A-share listed companies. The database is provided by a third-party corporate social responsibility rating agency, SynTao Green Finance. We use empirical models to test the hypothesis from the theoretical model of game theory.

Results: In practice, family businesses are less likely to fulfill the health and safety responsibilities of employees compared to non-family businesses. Family businesses are likely to be more motivated than other businesses to send signals that they are performing their responsibilities well. From the view of operation term, family businesses will be gradually inclined to better fulfill the health and safety responsibilities of their employees, while this process will show a "U" shape change over operation time.

Conclusions: As there is inconsistency between the information disclosure and actual practice of family enterprises when it comes to the issue of employee health and safety, more related regulatory policies and stakeholder monitoring are needed. Although the performance of family enterprises in this regard will be better in the long run, it is still necessary to improve employees' legal and rights awareness and enhance the effectiveness of supervision over external stakeholders.

KEYWORDS

health and safety, family firms, occupational health, employee health, corporate sector, corporate social responsibility, family business, game theory

Introduction

The impact of COVID-19 has brought unprecedented attention to the health and safety of employees around the world. The so-called family business, a long-established and ubiquitous business model worldwide, is considered to play an important role in the economic ecology of almost all countries (1). As stated by some reports, family businesses contribute 70–90% of global GDP (2). In China, the number of family businesses is also on a rapid rise in China, and they have accounted for ∼80% of Chinese private companies. However, there is few research on the health and safety of employees in family businesses. Although family businesses are the most common operating mode in private enterprises, the availability of information about family businesses in China is limited compared with other private enterprises. Generally, it is easier to obtain the relevant information of listed companies, whereas there are only about 1,000 family-owned companies (the number varies as standard changes) among the more than 3,000 private listed companies in China's A-share market. This feature not only brings the challenge of lack of available information, cases and data to the relevant research, but also makes it more difficult for people to understand the occupational health and safety status of employees in family business under the condition of information asymmetry, let alone to discuss strategies and policies for improvement in their welfare. Therefore, we need proper theory framework and solid data to analyze the behavior of Chinese family business in employees' health and safety issues.

Based on the above reality, the innovation of this paper is reflected in both theory and practice. In theory, we attempt to build an analytical framework for the health and safety issues of family business employees, which are less studied. In practice, this study focuses on the performance of family businesses in China's social environment, and attempts to provide potential policies on external supervision from stakeholders. The contributions of this study are as follows: First, this study unifies the existing theoretical attempts on corporate fulfillment of employee health and safety responsibilities, and provides a certain amount of evidence for the solution of the existing disputes. Second, From the perspective of actual actions and signals released by family enterprises, this paper explains the impact of family enterprises on employees' performance of health and safety responsibilities, and attempts to reveal the practical motivation of family enterprises to perform employees' health and safety responsibilities. Third, in the case of difficult access to information and data, this paper applies limited information and data to take into account the possible changes in the time dimension of family enterprises' implementation of employee health and safety behaviors, and combine with the traditional Chinese cultural environment to explain the possible reasons behind such behavioral changes in Chinese family enterprises, providing inspiration for future related research. The conclusions are conducive to vulnerable stakeholders and external stakeholders when encountering irresponsibility in the course of getting along with family enterprises. The actions taken in-between lays a foundation to some extent, which will play a role in promoting family businesses to improve the level of environmental responsibility and improve the relevant information disclosure system of the listed family business company.

Literature review

At present, the most common theories for analyzing corporate social responsibility (CSR) mainly include agency theory and social emotional wealth theory (socio-emotional wealth, SEW) (3).

From the perspective of agency theory, the controller of a family business, as a rational participant in the market, naturally faces the problem of obtaining maximum benefit with limited resources (4). Existence also brings "principal-agent" problems (5). When family businesses are faced with two types of "principal-agent" problems, the "first type" could generally be solved because their family members are widely involved in specific operations as senior managers. However, as the family members' voices increase, they have more incentives and conditions to encroach on the interests of other stakeholders (6), which makes it possible for the holding family to reduce costs and seek private interests while ignoring the health and safety of employees. In non-family businesses, major shareholders do not have such a powerful voice compared to other stakeholders. This view is supported by studies by Abdullah et al. (7). In addition, considering that many enterprises are state-owned enterprises in China in practice, these enterprises are not completely in seek of self-interest, and are inclined to take on more such social responsibility as those for the health and safety of employees. Therefore, family businesses have the tendency to take up less responsibility for the health and safety of their employees.

However, the socio-emotional wealth theory represented by such scholars as Gomez-Mejia takes into consideration the influence of family management on enterprise management decision-making, which will cause enterprises to seek non-economic goals such as socio-emotional wealth in addition to maximizing their own economic interests (8). What can also be seen as part of this socio-emotional wealth is the family image and reputation built by shouldering more responsible for the health and safety of employees, and the moral capital accumulated. These motivations may incentivize family firms to pursue certain non-economic interests, thereby accumulating more socio-emotional wealth for the family. In non-family businesses, however, this motivation may be weakened by the belief that stakeholders are more dispersed, reducing the motivation to acquire social-emotional wealth, which was supported by the research of Jiang et al. (9). In addition, as shown by the research results of Chen et al. (10) on Chinese

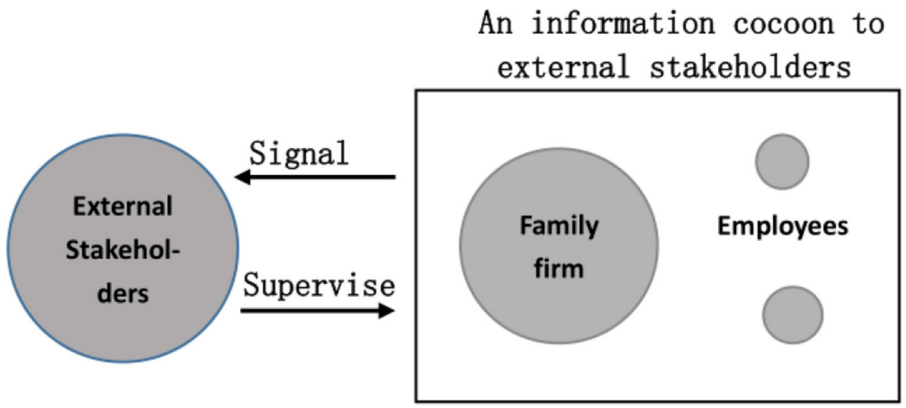


FIGURE 1
Analysis framework.

enterprises, such factors as organizational image and reputation will exert an influence on Chinese enterprises' performance of their social responsibilities.

In fact, the above two seemingly contradictory theories are not tit for tat. The cost problems caused by enterprises taking responsibility for employees' health and safety under the consideration of principal-agent theory has mostly been rooted within the firm, which is mainly the result of the game between family firms and their employees. However, the social emotional wealth emphasized by the social emotional wealth theory fundamentally derives from the external stakeholders of the firm.

The main shareholders and senior managers of family firms are frequently closely related. On the one hand, they are in a stronger position for such internal stakeholders as employees than in general firms; On the other hand, they also have greater advantages of information asymmetry over the external stakeholders of the firm (government, community, etc.). Therefore, family businesses have greater possibility to ignore employees' health and safety issues in practice, while relying on asymmetric advantages to send a responsible signal to their external stakeholders to seek social emotional wealth. Preuss and Lenssen (11) and Prior et al. (12) illustrates the possibility of this type of motivation from one side.

On this basis, we established the following analytical framework.

As shown in Figure 1, the family business engages in a game with relatively weak employees, ultimately resulting in the outcome of whether and to what extent it is responsible for employees' health and safety. External stakeholders such as the government will accept the signals from the firm and supervise the family firm. However, the main shareholders and senior managers of family enterprises often come from the same family, therefore there is interest binding, and a greater possibility of collusion as well. Therefore, the family business enjoys a greater information advantage for its own information and internal behavior. At the time, compared to other enterprises, their external signals and supervision tend to be ineffective.

This behavior pattern of family businesses is also supported by the literature. Nekhili et al. (13)'s research on French family businesses shows that the disclosure of social responsibility information of family businesses is less than that of non-family businesses. And the Tobin Q of family enterprises is positively correlated with their social responsibility disclosure, which shows that family enterprises can indeed obtain social emotional wealth by disclosing social responsibility information to a certain extent. Izzo and Ciaburri (14)'s research shows that family businesses do take social responsibility actions selectively according to changes in the social environment, which also indirectly shows that family businesses have strategic choices in fulfilling their social responsibilities.

Based on this analytical framework, the model established by Wang on CSR in China is improved to make it more relevant to the specific context of the issues discussed above, with the aim of setting up a game theory model for employee health and safety issues between family firms and their employees and external stakeholders (15).

Methods and data

Game theory modeling analysis

Game model of family businesses and employees on employee occupational health and safety

In the game between employees and enterprises in terms of employees' occupational health and safety, the payment matrix is considered as follows.

TABLE 1 Payment matrix between employees and firms.

Firm \ Employee	A	B
A	a_1, a_2	$k, k+b_2$
B	$k+b_1, k$	a_1, a_2

TABLE 2 Payment matrix of corporate dominant strategy.

Firm \ Stakeholders	C	D
Y	f-c	f-c
N	f	f-x

As shown in Table 1, companies and employees have two sets of action plans for employees' health and safety game. A represents a relatively strong/positive approach, while B represents a relatively weak/negative approach. a_1 and a_2 in the matrix signify the gains and losses of employees and enterprises when equilibrium is not reached, respectively. To simplify the analysis, it is assumed that both are less than zero, which is equivalent to assuming that it will be a lose-lose outcome if the equilibrium cannot be reached. However, it is worth noting that the two sides of the game have different opinions regarding employee health and safety issues. b_1 and b_2 indicate the additional benefits that employees and firms receive contributed by their own strong strategies and the other's weak strategies when the equilibrium is achieved, and b_1, b_2 and k are all greater than zero. Compared with employees, companies, especially family-owned companies, own stronger negotiating power, so there is $a_1 < a_2, b_1 < b_2$.

By considering the incomplete information mixed strategy equilibrium (MNE) of this game, what is pinpointed is the probability that the enterprise and the employee adopt two strategies respectively, and use this probability to judge the inclination of the two sides of the game to adopt the two strategies. It is assumed that the probability of the enterprise taking action A is P, the probability of taking action B is (1-P), the employee's strategy for taking action A is Q, and the strategy for taking action B is (1-Q). From this assumption, we can obtain the trade-off equations for enterprises and employees:

$$\boldsymbol{a_2 \times Q + (k + b_2) \times (1 - Q) = k \times Q + a_2 \times (1 - Q)} \quad (1)$$

$$\boldsymbol{a_1 \times P + (k + b_1) \times (1 - P) = k \times P + a_1 \times (1 - P)} \quad (2)$$

Solving the above two equations are shown as follows:

$$\boldsymbol{P = \frac{(k + b_1 - a_1)}{(2k + b_1 - 2a_1)}} \quad (3)$$

$$\boldsymbol{Q = \frac{(k + b_2 - a_2)}{(2k + b_2 - 2a_2)}} \quad (4)$$

The relationship between the size of the following formula and the sizes of a and b is demonstrated as follows:

$$\boldsymbol{p = \frac{(k + b - a)}{(2k + b - 2a)}} \quad (5)$$

The partial derivative of p with respect to a is illustrated as follows:

$$\boldsymbol{\frac{\partial p}{\partial a} = \frac{b}{(2k + b - 2a)^2} > 0} \quad (6)$$

The partial derivative of p with respect to b is shown as follows:

$$\boldsymbol{\frac{\partial p}{\partial b} = \frac{k - a}{(2k + b - 2a)^2} > 0} \quad (7)$$

Because $a_1 < a_2$ and $b_1 < b_2$, the company as a strong side is more inclined to take strong actions on employee safety and health issues than the employee side does, and employees are more likely to adopt negative strategies. In other words, it is easier to achieve the pure strategy equilibrium of $(k, k + b_2)$ in reality; to put it another way, the enterprise is not responsible for the health and safety of employees, but the employees can only accept the result. Compared with other companies, family businesses have more say in the game of employees; therefore, this kind of equilibrium is more likely to occur in family businesses.

Through an analysis of this part of the model, an assumption is proposed as follows:

H1: Compared with other businesses, family businesses tend to ignore employee health and safety issues in practical actions in order to save costs.

Game model of family business and external stakeholders

In terms of the game between enterprises and external stakeholders regarding the health and safety of employees, what is considered here in this study is a simple static game of incomplete information. It is assumed that a company is in the course of weighing how well it fulfills its employees' health and safety responsibilities in order to capture social-emotional wealth from external stakeholders. Supposing that the company decides not to perform this obligation well, there is a probability n that external stakeholders will detect this behavior and impose penalties on it. Based on this assumption, the possession strategy of a company is set up according to Table 2.

Since the choice made by corporate dominant strategy in this game has nothing to do with the benefits of stakeholders, the benefits of external stakeholders are omitted. As Strategy C of the external stakeholder in the matrix indicates, it has discovered that the company is sending false signals, whereas D indicates that it has done the opposite. If the enterprise fulfills the related responsibilities of employees' occupational health and

safety well, it will pay the cost c on the basis of the harvest f, that is, the net benefit at this time is f-c. If firms choose not to perform well, they will pay no cost c if they are not detected; however, they will pay a greater price x than c if they are found.

Calculating the expected return of the two strategies adopted by the enterprise, it can be seen that the expected return of the enterprise choosing to fulfill its responsibility is f-c, and the expected return of not fulfilling its responsibility is f-nx. Obviously, when c is constant, the strategy adopted by the company as dominant strategy depends entirely on the intensity of punishment and the probability of being discovered. When the punishment is the same, the choice of strategy is greatly affected by the probability of being discovered. Starting from the theory in the theoretical research part of this paper, it is clear that family businesses whose interests are highly aligned with major shareholders and senior managers are more motivated to send false signals to the outside world without fulfilling the health and safety responsibilities of their employees. Therefore, there lacks evidence to judge whether the family business has properly fulfilled its employees' health and safety responsibilities through the signals released by the family business. In other words, the signals delivered by family enterprises and non-family enterprises on the issue of employee health and safety are theoretically not significantly different. There will even be cases where family businesses perform better than non-family businesses. Of course, this conclusion is not as strong as that drawn from the game with employees in the previous subsection.

Based on the analysis of this part of the game, assumption could be made as follows:

H2: Only relying on the information disclosed to the public, the performance of family enterprises on employee health and safety issues is better than that of non-family enterprises, or there is no significant difference between the two types of enterprises.

Complementary to game theoretical models: The time dimension

In the above analysis framework and game model, what is statically discussed is only the behavior of family businesses in fulfilling their employees' health and safety responsibilities, without taking into consideration the impact of changes in the operating stages of family businesses over time. This section will discuss how the responsibility performance behavior of Chinese family businesses will change over time in China's social and cultural environment.

The traditional concept of the family enjoys a long history in China. Family members live in groups with blood ties and have a strong cultural and emotional identity with each other. Under the influence of traditional Chinese culture, a traditional Chinese family will pay greater attention to the improvement of the quality of family members in the process of its development and growth, and will be proud of the prestige and honor it brings from generation to generation. This culture is known in China as Jia-Feng, which refers to the family tradition. In this sense, as the family business continues to grow, the controlling family pays an increasing amount of attention to the inheritance of its family prestige and honor. This is reflected in our analytical framework that firms' propensity to acquire social-emotional wealth increases over time. Li 's (16) research on Chinese family businesses also confirmed this. At the same time, external stakeholders, such as the government, may weaken the unequal position of family businesses in the game through legislation, increase supervision, and provide legal assistance.

However, despite the adjustment of the traditional Chinese cultural influence, what cannot be ignored is the influence of the mechanism discussed above. In addition, the scale of Chinese family enterprises is relatively small compared to other enterprises, which may make them more likely to fall into a crisis of operation or end the operation earlier than expected (17). Employees' health and safety of may be of less importance over time.

Based on this, the following assumption could be made:

H3: As the business enjoys a longer history, the family business will better /worse fulfill the health and safety responsibilities of its employees.

Two mechanisms of H3 may play a major role in different periods of family business operations. Thus, assumption could be made as follows:

H4: A family business's performance of employee health and safety responsibilities will show a U-shaped or inverted U-shaped change over time.

To confirm these assumptions, the econometric methods below will be applied for demonstration.

Data and econometric methods

There exists rare domestic literature on family business responsibility for employee health and safety in China. Relevant research data and methods on Chinese CSR in a broader sense are referred to in order to construct our research scheme (18, 19). Because of the difficulty in obtaining data and information about family enterprises mentioned above, most of the domestic CSR studies related to family enterprises have applied the Survey of Private Enterprises in China database in 2012 based on the cross-sectional data obtained from the questionnaire. The indicators related to employee health and safety of Chinese A-share listed companies are conducted by SynTao Green Finance, a third-party CSR rating agency, and the related indicators are from CSMAR database. After excluding financial firms that may behave differently, 3,290 observations were obtained.

All variables used in this study are shown in Tables 3, 4.

TABLE 3 Variable descriptions.

Variable name	Variable meaning
Prof_tra	SynTao Green Finance scores the enterprise according to the employees' vocational training. The data comes from the "number of employees/times and time of vocational training received by employees each year" in the employee-related indicators of SynTao Green Finance.
H&S_pol	The score given by SynTao Green Finance is based on the company's employee occupational health and safety-related policies published in its annual social responsibility report or other channels.
YoN	Whether the business is a family business or not, different businesses are assigned values according to CSMAR's broad definition of family business, 1 for family businesses and 0 for non-family businesses.
Power	The proportion of the actual controller of the enterprise owning the actual control of the enterprise, the specific value comes from the CSMAR database
Fam_time	The time since the company has been familiarization (years).
SIZE	Business size of family firms, measured by the logarithm of total assets data.
Lev	Enterprise debt ratio family firms, the logarithm of the ratio of its liabilities to total assets.
Rate	Total profit margin of family firms.
Number	Number of board members of family firms.
Indus	Industry fixed effects, refer to the dummy variables assigned to each industry by the CSRC industry classification.

TABLE 4 Data description.

Variable name	Obs	Mean	Std.Dev	Min	Max
Prof_tra	3,290	7.796	17.878	0	100
H&S_pol	3,290	63.016	42.535	0	100
YoN	3,290	0.243	0.429	0	1
Power	1,092	39.575	16.768	0.005	87.920
Fam_time	800	5.068	5.295	0	28
SIZE	787	21.279	0.921	17.053	24.872
Lev	787	−1.083	0.962	−7.861	1.720
Rate	800	0.064	0.069	−0.636	0.664
Number	775	8.002	1.533	4	15

Variable Prof_tra is chosen as the proxy variable of the enterprise's actual action on employee health and safety issue. It is generally believed that good occupational training is conducive to improving the production safety of employees, and that it is a behavior that is responsible for the life and health of employees to conduct good occupational training for employees (20). And it is based on the following considerations: First, professional vocational skills training can make employees improve their proficiency and capability to avoid production hazards, so that employees can produce in a safer manner; Second, the cost of vocational training for employees should be borne by the enterprise; Third, employees cannot produce for the enterprise during the training period, which can be regarded as the opportunity cost shouldered by the enterprise for employees' safety and health. Therefore, the length of occupational training is taken that each employee of the company receives in a year (Prof_tra) as a proxy variable for the company's responsibility for employees' occupational health and safety.

At the same time, we used the variable H&S_pol from SynTao green finance to reflect the performance of employees' health and safety responsibilities disclosed by the enterprise itself. The higher the score, the better the performance of employees' health and safety responsibilities.

Through the distribution of the above two proxy variables, what is intuitively illustrated is the differences in practical actions and information disclosure between family enterprises and non-family enterprises' on employee health and safety issues. In this process, H1 and H2 were tested.

For H3, the following models is established to conduct empirical research on family business observations:

$$\begin{aligned} Prof\_tra_i &= \beta_0 + \beta_1 * Fam\_time_1 + \beta_3 * control_i \\ &+ \beta_4 * Indus_i + \varepsilon_i \end{aligned} \quad (8)$$

$$\begin{aligned} H\&S\_pol_i &= \beta_0 + \beta_1 * Fam\_time_1 + \beta_3 * control_i \\ &+ \beta_4 * Indus_i + \varepsilon_i \end{aligned} \quad (9)$$

This part of the study includes only 800 family business observations. Taking the time of family business familiarization as the core explanatory variable, discussion was carried out on the impact of different periods of family business operations on the health and safety responsibilities of traveling employees.

In the actual data processing of this study, the introduction of control variables will inevitably lead to the loss of valuable observations. To avoid the influence of this problem and at the same time ensure the robustness of the empirical results as much as possible, the following two models are set up in the actual processing of each hypothesis for research. The first model relaxes the assumptions by not introducing control variables. The maximum number of observations was maintained, and the relationship between the core explanatory variable and the explained variable was studied. The second model tightens the conditions, introduces control variables, and excludes factors such as state-owned enterprises. Finally, the regression results of the two models are compared. If the core explanatory variables of the two models do not change in sign and significance of the regression coefficients, a relatively robust result could be generated. The regression results are listed in Table 6.

At the same time, in order to verify H4, the quadratic term of Fam_time was introduced and the following

TABLE 5 Correlation matrix of variables.

Variable	Prof_tra	H&S_pol	YoN	Power	Fam_time	SIZE	Lev	Rate	Number
Prof_tra	1.000								
H&S_pol	0.107***	1.000							
YoN	−0.056***	0.008	1.000						
Power	−0.108***	0.062*	0.173***	1.000					
Fam_time	0.252***	0.094***	Null	−0.291***	1.000				
SIZE	0.399***	0.164***	Null	−0.060	0.449***	1.000			
Lev	0.012	0.172***	Null	−0.085**	−0.170**	−0.084***	1.000		
Rate	0.042	0.014	Null	0.215**	−0.083**	0.208***	−0.188***	1.000	
Number	0.148***	0.065*	Null	−0.132***	−0.136***	0.235**	0.037	0.066*	1.000

***Significant at the 1% level.
**Significant at the 5% level.
*Significant at the 10% level.
Variables Prof_tra and H&S_pol are provided by SynTao Green Finance, other variables are sourced from the CSMAR database.

FIGURE 2
Prof_tra's score distribution.

models was established. The regression results are shown in Model 9–10, and the regression results are presented in Table 7.

$$Prof\_tra_i = \beta_0 + \beta_1 * Fam\_time_i + \beta_2 * Fam\_time_i^2 + \beta_3 * control_i + \beta_4 * Indus_i + \varepsilon_i \quad (10)$$

$$H\&S\_pol_i = \beta_0 + \beta_1 * Fam\_time_i + \beta_2 * Fam\_time_i^2 + \beta_3 * control_i + \beta_4 * Indus_i + \varepsilon_i \quad (11)$$

Results

Results of statistical analysis

Table 5 presents the results of the correlation analysis for the variables involved in this study. Among the 3,290 observations here, there were 800 family business samples. In the correlation analysis, it can be intuitively observed as follows: 1. Compared with non-family enterprises, the situation of family enterprises' vocational training for employees is worse, to be specific, in practice, family businesses may be more reluctant to fulfill their employee health and safety responsibilities than non-family businesses, which is consistent with H1; 2. From the disclosure point of view, there is no intuitively significant difference between family businesses and non-family businesses, which is consistent with H2; 3. From the time dimension of corporate familiarization, familiarization time is proportional to its responsibility performance. In summary, the results of the correlation study on variables support H2.

The sample by family business and non-family business were grouped, and by drawing pie charts for the score intervals of the two variables Prof_tra and H&S_pol for each group, in a more intuitive way, the hypothesis H1 and H2 was initially tested. Prof_tra's score distribution of family and non-family businesses is shown in Figure 2.

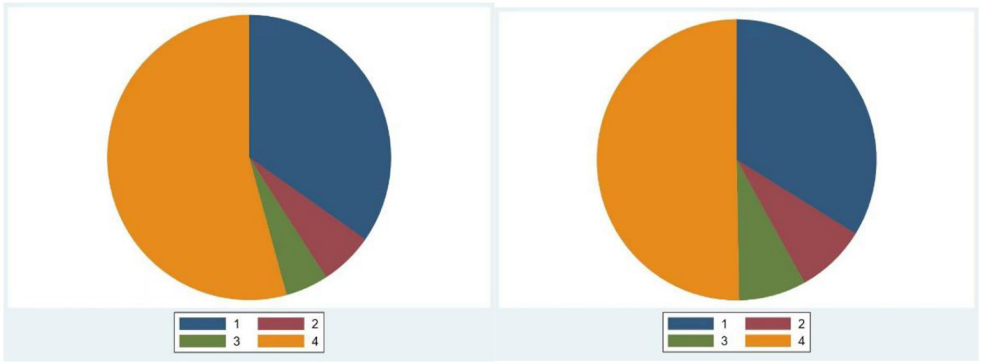


FIGURE 3
H&S_pol's score distribution.

The different colored areas 1, 2, 3, and 4 in the figure represent the score ranges 0–25, 26–50, 51–75, and 76–100, respectively. The graph on the left represents a family business, and the graph on the right represents a non-family business. In terms of percentages in each interval, non-family businesses score better than family businesses (The percentage of family businesses that fall within the range 1–4 were 93.75, 4.375, 1.375, and 0.5. The corresponding percentages for non-family businesses were 92.77, 4.578, 1.526, and 1.126). This also supports H1 to a certain extent. The distribution of H&S_pol's family and non-family business scores is shown in Figure 3.

The score of family business in H&S_pol is completely different from that in Prof_tra. From the distribution of scores in field H&S_pol, the proportion of family firms in the highest districts is significantly higher than that of non-family firms. In the score distribution of non-family enterprises, the four intervals accounted for 34.75, 6.125, 4.875, and 54.25% respectively. In the score distribution of family enterprises, the four intervals accounted for 33.82, 8.112, 7.791, and 50.28%, respectively. This means that family businesses may have behaviors that are inconsistent with the information disclosed to the outside world and their actual actions, which supports Hypothesis H2 from one aspect.

Results of regression analysis

As shown in the Tables 6, 7, as the operating time extends, family businesses begin to pay more attention to the health and safety of employees and improve their vocational training. After controlling for many variables, this result still holds true. At the same time, after the quadratic term was introduced, it is found that in the early stage of operation, family businesses tend to be more and more irresponsible for the health and safety of their employees, and once a certain period of time is exceeded, family businesses grow to be more responsible gradually. This shows that the two effects in the H3 play different roles in different periods. Combined with the mechanisms analyzed in this paper, the reason may be that in the first few years of family business operation, in order to make up for its small size, family businesses tend to concentrate on accumulating capital, and then gradually focus on responsibility as they gain a firm foothold. As a whole, this process presents a "U"-shaped change over time, as shown in the Figure 4. Based on the sample calculations here, it can known that this turning point generally occurs in the seventh (6.95) year of family business operations. Out of the 800 family business samples obtained here, 263 were in the first stage, while 537 were in the second stage.

TABLE 6 Regression results of model 1–4.

	Model 1	Model 2	Model 3	Model 4
Fam_time	0.751***	0.314*	0.966**	0.136
	(4.88)	(1.84)	(2.78)	(0.34)
Control variables	***N***		***N***	
Size		5.916***		9.163***
		(5.76)		(4.50)
Lev		−0.642		4.873***
		(−0.98)		(2.60)
Rate		−5.20		−2.40
		(−0.48)		(−0.08)
Number		0.339		1.23
		(0.80)		(0.99)
Industry fixed effect	Y	Y	Y	Y
Robust standard error	Y	Y	Y	Y
R-squared	0.150	0.267	0.133	0.180

Model 1–2 is the regression result of model (7), and model 3–4 is the regression result of model (8). ***Significant at the 1% level. **Significant at the 5% level. *Significant at the 10% level.

But at the same time, it is also noticed that on the issue of releasing responsibility signals to the outside world, what is not found is that it has changed significantly over time, which shows that H2 is correct from one aspect.

Robustness

The criteria for determining family businesses from the broad definition of the CSMAR database was replaced with the proportion of the actual controller of the enterprise with actual control over the enterprise. The higher the proportion, the closer the enterprise is to the behavioral pattern of a family business. Companies whose actual controllers have more than 40% of the actual control of the company as family businesses (as shown in Table 4, the mean value of the variable power is about 40%) are identified, and models 7–10 were build up on this basis and the robustness of models 1–4 was re-verified. Table 8 presents the regression results.

The regression results in Table 8 are basically consistent with those in Table 6, indicating that our conclusions are robust to a certain extent.

Models 11–12 were set up to verify the robustness of models 5–6. Table 9 presents the regression results.

The quadratic term of model 11 is significant, which shows that the assumption of U-curve in H4 is robust, which proves the robustness of model 5.

TABLE 7 Regression results of model 5–6.

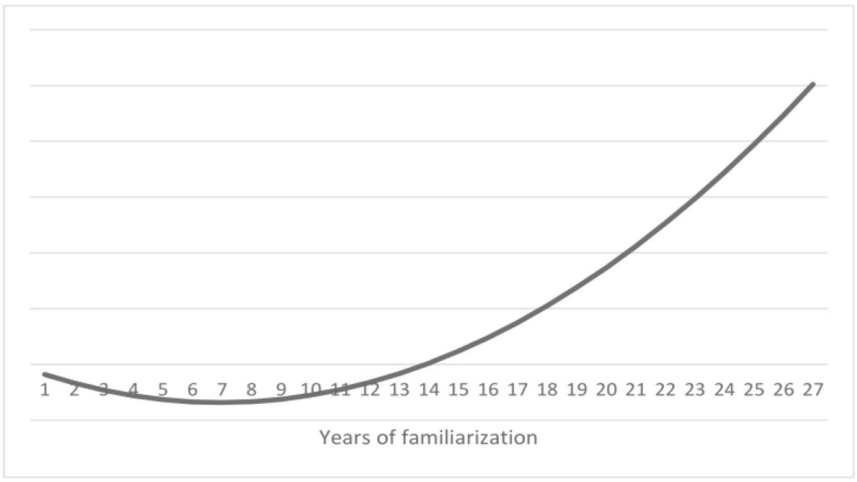
	Model 5	Model 6
Fam_time	−0.987***	0.837
	(−2.74)	(0.82)
Fam_time^2	0.071***	−0.038
	(3.53)	(−0.82)
Control variables		
Size	6.132***	9.047***
	(5.95)	(4.43)
Lev	−0.591	4.846***
	(−0.92)	(2.58)
Rate	−7.948	−0.934
	(−0.75)	(−0.03)
Number	0.279	1.265
	(0.68)	(1.02)
Industry fixed effect	Y	Y
Robust standard error	Y	Y
R-squared	0.286	0.181

Model 5 is the regression result of model (9), and model 6 is the regression result of model (10). ***Significant at the 1% level.

TABLE 8 Regression results of model 7–10.

	Model 7	Model 8	Model 9	Model 10
Power	1.04***	0.885**	1.359**	0.659
	(3.28)	(2.56)	(2.33)	(1.00)
Control variables	N	Y	N	Y
Industry fixed effect	Y	Y	Y	Y
Robust standard error	Y	Y	Y	Y
R-squared	0.177	0.232	0.172	0.224

***Significant at the 1% level. **Significant at the 5% level.



The abscissa represents the time (year) from the familiarization of the business to 2021

FIGURE 4
Changes over time in the family business's responsibility for employee health and safety.

TABLE 9 Regression results of model 9–10.

	Model 11	Model 12
Fam_time	−1.055	2.455
	(−1.50)	(1.51)
Fam_time^2	0.144**	−0.133
	(2.34)	(−1.33)
Control variables	Y	Y
Industry fixed effect	Y	Y
Robust standard error	Y	Y
R-squared	0.270	0.228

**Significant at the 5% level.

Discussion

Evidence from existing research

Family businesses are the most common mode of operation for private Chinese companies, providing a large number of employment opportunities in China. Yet at the same time, as is the case in most developing countries, Chinese family businesses are characterized by their small scale and difficult access to internal information. It also makes scarce the number of studies that focus on the health and safety of its employees. However, it is precisely because of this that the health and safety issues that have been neglected for these employees for a long period of time should also receive more attention. Family businesses are important players that cannot be ignored in the course of achieving sustainable development and building a healthy business environment in China. If the family business does not fulfill its employee health and safety responsibilities satisfactorily, this goal will not be achieved.

In contrast to other CSR research, this study analyzes the behavior of family enterprises by distinguishing the actual responsibility performance behavior of family enterprises from their externally declared responsibility performance behaviors. It also concludes that the actual responsibility performance of the family business is inconsistent with its declared responsibility performance. This conclusion is not contradictory within the framework of our analysis, and was supported by a considerable number of studies. These studies mainly support conclusions drawn here in this paper in following two aspects.

On the one hand, if the company sends a signal of good social responsibility to the outside world and is accepted and believed by external stakeholders, it will bring "social emotional wealth" to the company. For example, as Magnanelli and Izzo (21) point out, an increasing number of banks and lenders are evaluating CSR performance. Du et al. (22) also emphasized that companies with good responsibility performance tend to obtain better conditions in banks and can obtain lower debt costs. In this sense, "socio-emotional wealth" brings tangible wealth to the business. Reputation and image are the two basic elements of a family business (23). Du et al. (24) analyze Chinese firms, showing that internationalization is positively related to corporate philanthropy, this phenomenon means that the responsible companies will be more favored by international clients. Either from the perspective of "socio-emotional wealth" or from the perspective of commercial wealth brought by "socio-emotional wealth," family businesses are more motivated to acquire "socio-emotional wealth." Therefore, many studies based on the information provided by family businesses have concluded that family businesses are more willing to be responsible (25).

This conclusion ignores the possibility that the information provided by businesses does not necessarily reflect the reality. This information may be selectively provided by the enterprise or even fake. This is also supported by a large body of literature, for example, Campopiano and De Massis (26) showed that family-owned businesses tend to be less compliant with disclosure; Biswas et al. (27) claimed that family management has a negative impact on corporate social responsibility-related disclosure; Cabeza-García et al. (28) also demonstrated the same from the perspective of family members serving as board chairs. Meanwhile, for social responsibility information, family enterprises are more sensitive to media exposure than non-family enterprises (29). This behavioral pattern of family businesses undoubtedly coincides with the conclusions drawn from our analysis of the principal-agent theory.

The research framework in this thesis was supported by empirical results based on a comprehensive consideration of these factors. At the same time, there are a smaller number of studies on the changes in family enterprises' responsibility performance over time, so the long-term dynamic changes of family enterprises' behaviors toward employees' health and safety responsibility were studied. After a few years of the start-up period, such a company will gradually be willing to take responsibility for the health and safety of employees, facilitating a better understanding of the behavior of family businesses. Some literatures also provide evidence for this. Combs et al. (30)'s research on the top 500 family businesses of S & P shows that these powerful and long-standing family businesses will perform their social responsibilities better than non-family businesses. This also provides us with the prospect of a family business actively fulfilling its responsibility for the health and safety of its employees.

Limitations

First, due to the availability of information and the cost of acquisition, only cross-sectional data for 1 year were collected. At the same time, limited by the sample size, we cannot introduce too many control variables in order to avoid losing valuable observations as much as possible. Second, only the

listed companies from the sample were included, and as for what is the difference between unlisted family businesses and listed family businesses in the area of employee health and safety responsibilities, this will be another question worthy of study. Finally, due to space constraints, the impact of regional differences on the performance of employees' health and safety responsibilities in family enterprises has not been studied. These limitations are expected to be addressed in future study or after we get more available data.

Conclusions

This study applied the latest relevant data provided by a third-party CSR rating agency to extract proxy variables and also the 2021 Chinese A-share listed companies as a sample to study the current status of Chinese family enterprises in fulfilling employee health and safety. The dimensions of the study include the actual actions of the family business, external propaganda of the family business, and long-term behavior of the enterprise in fulfilling its responsibilities. Compared with other businesses, Chinese family businesses perform worse in actual actions to fulfill employee health and safety responsibilities. In the external publicity on fulfilling employee health and safety responsibilities, no significant difference between Chinese family businesses and other businesses can be identified. This means that family businesses with poor responsibilities may send false signals to the outside world. In the traditional Chinese cultural environment, family businesses as a whole will be more responsible for the health and safety of their employees as their business practices enjoy a longer period of time. As further research proves, Chinese family enterprises' responsibility for employee health and safety is affected by a variety of mechanisms with changes in their operating time. Responsibility performance shows a U-shaped change over time. The turning point of the U-shaped change occurred in the fifth year of family business familiarization.

Combining the contents of the three aspects, the factors that affect the family business' fulfillment of employee health and safety responsibilities can be also sorted out, which could be applied to put forward relevant suggestions to improve the welfare of family business employees. From the perspective of external stakeholders, especially those who can play a supervisory role, such as the government or regulatory agencies in related industries. External stakeholders can require more transparency and information disclosure to improve family enterprises' enthusiasm to fulfill their responsibilities.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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Occupational safety of janitors in Ethiopian University during COVID-19 pandemic: Results from observational study

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Introduction: Janitors are at high risk of COVID-19 infection, as they are among the frontline workers for the prevention and control of COVID-19. Poor occupational safety practices could contribute to loss of lives of janitors and the general public. However, there are no detailed investigations on occupational safety practices of janitors involved in different settings, such as universities where there are crowds of people. In addition, although observation is recognized as a better tool to investigate occupational safety practices, previous studies mainly employed self-administered questionnaires and/or face-to-face interviews as data collection mechanisms. Therefore, this study aimed to assess occupational safety practices to prevent COVID-19 transmission and associated factors among Ethiopian University janitors using an observation tool and a self-administered questionnaire.

Methods: An institutional-based cross-sectional study was conducted among 410 janitors of Bule Hora University (Ethiopia) from November to December, 2021. A multivariable logistic regression model was used to identify the independent factors associated with occupational safety practices.

Results: Occupational safety practices for COVID-19 were good only among 53.9% of the janitors. Training on COVID-19 prevention measures (AOR = 2.62; 95% CI: 1.57–4.37), availability of policy and protocol in the work place (AOR = 5.46; 95% CI: 3.57–8.36), and availability of soap/bleach (AOR = 2.71; 95% CI: 1.64–4.46) were found to significantly increase the likelihood of occupational safety of the janitors.

Conclusion: A significant proportion of the janitors had poor occupational safety practices. Therefore, an adequate supply of PPE and regular training and awareness creation on COVID-19 should be strengthened. Close follow-up and regular supervision of safety procedures should also be conducted as controlling strategies.

KEYWORDS

COVID-19, occupational safety, janitor, Ethiopia, University

Background

Coronavirus disease 2019 (COVID-19) is a respiratory disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It was first reported in Wuhan, Hubei, province (China) during late December 2019 (1). The virus is mainly transmitted *via* respiratory droplets (2). The disease is known to have various symptoms ranging from no clinical symptoms to dry cough, fever, fatigue, and a severe form of respiratory illness (3, 4). A study conducted in China showed that the majority (80%) of the infected people had mild symptoms (5). Even though all age groups of the community are at risk of being infected with the virus, the risk of mortality and morbidity is higher among elders and patients with chronic diseases, such as asthma, hypertension, cancer, and heart and lung diseases (5).

The death rate due to COVID-19 has been alarming through time all over the world. As of 1 March 2022, it had affected more than 437 million people and caused more than 5.9 million deaths globally (6). COVID-19 could infect 7 billion people and cause 40 million deaths globally if immediate interventions are not taken (7). Similarly, over 11.1 million confirmed cases and 248,812 deaths were reported in Africa on 30 February 2022 (8). Beyond morbidity and mortality, coronavirus has devastating effects on the economy of a country. According to the Economic Commission for Africa (ECA), COVID-19 could cause up to 2.6% of gross domestic product (GDP) decline in the African continent (9).

A systematic review and meta-analysis study showed that more than 152,888 confirmed cases and 1,413 deaths of healthcare workers, including janitors, were reported globally on 8 June 2020 (10). Studies conducted in Bangladesh (11) and six other Asian countries (12) indicated that 11 and 8% of janitors, were infected with COVID-19 at their workplace. Among other healthcare workers, janitors are at high risk of getting infected with COVID-19 (13), as they are less knowledgeable of the concepts of self-hygiene and other COVID-19-related information (14). In addition, as SARS CoV-2 can be excreted through feces, janitors could be easily exposed to COVID-19 because of the nature of their work (15, 16).

Poor occupational safety practice could contribute to loss of lives of janitors and the general public (17). However, there are no detailed investigations on occupational safety practices among janitors involved in different settings, such as universities where there are many residents and visitors. In addition, although observation is recognized as a better tool to assess occupational safety practices (18), previous studies mainly employed self-administered questionnaires and/or face-to-face interviews (19–21) as data collection mechanisms. As a consequence, it is challenging to adequately inform the public about the risks involved and precautions needed. Therefore, there is an urgent need to investigate the actual occupational safety practices of janitors during routine activities.

This study was, therefore, aimed at assessing the occupational safety practices to prevent COVID-19 transmission and associated factors among Bule Hora University (Ethiopia) janitors using an observation tool and a self-administered questionnaire. The findings of this study would be helpful to identify the gaps in the struggle to prevent the spread of the virus among janitors in universities and other similar settings. This could have a significant role in taking necessary actions to reduce COVID-19 transmission. This is particularly important for countries like Ethiopia, where a large number of cases are being reported (fifth in Africa) (8).

Materials and methods

Study area

Bule Hora University is located some 467 km away from the Ethiopian capital, Addis Ababa. The University was established in 2015/16. Currently, it has a total of 17,120 students (10,542 regular and 6,578 extension), 1,153 academic staff, and 3,239 administrative staff (464 janitors). The University is serving as an isolation center for patients with COVID-19 and janitors who have close contact with infected people and materials.

Study design, period, and population

An institutional-based cross-sectional study was conducted from November to December 2021 in Bule Hora University. All janitors in Bule Hora University were the source population, and randomly selected janitors from the registration logbook were the study population.

Inclusion and exclusion criteria

All janitors in Bule Hora University who were actively working during the period of data collection were considered to be included in this study, whereas janitors who were on annual leave ($n = 2$) and who had a severe illness ($n = 1$) were excluded.

Sample size determination and sampling procedure

The sample size was calculated using a single population proportion formula. A 5% margin of error (d), 95% confidence

Abbreviations: AOR: adjusted odds ratio; CI: confidence interval; COR: crude odds ratio; COVID-19: coronavirus disease 2019; PPE: personal protective equipment.

level (alpha, $\alpha = 0.05$), and 50% proportion of good occupational safety practices of janitors were assumed. Accordingly, the total sample size was calculated as (22):

$$n = \left(Z_{\alpha/2}\right)^2 p\,(1-p)/d^2$$

where n = required sample size, Z = critical value for normal distribution at 95% confidence level (Z value at $\alpha = 0.05$, two tailed = 1.96), $P = 50\%$ proportion of good occupational safety practice, and d = 5% margin of error.

By considering a 10% non-response rate, the final sample size for this study was 422. A simple random sampling technique (lottery method) was used to select the study participants from the list of 461 janitors.

Data collection and quality assurance

The required data on occupational safety practice was collected using an observational checklist prepared after reviewing the appropriate literature (Appendix 1). Before the actual observation, four observers and a supervisor (environmental health experts) were trained for 2 days about the objectives of the study, data collection tools, and ethical issues to ensure the quality of the data. Detailed training on COVID-19 prevention measures was also given. During the observational study, the data collectors directly observed the study participants while conducting their routine activities. During observation, the janitors were unaware of the research activity to minimize bias (Hawthorne effect). Some other days after the completion of observation, a face-to-face interview was conducted on the same janitors to complete other required information (Appendix 2). The questionnaire was prepared in English and translated into the local language (Afan Oromo). Prior to the interview, a pre-test was conducted in a Bule Hora hospital ($n = 20$), and an amendment was made. The internal consistency of the questionnaire was checked using Cronbach's alpha coefficient and was found to be 0.82. The completeness and consistency of the data were checked daily by the supervisor, and daily feedback was given to the data collectors throughout the study.

Data management and analysis

The collected data were checked, coded, and entered into EpiData version 3.1 and exported to SPSS version 25.0 for data cleaning and analysis. In order to identify factors associated with occupational safety practice, first, a bivariable logistic regression analysis with $p < 0.25$ was performed to screen candidate variables. Then, a multivariable analysis was conducted to control possible confounders. Adjusted odds ratios (AOR) and their 95% CI were used to measure the association between dependent and independent variables. A significance level of $p < 0.05$ was used to decide the significance of statistical tests. Multi-collinearity among the independent variables was assessed using standard error. As the maximum standard error was 1.95, there was no multicollinearity. Model fitness was checked by the Hosmer-Lemeshow test (23) with a p-value of 0.697, which indicated that the model was fit. The model also explained 78.3% of the variance in occupational safety practice.

Study variables

The outcome variable for this study was occupational safety practice (good or poor) and the independent variables were sociodemographic characteristics (sex, age, educational status, marital status, religion, and experience), availability of personal protective equipment (facemask, glove, sanitizer, hand-washing facility, soap/bleach, and dust bin), and administrative control (presence of COVID-19 policy and protocol, and training) (Appendix 2).

Operational definitions

To identify the level of occupational safety practice (good/poor), responses from 13 working practice questions were computed (Appendix 1). The correct practice (answer) for each item was given a score of "1," and the incorrect practice was given a score of "0." The mean score was used as a cut-off point. Accordingly, a janitor who correctly practiced above the mean was considered as having good occupational safety practice and vice versa.

Safety precaution

All COVID-19 precautionary measures were considered by the data collectors as per the WHO guidelines.

Results

In this study, a total of 410 janitors participated, giving a response rate of 97.2%. Table 1 shows the sociodemographic characteristics of the study participants. More than half (219, 53.4%) of the study participants were within the age group of 26–35 years. Similarly, 233 (56.8%) were women and 229 (55.9%) were married. Out of the 410 janitors, 276 (67.3%) had 3 years or more work experience (Table 1).

TABLE 1 Sociodemographic characteristics of the Bule Hora University janitors in Southern Ethiopia from November to December 2021.

Variable	Category	Frequency (%) ($n = 410$)	Occupational safety	
			Good	Poor
Sex	Female	233 (56.8%)	126	107
	Male	177 (43.2%)	95	82
Age	15–25	136 (33.2%)	71	65
	26–35	219 (53.4%)	125	94
	36 and above	55 (13.4%)	25	30
Educational status	No formal education	127 (31%)	65	62
	Primary (up to grade 8)	157 (38.3%)	93	64
	Secondary and above (grade 9–12)	126 (30.7%)	63	63
Experience	<3 years	134 (32.7%)	82	52
	≥3 years	276 (67.3%)	139	137
Marital status	Single	148 (36.1%)	80	68
	Married	229 (55.9%)	126	103
	Widowed	33 (8%)	15	18
Religion	Protestant	203 (49.5%)	111	92
	Orthodox	173 (42.2%)	89	84
	Muslim	34 (8.3%)	21	13

Availability of personal protective equipment and sources of information about COVID-19

About two-thirds (67.1%) of the janitors had been provided with facemasks and gloves to wear during their routine work. More than half (54.1%) of the janitors reported the availability of hand-washing facility near their working area. Similarly, half (50.5%) of the janitors were provided with dust bins to dispose off used personal protective equipment, including gloves and face masks (Table 2).

Surprisingly, only 214 (52.2%) had detailed information about COVID-19. Of the respondents who had information, the sources for more than three-fourths (83.7%) of the participants were social media (particularly Facebook) followed by government media (61.7%) (Table 2).

Administrative control factors

Table 3 shows the administrative control factors to prevent COVID-19 transmission. More than half (53.9%) of the respondents reported the presence of COVID-19 prevention policy and protocol in their working area. More than half (57.3%) of the janitors did not take any training on COVID-19 pandemic prevention.

Working practice of janitors toward COVID-19 prevention

Only 64.1 and 66.3% of the janitors had worn gloves and facemasks, respectively, while cleaning. Similarly, only 61 and 63.9% of them followed disinfection procedures and handled waste materials properly, respectively. Also, only 55.6% of the janitors avoided touching noses, faces, and eyes before hand-washing. In general, only 53.9% of the janitors had good occupational safety practice, while 46.1% had poor practice to prevent COVID-19 (Table 4).

Factors associated with occupational safety practice to prevent COVID-19 transmission

In the multivariable logistic regression analysis, availability of soap, training on COVID-19, and presence of COVID-19 policy and protocol in the organization showed a significant association with safety practice of janitors toward COVID-19 prevention (Table 5).

Workers who had access to soap or bleach in the working area were almost three times more likely to have good safety practice than those who had no soap or bleach in the working area (AOR = 2.71; 95% CI: 1.64–4.46). Similarly, janitors who had taken COVID-19 training were about three times more likely to have good practice than the others (AOR = 2.62; 95%

TABLE 2 Availability of personal protective equipment to prevent COVID-19 transmission among the janitors of the Bule Hora University, Southern Ethiopia from November to December 2021.

Variable	Category	Frequency (%)	Occupational safety	
			Good	Poor
Availability of face mask to wear while cleaning	Yes	275 (67.1%)	160	115
	No	135 (32.9%)	61	74
Availability of glove while cleaning	Yes	275 (67.1%)	160	115
	No	135 (32.9%)	61	74
Availability of sanitizers	Yes	234 (57.1%)	146	88
	No	176 (42.9%)	75	101
Presence of hand washing facility	Yes	222 (54.1%)	131	91
	No	188 (45.9%)	89	98
Availability of soap/bleach	Yes	218 (53.2%)	149	69
	No	192 (46.8%)	72	120
Availability of dust bin	Yes	207 (50.5%)	127	80
	No	203 (49.5%)	94	109
Information about COVID-19	Yes	214 (52.2%)	104	109
	No	196 (47.8%)	116	80
	Social media	177 (83%)	82	95
	Google	103 (48%)	68	35
	Government media	132 (62%)	84	48
Source of information ($n = 214$)	Family/friends	103 (48%)	56	47

TABLE 3 Administrative control factors to prevent COVID-19 transmission in the Bule Hora University, Southern Ethiopia from November to December 2021.

Variable	Category	Frequency	Occupational safety	
			Good	Poor
Presence of policy and protocol toward COVID-19 prevention	Yes	221 (53.9%)	160	61
	No	189 (46.1%)	61	128
Do you take training on COVID-19 prevention	Yes	175 (42.7%)	132	43
	No	235 (57.3%)	89	146

CI: 1.57–4.37). The odds of good safety practice were 3.38 times higher among janitors who knew about the presence of COVID-19 policies and protocols than their counterparts (Table 5).

Discussion

This study was conducted to determine the occupational safety practices of janitors and their associated factors at Bule Hora University (Ethiopia). In this study, only 53.9% of the janitors had good occupational safety practice to prevent COVID-19. This finding is consistent with previous study findings reported among healthcare professionals in Ethiopia (19). Our findings suggest that a significant portion of the janitors and, hence, clients and the general public are at risk of COVID-19 infection.

This study revealed that majority (67.1%) of the janitors had worn facemasks while they were cleaning. Indeed, this figure was lower than the report from a community study in Taiwan (98%) (24). In contrast, it was greater than that reported among the Gedeo community (Ethiopia) (25), Malaysian community (26), and healthcare providers in Bangladesh (20), which, respectively showed 6.3, 51, and 24.2% facemask-wearing. Similarly, in our study, two-thirds (67.1%) of the janitors had worn gloves while cleaning. This finding was lower than that found among healthcare workers in Bangladesh, which was reported to be 94.1%. The disparities could be attributed to differences in study period and supply/scarcity of personal protective equipment, such as facemasks and gloves.

In this study, three key risk factors (training on COVID-19 prevention measures, presence of COVID-19 policy and

TABLE 4 Safe working practice of the Bule Hora University janitors to prevent COVID-19 transmission from November to December 2021.

Variables	Category	
	Frequency (%) Yes	Frequency (%) No
Wear glove while cleaning	263 (64.1%)	147 (35.9%)
Wear facemask while cleaning	272(66.3%)	138 (33.7%)
Wash hands before wearing PPE	269 (65.6%)	141 (34.4%)
Wash hands after removing PPE	284 (69.3%)	126 (30.7%)
Remove and discharge PPE after finishing surface cleaning	257 (62.7%)	153 (37.3%)
Change gloves after cleaning	273 (66.6%)	137 (33.4%)
Follow disinfection procedure	250 (61%)	160 (39%)
Handle waste material properly including face mask, glove and etc.	262 (63.9%)	148 (36.1%)
Wash hands after sneezing and coughing	258 (62.9%)	152 (37.1%
Avoid touching noses, faces and eyes before hand washing	228 (55.6%)	182 (44.4%)
Maintain social distancing	245 (59.8%)	165 (40.2%)
Wear protective shoes during cleaning	238 (58%)	172 (42%)
Wear gown during cleaning	206 (50.2%)	204 (49.8%)
Occupational safety of the janitors	Good	221(53.9%)
	Poor	189 (46.1%)

PPE, personal protective equipment.

protocol, and availability of soap) were found to have a significant influence on the occupational safety practices of janitors. We found that janitors who attended training were more likely (about 3 times) to have good safety practice toward COVID-19 than the others. This suggests that one of the best ways for janitors to prevent COVID-19 infection is through regular training on COVID-19 prevention measures. This is due to the fact that trained and educated people are more likely to understand health education messages and implement COVID-19 prevention practices than non-trained and less-educated ones (27). Indeed, only 42.7% of the janitors attended training on COVID-19 prevention. Our results are consistent with a study finding reported among healthcare professionals in Bangladesh (26).

Similarly, janitors who knew the presence of COVID-19 policies and protocols in their working environment had 3.4 more chance of having good occupational safety practices than those who did not know about the policies and protocols. Unfortunately, only 53.9% of our study participants knew the presence of policies and procedures. This is similar to the findings in the Oromia region (Ethiopia) (19). Whenever there are detailed policies and procedures aimed at preventing COVID-19 in the workplaces, janitors will have the chance to read, know, and implement them. Consequently, they will have good practice. That is why the Ethiopian Ministry of Health had provided the protocol to universities.

Furthermore, the availability of soap/bleach in the working area was identified as an important factor related to occupational safety of janitors. In this study, janitors who had soap or bleach were 2.7 times more likely to have good safety practice toward COVID-19 than those who did not have soap in the working area. This is again concerning, as 46.8% of the janitors reported lack of soap/bleach. In the absence of soap/bleach, the hardworking and highly exposure-prone janitors will not have the opportunity to use them during their routine work activities.

Conclusion

This study showed that only 53.9% of the janitors had good occupational safety practice toward COVID-19. The main factors that were found to significantly increase the likelihood of occupational safety practice of janitors were availability of soap, presence of COVID-19 policy and protocol, and training on COVID-19 prevention measures. Therefore, special attention should be given to supplying adequate PPE and regular training and awareness creation on COVID-19. Close follow-up and regular supervision of safety procedures should also be conducted as control strategies.

Limitations of the study

Although the janitors were unaware of being observed, some might have suspected being under observation and thus modified their practice. In addition, due to shortage of

TABLE 5 Multivariable analysis of factors associated with occupational safety practice among the janitors of Bule Hora University from November to December 2021.

Variable	Category	Occupational safet		COR (95%CI)	AOR (95%CI)	*p*-Value
		Good	Poor			
Work experience	<3 years	82	52	1	1	0.071
	≥3 years	139	137	0.64 (0.420–0.972)	1.57 (0.96–2.56)	
Availability of face mask to wear while cleaning	Yes	160	115	1.67 (1.11–2.54	1.51 (0.91–2.49)	0.105
	No	61	74	1	1	
Availability of sanitizer	Yes	146	88	2.21 (1.48–3.13)	1.11 (0.66–1.85)	0.685
	No	75	101	1	1	
Presence of hand washing facility	Yes	131	91	1.58 (1.07–2.34)	0.81 (0.49–1.34)	0.420
	No	89	98	1	1	
Availability of soap/bleach	Yes	149	69	3.65 (2.42–5.49)	2.71 (1.64–4.46)	<0.001
	No	72	120	1	1	
Availability of dust bin	Yes	127	80	1.86 (1.25–2.75)	1.22 (0.74–2.01)	0.423
	No	94	109	1	1	
Information about COVID-19	Yes	104	109	1.52 (1.03–2.25)	1.2 (0.75–1.92)	0.445
	No	116	80	1	1	
Presence of COVID-19 policy and protocol	Yes	160	61	5.46 (3.57–8.36)	3.38 (2.07–5.49)	< 0.001
	No	61	128	1	1	
Do you take training on COVID-19 prevention	Yes	132	43	5.09 (3.3–7.86)	2.62 (1.57–4.37)	< 0.001
	No	89	146	1	1	

1, Reference category; COR, crude odds ratio; AOR, adjusted odds ratio; CI, confidence interval.

literature on occupational safety practices of janitors toward COVID-19 prevention, the discussion was made on the basis of findings from different target groups and studies conducted in other areas. This cross-sectional study might not fully represent occupational safety practices throughout the year with varying workload periods and availability of resources overtime. Acknowledging these limitations, this observational study is suggested to provide a guide to future efforts in improving occupational safety of janitors in populated settings, such as universities.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding authors.

Ethics statement

The study was approved by the institutional review board of Bule Hora University, Institute of Health. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

Author contributions

CD, MG, LA, HL, and EK were involved in tool preparation, data analysis, interpretation, visualization, methods, and manuscript writing. AA, AE, and SAD were involved in data entry, collection, and editing. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpubh.2022.895977/full#supplementary-material

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Impact of organizational health-oriented strategies on employees' job performance, perceived medical mistrust as a moderator: A COVID-19 perception-based view

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After experiencing the COVID-19 pandemic, employees' health and well-being become a priority for firms. Organizational health-oriented strategies assist them in coping with health-related crises. Based on the social exchange theory, the present study attempts to determine the role of organizational health-oriented strategies in promoting employees' job performance. This study hypothesized that the organizations' health-oriented strategies positively correlate with employees' job performance. This study also assessed the mediating role of employees' psychological wellbeing and trust and moderating role of perceived medical mistrust. For the empirical examination, data of the present study was gathered from the textile sector in China. This study analyzed data through partial least square structural equation modeling (PLS-SEM). For this purpose, Smart-PLS software was used. The outcomes revealed that organizational health-oriented strategies positively enhance the employees' psychological wellbeing, trust, and job performance. Moreover, the results revealed that employees' psychological wellbeing and trust positively mediate the proposed relationships. This study found that perceived medical mistrust moderates the relationship between employees' psychological wellbeing and job performance. However, the findings revealed that perceived medical mistrust does not moderate the relationship between employees' trust and job performance. In addition, the present study's findings provide insights to the firms about the importance of health-oriented strategies. Moreover, this study's findings also serve the literature by providing important theoretical and practical implications.

KEYWORDS

organizational health-oriented strategies, psychological wellbeing, employee trust, job performance, perceived medical mistrust

Introduction

Employees are an essential part of a firm as they can play a considerable role in its success (1). Poulis and Wisker (2) acknowledged that firms could utilize the intellectual abilities of employees as s strategic tool to differentiate themselves in the market. However, it is also noticed that the COVID-19 pandemic affects employees' physical and psychological health (3). Moreover, employees' overall performance is also adversely influenced when they have health-related issues. A previous study identified that after experiencing the COVID-19 epidemic, organizational health strategies are gaining more importance for employees' wellbeing and work performance (4). Further, they stated that after experiencing the COVID-19 pandemic, organizations must develop quick strategies to deal with a turbulent environment. Organizational health promotion activities are one of the important aspects of corporate social responsibility (5). In addition, they shed further light and said that firms should plan employees' healthcare strategies on a priority basis because it is a positive indicator of employees' wellbeing and job effectiveness.

A previous study noticed that firms' effective health strategies positively influence employees' physical and psychological wellbeing (6). Therefore, organizational health-oriented strategies are considered key to employees' wellbeing. Organizations should consider health-oriented strategies to promote employees' wellbeing and job productivity (7). Further, they stated that employees' satisfaction and loyalty level positively influences when organizations give importance to their wellbeing through proper strategies and procedures. Employees spend most of their day in the workplace, so it matters a lot to them how they are treated at the workplace by the organization (8). It is noticed that employees' trust was built when employees perceived that their organizations cared about their wellbeing (9). Further, they acknowledged that the trustfulness of employees is a positive indicator for boosting their job productivity and the overall performance of firms. In addition, organizational trust constructively influences the attitude and behavior of employees and plays a key role in strengthening the employment relationship between two parties (10). Further, they stated that organizations could save themselves from the undesired situation of contract breaches when the employment relationship is based on the trust of both parties. A previous study also commented on the adverse effects of psychological contract breach and said that this is the worst situation for the firm when employees perceive that their organizations are not fulfilling their obligations (11). Therefore, organizations must develop trustable relationships with their workforce (12). In addition, they point out that employees' strong psychological and emotional bond with their organizations build their trust and boost their job performance.

The COVID-19 pandemic adversely affects employees' work productivity (13). Moreover, in the early days of the pandemic, employees have to face lockdown situations, and they have to follow work from home strategies of firms. Further, they stated that the COVID-19 pandemic upset almost everyone's daily routine. However, it is noticed that COVID-19 vaccination was a big relief in this turbulent pandemic (4). The literature also identified that people's hesitancy from COVID-19 vaccination was reported globally (14). Further, they argue that this is a serious concern for organizations to prepare their workforce for COVID-19 vaccination. However, the perceived medical mistrust could be a possible reason for this hesitance of employees (15). It is acknowledged that perceived medical mistrust of employees adversely impacts their work attitude and behavior (16). Further, they stated that when employees perceive medical mistrust about some medical treatment, it negatively impacts health care quality. A previous study points out that individuals' uncertainty about vaccination is a huge hurdle to the success of vaccination programs (17). Further, they said that one recent survey about COVID-19 vaccination shows that more than 30% of people show hesitation and concern about having the vaccination. Moreover, the resistance of individuals makes it difficult to achieve projected targets for successful vaccination programs.

The present study serves the literature in four ways. First, this study provides insight into the role of organizational health-oriented strategies in employees' job performance. Based on social exchange theory (18), this study assumes that employees' job performance increases when organizations build health-oriented strategies. The present study adopts three important health-oriented strategies (preventive care, healthcare support, and health insurance) from literature (5). Second, this study tries to determine the mediating role of psychological wellbeing and employee trust between organizational health-oriented strategies and employees' job performance, respectively. Third, with the perspective of COVID-19 vaccination, the present study assumes that perceived medical mistrust of employees moderates the relationship between psychological wellbeing and job performance, and between employee trust and job performance. According to the authors' knowledge, this is first study that provides empirical insight on perceived medical mistrust with perspective of COVID-19 vaccination. Fourth, the findings of this study also have some important theoretical and managerial implications as well.

The remainder of this article is structured as follows: first, the present study introduces the key constructs of the theoretical framework and reviews the literature for hypothesis development. Second, the methodology of this paper is presented, and the results are discussed. In the next section, the discussion about study findings was discussed. Finally, the current study is concluded with future research directions and study limitations.

Literature review

Organizational health-oriented strategies

In this turbulent environment, the health-oriented strategies of firms are considered a key source of sustainable competitive advantage (19). Further, they pointed out the importance of health-oriented strategies and said that healthy employees could contribute effectively to attaining organizational goals. Moreover, the health-oriented strategies of firms are a positive signal to employees that their organizations care about their wellbeing. However, it is acknowledged that after the COVID-19 pandemic, it becomes more important for firms to make strategies on a quick basis to cope with this stumble situation (4). In addition, they stated that firms should have to redouble their energies and efforts to make health-oriented strategies for the betterment of their workforce.

A prior study points out that after experiencing the pandemic of COVID-19, organizations need to reschedule their strategies and plans for smoothing their day-to-day work routine (7). Further, they acknowledged that effective internal communication of firms could play a key role in the fruitfulness of these strategies. Moreover, the efficient role of the manager is also a valuable factor in coping with crises and building employees' confidence and trust. During health crises, effective internal communication of managers could serve as emotional support for employees by whom they can overcome their emotions such as fear and anxiety. A previous study draws firms' attention to important points for recovering from the crisis of the COVID-19 pandemic (6). One of these important points is that organizations can adopt key strategies to recover from the turbulence of an epidemic. There are three important organizational health-related strategies (preventive care, healthcare support, and health insurance) that can significantly affect employee wellbeing, satisfaction, and loyalty (5).

Preventive care

Preventive care comprises measures to prevent disease (20). Moreover, preventive measures are known as proactive actions to deal with upcoming healthcare crises. Some important preventive care measures include screening tests, check-ups, first aid training, vaccination, and supporting cessation programs (21). These preventive healthcare strategies could assist organizations in coping with uncertain health-related challenges. These proactive measures also paved the way for employees' constructive perception that their organizations care about their wellbeing.

Healthcare support

Healthcare support is the financial backing of organizations to cope with some undesirable health conditions of employees (5). Funds for disease cure, supporting recovery, and regenerative holidays are some important examples of healthcare support. It is noticed that healthcare support is one of the valuable organizational strategies for improving employees' wellbeing (22). Moreover, when employees perceive that their organizations are giving them healthcare support, they work more enthusiastically to fulfill organizational goals.

Health insurance

Health insurance is the financial support of firms to accommodate their employees in hard times (5). In addition, financial accommodations in case of illness, accident, or death are some examples of health insurance. Health insurance is an important organizational strategy to assist employees in dealing with their hard times (23). Moreover, employees' loyalty and trust build when they perceive that their organizations are always there to help them deal with health-related crises.

Psychological wellbeing

A prior study defines psychological wellbeing as the extent to which employees have a positive emotional state which exhibits their level of happiness and satisfaction (24). Further, they stated that psychological wellbeing is the degree of emotional health and happiness people demonstrate when they feel satisfied with overall life functioning. A previous study identified three important aspects that define psychological wellbeing in more detail (25). The first aspect could be an individual's subjective experience of psychological wellbeing. In other words, it is an individual's point of view about how they perceive the degree of psychological wellbeing. Moreover, the second aspect indicates the degree of existence of positive emotions in an individual's mind and the absence of negative emotions. In other words, when individuals have a high level of psychological wellbeing, simultaneously, they experience low negative emotions (9). The third aspect is the objective nature of wellbeing which indicates the individuals' quality of life indicators that define their level of psychological wellbeing, such as material resources and social attributes.

It is acknowledged that employees' psychological wellbeing assists them in coping with stressful life events and help them survive the hard times of their life (26). Moreover, psychological wellbeing positively influences employees' work attitudes and behavior (9). In addition, the psychological wellbeing of employees boosts their creative thinking ability and enhances their level of work engagement. Moreover, when employees have a psychological bond with organizations, they perform beyond the expectations in the workplace. A prior study also pointed out the importance of psychological wellbeing and said that it motivates employees to do their work more effectively and efficiently (25).

It is noticed that the COVID-19 pandemic harms not only the physical health of individuals but also their psychological wellbeing (27). In addition, employees feel cynical after experiencing the negative outcomes of the pandemic, and they feel insecure about their future. A previous study also argued about the negative consequences of the COVID-19 pandemic on the emotional health of employees and said that this pandemic adversely influences employees' mental wellbeing and work attitude (28). Further, they point out that organizations must make proactive-basis strategies to deal with undesired crises. Based on the above-discussed literature, the present study assumes that organizational health-oriented strategies are positive signals for firms to enhance employees' psychological wellbeing. When employees perceive that their organizations care about their health and support them on hard days, they feel a sense of engagement and boost their psychological wellbeing. For empirical investigation present study hypothesize that

H1: *Organizational health-oriented strategies have a positive relationship with psychological well-being.*

Employee trust

Literature defines the term "trust" as an individual's confidence in another's reliability and integrity (10). In the organizational context, a trust could be defined as the belief and confidence of employees that their organizations are fair to them. The positive belief of employees constructively influences their work attitude and behaviors and encourages them to maintain long-term relationships with their firms. A prior study points out that psychological contract breaches can harm the relationship between employer and employee, resulting in negative outcomes for organizations (11). Further, they acknowledged that psychological contract breach leads to adverse consequences by decreasing employees' trust and work productivity.

Employees' trust in their organizations has a valuable role in boosting their commitment, satisfaction, and engagement (29). Additionally, a high level of employees' trust in their organizations constructively increases their job satisfaction and job performance (12). In addition, "ability, benevolence, and integrity" are three important dimensions of trustworthiness, adopted from Rousseau's definitions of reciprocity basis expectations (29). At the organizational level, ability, benevolence, and integrity mean employees assess their organization's trustworthiness based on the firm's competencies. For example, employees evaluated how their organizations fulfill their responsibilities, how firms take care of their employees' wellbeing, and how organizations follow moral principles, e.g., fairness and honesty.

It is noticed that the trust level of employees decreased due to the uncertainties and unpredictable changes experienced during the COVID-19 pandemic (29). Further, they stated that organizations should focus on trust repair strategies for employees to cope with crises after the COVID-19 pandemic. A previous study also stated that how organizations react and deal during some crises is a considerable question for firms (7). Further, they acknowledged that after the COVID-19 pandemic, employees' trust reduction is one of the adverse consequences of this epidemic. Moreover, they informed that organizations should focus on internal communications effectiveness and proactive health-oriented strategies to deal with health crises. Based on the above literature, the present study assumes that organizational health-oriented strategies positively build employee trust. Based on the social exchange theory, employees' trust boosts when they perceive that their organizations care for their wellbeing. For empirical investigation, the present study hypothesized that:

H2: *Organizational health-oriented strategies have a positive relationship with employee trust*

Job performance

Performance could be defined as how individuals perform their duties effectively and efficiently (30). In addition, according to a prior study's projections, performance is a two-dimensional model, including task performance and relationship performance (31). Moreover, task performance indicates job specification behaviors or prescribed behaviors, while relationship performance refers to behaviors that may be spontaneous or that may not be specifically job-oriented. Further, it is stated that employees' job performance is crucial to a firm's effectiveness and success (30). Further, they acknowledged that goal achievement is one of the important factors of effective job performance, which can, in turn, play a valuable role in organizational success.

A previous study points out that "task performance, interpersonal promotion, and work dedication" are three important dimensions of job performance (31). Task performance refers to the work contribution of employees in accomplishing the organizational goals and targets. Interpersonal promotion indicates the social aspects of employees' performance, such as increasing colleagues' morale, establishing and improving relationships with peers, and encouraging colleagues to boost their performance. Work dedication highlighted the employees' active work behavior such as discipline, selfless dedication, and the organization's welfare rather than self-interest. A previous study identified employees' psychological wellbeing as an important antecedent of their effective job performance (25). Further, they acknowledged that employees feel a sense of engagement and strong bond with their organizations when they perceive that their firms care about their wellbeing. A prior study also advocated the importance of

employees' psychological wellbeing for their job performance and said that employees' work productivity enhances when their organizations care about their psychological wellbeing (8). In addition, employees' trust level increases when they perceive a psychological and emotional bond with their organizations (9). Further, they informed that employees' engagement and work productivity boost when they perceive that their organizations care about their wellbeing.

Based on the above-discussed literature, the present study assumes that the psychological wellbeing of employees and their trust level positively influences their job performance. Based on the social exchange theory, employees' work engagement and productivity are positively influenced when organizations care about their wellbeing. The organizational health-oriented strategies can also develop employees' trust, improving their job performance. For empirical investigation, the present study hypotheses that:

H3: *Psychological wellbeing has a positive association with job performance*
H4: *Employee trust has a positive association with job performance*
H5: *Psychological wellbeing mediates the relationship between organizational health-oriented strategies and job performance*
H6: *Employee trust mediates the relationship between organizational health-oriented strategies and job performance.*

Perceived medical mistrust

A previous study defines medical mistrust as the extent to which people perceive their medical treatment as not trustable or secure (32). Further, they stated that medical mistrust is negative health-related behavior with some undesirable consequences for individuals and organizations. In addition, perceived medical mistrust is a big hurdle in improving health-related issues and coping with some uncertain health crises. The perceived medical mistrust is a negative behavior that can influence individuals' physical and emotional health (33). Further, they said medical mistrust is negative behavior and should be reduced by planning preventive strategies and approaches.

The COVID-19 pandemic disturbs almost everyone's life routine and adversely affects individuals' physical and emotional health (15). Organizations have to make alternative strategies for working due to lockdowns and social distancing strategies. However, it is noticed that after the COVID-19 vaccination, organizations feel great relief to recover working conditions (4). After the COVID-19 vaccination was introduced, people's hesitation was reported globally (14). However, scholars noticed that perceived medical mistrust could be a possible reason for people's hesitancy toward COVID-19 vaccination (14, 15, 17). Based on the literature, the present study attempts to check the moderating role of perceived medical mistrust of employees. The present study attempts to check the role of perceived medical mistrust from the perspective of COVID-19 vaccination. The COVID-19 vaccination is a preventive measure to save employees from being victims of the pandemic. As in the above section, it is discussed that individuals feel hesitant and fear because they perceive that the vaccination might harm their health. This study tries to determine the employees' hesitant behavior toward COVID-19 under the medical mistrust construct and its impact on their job performance through interactional effects on their psychological wellbeing and trust. For instance, this study checks the moderating role of employees' perceived medical mistrust between their psychological wellbeing and job performance and their trust and job performance. Hence, the present study proposed the following hypotheses for empirical investigation, and Figure 1 represents this study's empirical model.

H7: *Perceived medical mistrust moderates the relationship between psychological wellbeing and job performance*
H8: *Perceived medical mistrust moderates the relationship between employee trust and job performance*

Research methods

Study design

This study followed a convenient sampling approach for the collection of data. In this regard, employees of different textile sectors in China were targeted. The author first approached the managers of the targeted textile sectors through phone calls and requested a face-to-face meeting at their convenient time. The firm managers who responded positively were shortlisted for further process. This way, the author fixed a meeting with the agreed managers. In the meeting, the author explained this study's whole objective. The author assured them about the data privacy, such as it would be used only for academic purposes, and promised to share the present study's practical implications with them at their request. Finally, the managers showed their consent, and the author distributed questionnaires personally among employees. The questionnaires were prepared with a cover letter. In this letter, the author explained the present study's objective and trusted them about their data confidentiality, such as accumulated results will be revealed instead of the individual level.

Moreover, the cover letter also confident the employees about the concept of right and wrong answers, such as their true answers will be treated right for this study instead of their consulted or copied answers; thus, consultation with their colleagues was not allowed during answering questionnaires. In this way, the employees filled out questionnaires with their

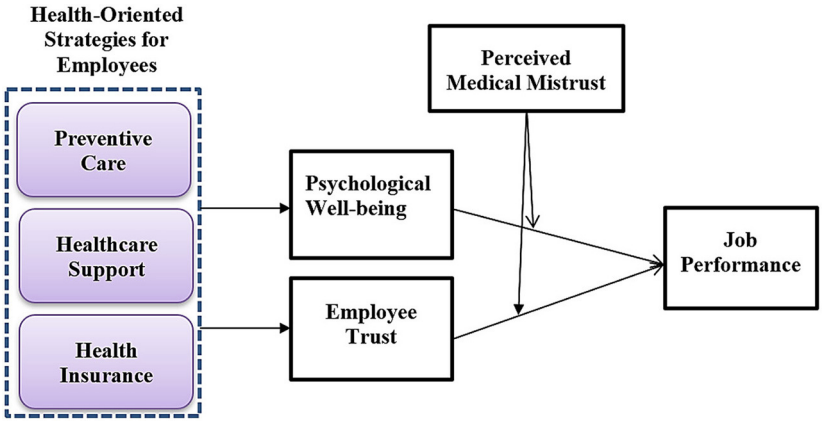

FIGURE 1
Conceptual framework.

true answers. The questionnaires were also translated into the Chinese language as understanding English was not an easy job for every employee. Hence, a team based-approach was incorporated for translations. In this regard, the author got the help of senior researchers and a Chinese language expert (34). As per the suggestion of the senior researchers, the author also filled out some translated questionnaires from the students to remove language difficulties for clear understanding. This way, the author finalized the questionnaires after being approved by senior researchers.

The author also decided to collect data in different turns to avoid common method bias. For this objective, a time lag data method was applied. The questionnaire also included a hidden code to identify the same respondents' in all turns. The author distributed the questionnaires in four turns. The questionnaires based on the independent variable (organizational health-oriented strategies) were distributed in the first turn. In this second turn, questionnaires were distributed based on mediator variables (psychological wellbeing and employee trust). In the third turn, the questionnaires regarding the dependent variable (job performance) were distributed, and in the fourth turn, the questionnaires regarding the moderator variable (perceived medical mistrust) were distributed among employees. In the first turn, the author distributed 1,500 questionnaires among employees and collected 1,110 questionnaires; after separating incomplete or non-useable questionnaires, the author got 10,34 complete and valid questionnaires in the first turn. In the second turn, after the 1-month gap, the author distributed 1,034 questionnaires by announcing that the employees who did not participate and did not properly fill questionnaires in the first turn to not participate in the second turn. The author got 750 questionnaires in the second turn, and by separating the incomplete or not useable questionnaires, the author finalized 599 valid and complete questionnaires in the second turn after recognizing the same respondents. In the third turn, the author distributed 599 questionnaires after a further 1-month gap. As per previous practice, the author made a similar announcement. The author got 487 questionnaires, and after separating non-useable questionnaires and verifying the same respondents, 439 questionnaires were finalized in this round. In the fourth turn, the author distributed 439 questionnaires after a further 1-month gap by adopting a similar practice based on the previous turn's collection; the author got 439 questionnaires. One questionnaire was found non-useable; hence it was discarded. In this way, the author finalized 438 valid and complete questionnaires. This way, the data collection procedure was completed in 4 months, started in November 2021 and finished in February 2022. Hence, this study is based on 438 sample sizes.

Measures

The present study considered a Likert scale based on five points to measure participants' responses. In this scale, 1 denotes "strongly disagree," 2 denotes "disagree," 3 denotes "neutral," 4 denotes "agree," and 5 denotes "strongly agree." The variables were measured based on prior study validated items. The independent variable organizational health-oriented strategies were measured with six items scale developed by Gorgenyi-Hegyes et al. (5). The mediated variables of psychological wellbeing were measured by three items scale adapted from the previous study Baker and Kim (8). The second mediator variable of employee trust was measured with four items adapted from Cook and Wall (35) and validated by Kelloway et al. (36). The dependent variable job performance was measured with four items scale developed by Walker (37) and validated by Chen and Silverthrone (38). The moderating variable of perceived medical

TABLE 1 Reliability and convergent validity of the study constructs.

Construct	Item	Outer loadings	VIF	Alpha	roh-A	Composite reliability	AVE
ET	ET1	0.800	1.789	0.849	0.850	0.898	0.689
	ET2	0.858	2.316				
	ET3	0.839	2.387				
	ET4	0.821	2.029				
HS	HS1	0.824	2.432	0.919	0.919	0.937	0.712
	HS2	0.862	2.963				
	HS3	0.874	3.093				
	HS4	0.846	2.636				
	HS5	0.864	2.866				
	HS6	0.792	2.042				
JP	JP1	0.654	1.309	0.838	0.860	0.893	0.680
	JP2	0.855	2.188				
	JP3	0.900	2.897				
	JP4	0.866	2.390				
PMM	PMM1	0.742	2.124	0.933	0.934	0.942	0.575
	PMM2	0.749	2.157				
	PMM3	0.723	2.081				
	PMM4	0.803	2.695				
	PMM5	0.761	2.406				
	PMM6	0.808	2.905				
	PMM7	0.757	2.202				
	PMM8	0.767	2.427				
	PMM9	0.724	1.972				
	PMM10	0.716	1.849				
	PMM11	0.775	2.541				
	PMM12	0.768	2.500				
WB	WB1	0.829	1.776	0.838	0.849	0.902	0.755
	WB2	0.883	2.098				
	WB3	0.894	2.131				

ET, Employee Trust; HS, Health-oriented Strategies; JP, Job Performance; PMM, Perceived Medical Mistrust; WB, Psychological wellbeing.

mistrust was measured with a twelve-item scale adapted from Thompson et al. (39). The present study changed the group-based scale to an individual-based scale according to this study context. Appendix 1 (variable and items) represents this study's variables scale items.

Results

Assessment of measurement and structural model

The statistical outcomes of this study were analyzed through the partial least square structural equation modeling (PLS-SEM) method. PLS-SEM is taken because it is a variance-based method and differs from the covariance-based method (40). This study adopted PLS-SEM because it is appropriate for both studies, confirmatory and exploratory (41). Moreover, two techniques can be examined under structural equation modeling, covariance-based structural equation modeling (CB-SEM) and partial least square structural equation modeling (PLS-SEM). Both techniques have different roles, such as CB-SEM is appropriate for accepting or rejecting the theory, whereas PLS-SEM is appropriate for advancing or extending the theory (41). Moreover, PLS-SEM effectually handles small sample sizes. Hence, the data of this study was examined through PSL-SEM. For this purpose, Smart-PLS software was used. PLS-SEM measured data in two terms. The first term includes the measurement model, and the second term includes the structural path model.

The measurement model is based on two sections, i.e., reliability and validity. Reliability is assessed through Cronbach alpha, roh-A, composite reliability, and average variance extract (AVE) (41, 42). Table 1 explains model reliability. According

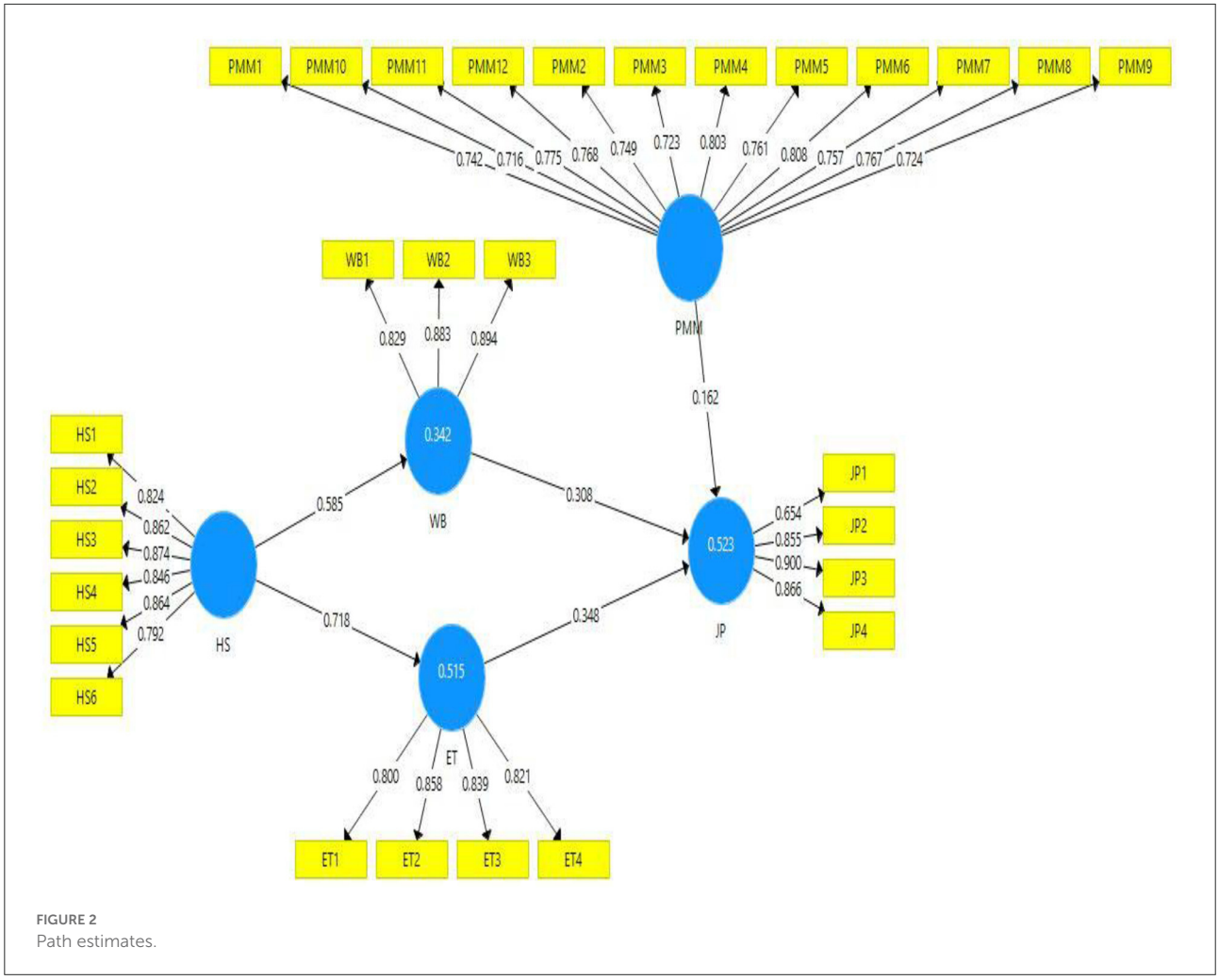

FIGURE 2
Path estimates.

to the criteria, the Cronbach alpha value should be more than 0.7 (43–48). All model variables such as independent variable (organizational health-oriented strategies), mediated variables (psychological wellbeing and employee trust), dependent variable (job performance), and moderated variable (perceived medical mistrust) Cronbach alpha values are 0.919, 0.838, 0.849, 0.838, and 0.933, respectively. These all values are according to the given standard of Cronbach alpha. Hence, Cronbach alpha values are accepted. Composite reliability values are accepted if these are above 0.7. Our study model all variables composite reliability values are 0.937, 0.902, 0.898, 0.893, and 0.942. These values are according to the given standard as all values are higher than 0.7. Hence, composite reliability values are also accepted. Similarly, the roh-A values of all variables are in the acceptable range and thus accepted. According to the criteria, the average variance extract (AVE) values should be above 0.5. Our models' variables have more than 0.5 AVE values, such as our models' variables independent variable (organizational health-oriented strategies), mediated variables (psychological wellbeing and employee trust), dependent variable (job performance), and moderated variable (perceived medical mistrust) AVE values are 0.712, 0.755, 0.689, 0.680, and 0.575, respectively. Hence, AVE reliability is achieved (49).

The outer loadings of all variable items are also presented in Table 1. As per the criteria, the item's outer loading is accepted if >0.7 (41). The items of this study model variable have >0.7 outer loadings (Figure 2). Hence, it shows the strength of the models' reliability. Table 1 also presents variable item variance inflation factor (VIF) values. VIF explains the collinearity of the model constructs. A VIF value of <0.5 is considered a fit for the model (40). This study model variable "organizational health-oriented strategies" item HS3 has the highest VIF value (3.093). Hence, it confirmed that collinearity is not an issue in this study model.

The values of coefficient of determination (R^2) were used to explain the strength of the study model (40). The level of variation explained in each endogenous construct, and the prediction accuracy of the study model are both shown by the R^2 value of each endogenous construct. The latent constructs values near 0.5 and >0.5 explain moderate and substantial

TABLE 2 Discriminant validity (Fornell-Larker-1981 criteria).

Construct	ET	HS	JP	PMM	WB
ET	**0.830**				
HS	0.718	**0.844**			
JP	0.665	0.562	**0.824**		
PMM	0.744	0.635	0.607	**0.758**	
WB	0.637	0.585	0.628	0.606	**0.869**

ET, Employee Trust; HS, Health-oriented Strategies; JP, Job Performance, PMM, Perceived Medical Mistrust; WB, Psychological wellbeing.
Bold values shows the variable significance.

TABLE 3 Discriminant validity (HTMT).

Construct	ET	HS	JP	PMM	WB
ET	–	–	–	–	–
HS	0.812	–	–	–	–
JP	0.786	0.642	–	–	–
PMM	0.837	0.686	0.677	–	–
WB	0.752	0.662	0.734	0.677	–

ET, Employee Trust; HS, Health-oriented Strategies; JP, Job Performance, PMM, Perceived Medical Mistrust; WB, Psychological wellbeing.

strength. This study's latent constructs (psychological wellbeing, employee trust, and job performance) R^2 values are 0.342, 0.515, and 0.523, respectively. These values show that this model has moderate and substantial strength, a positive indicator of a good study model. Moreover, the latent variables values of Q^2 are considered fit if greater than zero. The present study models latent constructs have Q^2 values above zero. Hence, it confirms that the present has a significant model.

The present study examined the discriminant validity of the model by applying widely accepted approaches, for instance, Fornell-Larcker and heterotrait-monotrait (HTMT) ratio (42). The Fornell-Larcker values of the present study model constructs are presented in Table 2. It is examined by taking all constructs' square roots of AVE values (50). The Fornell-Larcker values are considered appropriate if all the above values are greater than their below values in the column. Table 2 explains that the above bold values are greater than the below values in the column. Hence, the outcomes are consistent with the Fornell-Larker criteria, confirming that discriminant validity is achieved. According to the threshold of HTMT, the HTMT value is considered appropriate if <0.85 (51, 52). Table 3 explains that this study model variable HTMT values according to the given threshold. Hence, HTMT discriminant validity is also confirmed.

This study's empirical analyses were conducted by applying 5,000 samples of the bootstrapping method. The direct, indirect, and total path outcomes are listed in Table 4 (42). The t and p-values are considered for hypotheses acceptance and rejection (41). The hypotheses results are listed in Table 5. According to proposition H1, organizational health-oriented strategies positively impact psychological wellbeing. The statistics results ($t = 8.906$, $p = 0.000$) revealed that organizational health-oriented strategies positively influence the employees' psychological wellbeing. Hence, H1 is accepted. The path value of H1 revealed that one unit change in organizational health-oriented strategies would result in a 0.585 change in employee psychological wellbeing. The H2 of this study proposed that organizational health-oriented strategies positively influence employee trust. According to the statistics outcomes ($t = 14.330$, $p = 0.000$), it is confirmed that organizational health-oriented strategies positively enhance employee trust. Thus, H2 is accepted. As per path value, one unit change in organizational health-oriented strategies would result in a 0.718 change in employee trust. The H3 of this study proposed that employee wellbeing has a positive relationship with their job performance and statistics results ($t = 4.002$, $p = 0.000$) confirmed that wellbeing have a positive impact on job performance. Thus, H3 is accepted. As per the H3 path value, one unit change in employee wellbeing would have 0.219 change in their job performance. The H4 proposed that employee trust positively impacts their job performance. The statistics results ($t = 5.191$, $p = 0.000$) revealed that employee trust positively enhances their job performance. Hence, H4 is accepted. The path value of H4 revealed that one unit change in employee trust would result in a 0.377 change in their job performance.

This study assessed the mediating role of psychological wellbeing and employee trust between organizational health-oriented strategies and job performance. For this purpose, H5 proposed that employee psychological wellbeing mediates the relationship between organizational health-oriented strategies and employee job performance. The statistics outcomes ($t = 3.601$, $p = 0.000$) revealed that psychological wellbeing mediates the relationship between health-oriented strategies and job performance. Moreover, the path value (0.128) of H5 confirmed that psychological wellbeing positively mediated between health-oriented strategies and job performance. Thus, H5 is accepted. The H6 proposed that employee trust mediates the relationship between health-oriented strategies and employee job performance and statistics outcomes ($t = 4.702$, $p = 0.000$), confirming the mediation role of employee trust in this relationship. According to the H6 path value (0.271), it is confirmed that employee trust positively mediated this relationship.

Moreover, this study also assessed the moderating role of perceived medical mistrust in the relationship between psychological wellbeing and job performance and employee trust and job performance (Figure 3). The H7 proposed that perceived medical mistrust moderates the relationship between psychological wellbeing and job performance. According to the outcomes ($t = 2.524$, $p = 0.012$), it is confirmed that perceived medical mistrust moderates this relationship, and as per path value (−0.099), it is also confirmed that it negatively moderates this relationship. Hence, H7 is accepted. The H8 proposed

TABLE 4 Direct, indirect, and total path estimates.

Direct path	Beta	SD	*t*	Confidence interval (95%)	f^2 effect size	*p*
ET -> JP	0.377	0.073	5.191	(0.229–0.513)	0.096	0.000
HS -> ET	0.718	0.050	14.330	(0.605–0.803)	1.061	0.000
HS -> WB	0.585	0.066	8.906	(0.438–0.699)	0.521	0.000
PMM -> JP	0.122	0.068	1.789	(−0.008 to 0.257)	0.011	0.074
PMM*ET -> JP	0.061	0.043	1.426	(−0.032 to 0.139)	0.006	0.154
PMM*WB -> JP	−0.099	0.039	2.524	(−0.171 to −0.017)	0.020	0.012
WB -> JP	0.219	0.055	4.002	(0.110–0.324)	0.045	0.000
Indirect path	**Beta**	**SD**	***t***	**Confidence interval (95%)**		***p***
HS -> ET -> JP	0.271	0.058	4.702	(0.156–0.384)		0.000
HS -> WB -> JP	0.128	0.036	3.601	(0.063–0.203)		0.000
Total path	**Beta**	**SD**	***t***	**Confidence interval (95%)**		***p***
ET -> JP	0.377	0.073	5.191	(0.226–0.511)		0.000
HS -> ET	0.718	0.050	14.330	(0.611–0.807)		0.000
HS -> JP	0.399	0.064	6.200	(0.272–0.529)		0.000
HS -> WB	0.585	0.066	8.906	(0.447–0.702)		0.000
PMM -> JP	0.122	0.068	1.789	(0.000–0.264)		0.074
PMM*ET -> JP	0.061	0.043	1.426	(−0.035 to 0.137)		0.154
PMM*WB -> JP	−0.099	0.039	2.524	(−0.167 to −0.010)		0.012
WB -> JP	0.219	0.055	4.002	(0.113–0.328)		0.000

ET, Employee Trust; HS, Health-oriented Strategies; JP, Job Performance; PMM, Perceived Medical Mistrust; WB, Psychological wellbeing.

TABLE 5 Hypotheses testing.

Hypotheses		Coefficient (beta)	S.D	t	Confidence interval (95%)	f^2 effect size	*p*	Status
H1	HS -> WB	0.585	0.066	8.906			0.000	Supported
H2	HS -> ET	0.718	0.050	14.330	(0.605–0.803)	1.061	0.000	Supported
H3	WB -> JP	0.219	0.055	4.002	(0.110–0.324)	0.045	0.000	Supported
H4	ET -> JP	0.377	0.073	5.191	(0.229–0.513)	0.096	0.000	Supported
Mediation hypotheses		**Coefficient (beta)**	**S.D**	***t***	**Confidence interval (95%)**		***p***	**Status**
H5	HS -> WB -> JP	0.128	0.036	3.601	(0.063–0.203)		0.000	Supported
H6	HS -> ET -> JP	0.271	0.058	4.702	(0.156–0.384)		0.000	Supported
Moderation hypotheses		**Coefficient (beta)**	**S.D**	***t***	**Confidence interval (95%)**	f^2 **effect size**	***p***	**Status**
H7	PMM*WB -> JP	−0.099	0.039	2.524	(−0.171 to −0.017)	0.020	0.012	Supported
H8	PMM*ET -> JP	0.061	0.043	1.426	(−0.032 to 0.139)	0.006	0.154	Not Supported

ET, Employee Trust; HS, Health-oriented Strategies; JP, Job Performance; PMM, Perceived Medical Mistrust; WB, Psychological wellbeing.

that perceived medical mistrust moderates the relationship between employee trust and job performance. According to the statistics results ($t = 1.426$, $p = 0.154$), it is confirmed that perceived medical mistrust does not moderate the relationship between employee trust and job performance. Hence, H8 is rejected. Figures 4, 5 represent the moderation slope of H7 and H8.

Discussion

Employees are considered valuable assets to the organization. Organizations can differentiate themselves in the market by utilizing employees' intellectual abilities. In this regard, this study explores the factors that enhance employees' job performance. This study develops a model

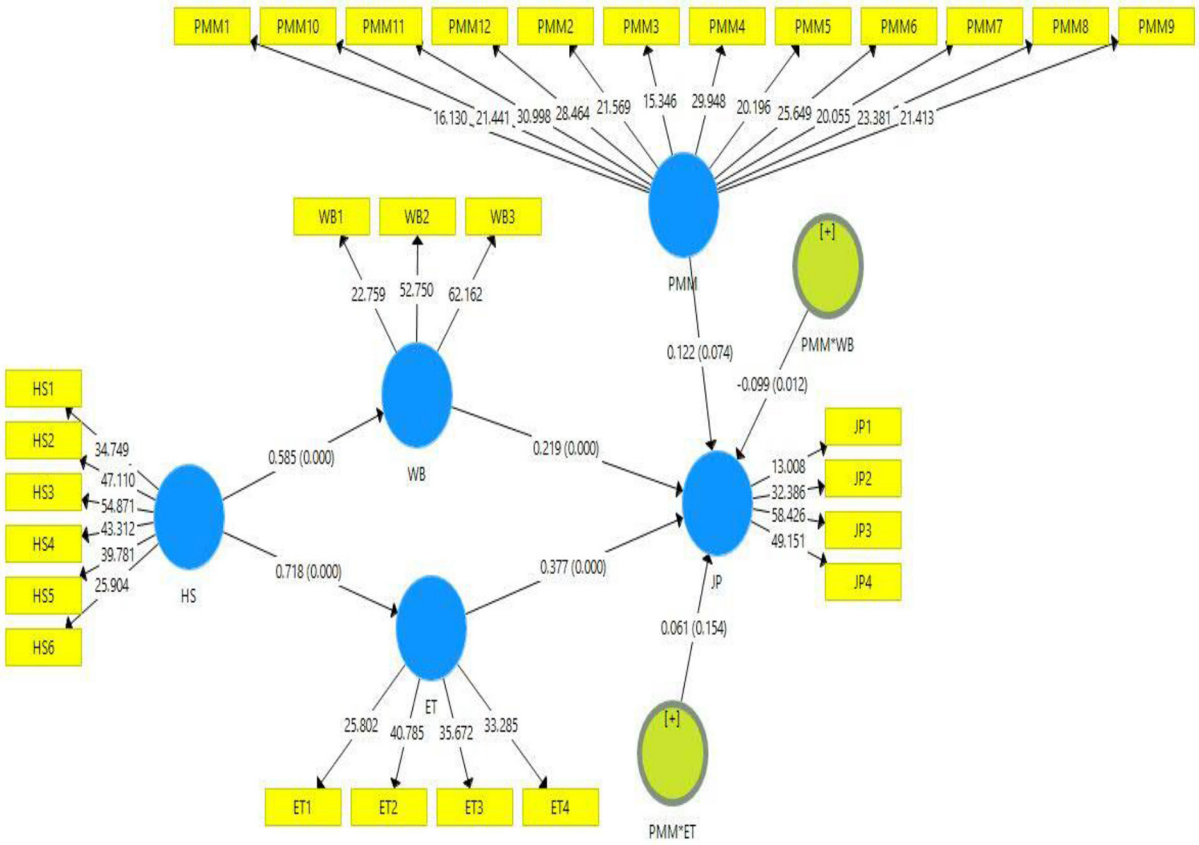

FIGURE 3
Bootstrapping estimates.

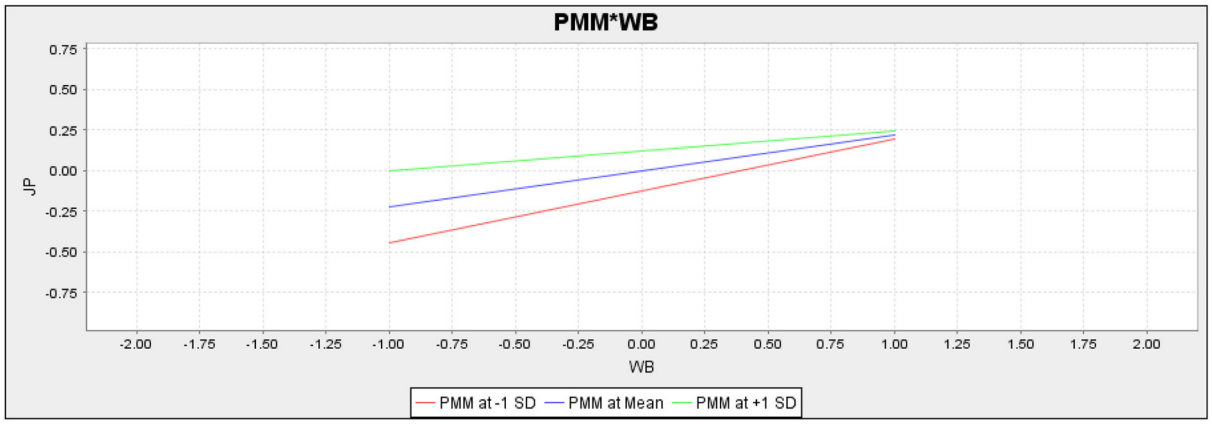

FIGURE 4
Moderation slope of PMM*WB.

based on social exchange theory and explores the role of organizational health-oriented strategies on employee job performance through mediating employees' psychological wellbeing and employee trust. This study investigated the direct association between organizational health-oriented strategies and employee psychological wellbeing and found that

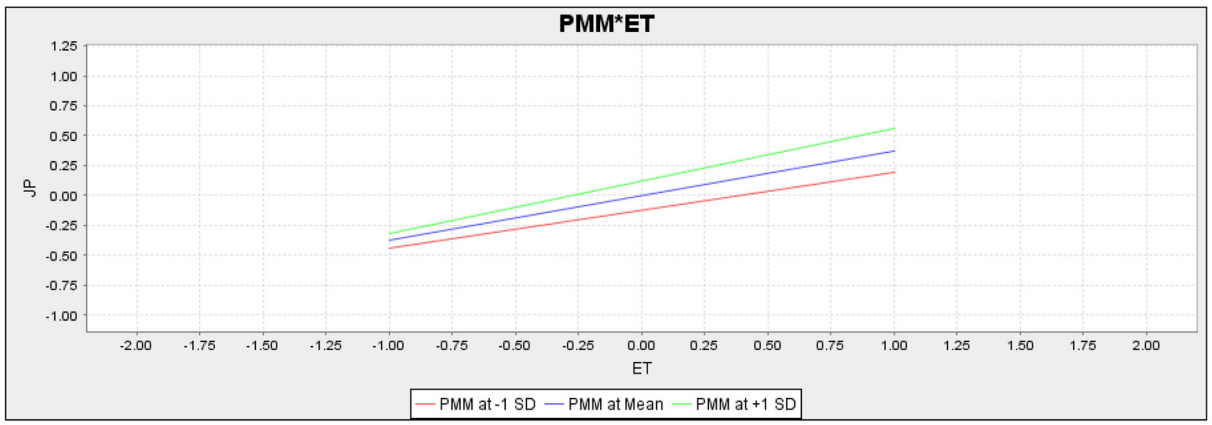

FIGURE 5
Moderation slope of PMM*ET.

organizational health-oriented strategies positively influence the employees' psychological wellbeing. According to previous studies, when employees perceive that their organizations are caring about their health their satisfaction and engagement increase which in turn positively impacts their wellbeing (53, 54).

This study also explored the direct association between organizational health-oriented strategies and employee trust, and outcomes revealed that organizational health-oriented strategies positively enhance the employees' trust. The present study's findings confirmed that organizational health-oriented strategies positively increase employees' psychological wellbeing and trust. The direct association was also assessed between employee psychological wellbeing and job performance and employee trust and job performance. The outcomes revealed that employees' psychological wellbeing and employees' trust positively influence their job performance. Such as when employees have trust in management and have psychological wellbeing, they enthusiastically perform well in their job roles. The previous studies also noticed that the health-oriented strategies of firms are a positive signal for employees that their organizations care about their health and wellbeing (9, 12). Moreover, the employees feel confident about their firms, and their trust is also built positively, a positive signal for boosting their performance.

This study also found that employee psychological wellbeing and trust mediate the positive association between organizational health-oriented strategies and employees' job performance. This study shed light on the importance of organizational health-oriented strategies as if organizations have health-oriented strategies for their employees. Then in return, their employees have psychological wellbeing and trust in the organization that must enhance their job performance. This study also checked the moderating role of perceived medical mistrust of employees between employee psychological wellbeing and job performance and employee trust and job performance. The outcomes revealed that perceived medical mistrust negatively moderates the relationship between employee psychological wellbeing and job performance, such as high perceived medical mistrust weakening the relationship between employee psychological wellbeing and job performance. This study also found that perceived medical mistrust does not moderate the relationship between employee trust and employee job performance. The outcomes revealed that employees' psychological wellbeing is crucial, but organizations must reduce perceived medical mistrust as its interaction with psychological wellbeing reduces employee performance. Thus, organizations must facilitate their employees through health-oriented strategies and provide some training regarding the COVID vaccine's positive effects to reduce the negative perception of their medical mistrust.

Theoretical and practical implications

This study has many theoretical and practical implications. Theoretically, this study extends the literature on organizational health-oriented strategies and job performance by taking the support of social exchange theory. Based on the social exchange theory, this study assumes that employees' job performance increases when organizations build health-oriented strategies. According to social exchange theory, the employees' performance enhances reciprocity when they perceive that their organizations care about their wellbeing. This positive perception of employees motivates them to take part in organizational activities more enthusiastically and do their best to enhance the productivity of the firm. The outcomes of this

study confirmed that organizational health-oriented strategies positively influence the employees' psychological wellbeing and trust. The findings also authenticate that employees' psychological wellbeing and trust positively influence their job performance. This study also extended the literature on employee psychological wellbeing and employee trust as both play a mediating role between organizational health-oriented strategies and job performance. Moreover, this study serves the literature on employees' perceived medical mistrust, as it moderates the relationship between psychological wellbeing and employee job performance.

The current study offers several valuable implications for managers regarding practical contributions. This study provides guidelines to organizations and managers for advancing their health-related strategies to improve employees' work productivity and performance. First, organizations should realize the importance of the health and wellbeing of their employees because their health is very important for efficiently doing a job. Specifically, after experiencing the COVID-19 pandemic, the organizations have to take extra care of their workforce to cope with the turbulent consequence of the pandemic. When organizations develop health-oriented strategies to facilitate their employees, employees develop psychological wellbeing and trust in the organization, which positively increases their job performance. Second, the present study's findings also highlighted the importance of employees' psychological wellbeing and trust in increasing their performance. Third, this study points out that perceived medical mistrust could be a possible hurdle in the job performance of employees, as perceived medical mistrust of employees adversely impacts their work attitude and behavior. The workforce should also be provided proper psychological counseling by organizations to avoid potential consequences of perceived medical mistrust.

Limitations

Like other social studies, this study also has limitations. First, the data of this study was gathered through a questionnaire survey method under a time lag approach to avoid common method bias and have a small data size. Hence, future research may conduct other methods for data collection, such as semi-structured questionnaires or interview methods. Additionally, future studies may adopt different techniques to avoid common method bias and enlarge the sample to strengthen and validate this study's outcomes. Second, this study checked the mediating role of employee psychological wellbeing and trust between organizational health-oriented strategies and job performance. Future research may check other mediators such as psychological ownership and emotional attachment to extend our study model. Third, this study examined the role of perceived medical mistrust as a moderator. Future research may check other moderators like employee cynicism and perceived organizational politics to validate the results of the present study. Moreover, this study observed data from textile sector employees in China. Future research should collect data from different sectors to verify the study outcomes. Future research may also conduct a similar study in western countries as results may vary due to cultural differences.

Conclusion

Every organization is operating to make a profit. For this purpose, the organizations utilize all their resources to enhance organizational performance. Efficient human capital is a considerable asset of the organization that plays a crucial role in achieving organizational goals. After experiencing the COVID-19 pandemic, there is a need to prioritize employees' health and wellbeing. In this regard, this study developed a model under the support of social exchange theory to examine the role of organizational health-oriented strategies on employees' job performance through the mediation of employees' psychological wellbeing and employee trust. This study found that organizational health-oriented strategies positively influence employee psychological wellbeing and trust; in turn, employee psychological wellbeing and trust enhance job performance. Moreover, this study found that employee psychological wellbeing and trust positively mediate the relationship between organizational health-oriented strategies and employee job performance. This study also found that perceived medical mistrust negatively moderates the relationship between psychological wellbeing and job performance and does not moderate between employee trust and job performance. Hence, organizations should develop health-oriented strategies that facilitate the employees regarding their health issues. Employees' psychological wellbeing and trust in the organization would positively increase their job performance.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author/s.

Author contributions

YL and XL: conceptualization. YC: data collection. MY: writing the draft. All authors read and agreed to the submitted version of the manuscript.

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Conflict of interest

Author XL was employed by the organization (Agricultural and Rural Bureau of Shizhong District).

The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpubh.2022.946946/full#supplementary-material

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Service innovation in small neighborhood family firms: An advanced approach to enhance employee's performance through social and psychological rewards

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This research study focuses on the employee's job performance of private small firms during the post COVID-19 situation. After the COVID these small family firms try to regain their business, but their efforts are not that much successful. This situation creates a financial crisis in these firms, and they are unable to provide sufficient monetary rewards to their employees. This situation creates unrest among the employees of these small firms. To manage this issue, social rewards and psychological rewards played their role. The study uses a causal research design with a correlational study design in a non-contrived environment. Minimal researcher interference has been assured. AMOS 24 has dealt with the mediation in study design with bootstrap methodology. The study was conducted on 250 employees of different private small family firms across Punjab province using a proportionate stratified sampling technique. A study's finding suggests that top management enhances employee performance in their organizations by introducing the organization's psychological rewards. In contrast, introducing social rewards does not significantly impact employee performance while considering satisfaction and motivation as a mediating variable.

KEYWORDS

social rewards, psychological rewards, small family firms, employee satisfaction, service innovation

Introduction

Job creation is the top priority of policymakers in every developing country. With many countries experiencing rapid growth in the population, governments must create a significant number of employments to keep up with labor demand, and even more, jobs are required for economic growth.

Small firms have created more and large number of employments than larger firms. This helps to grow the economy of the developing countries (1). Small firms need skilled labor and loyal employees for effective production. If the employees or laborers are satisfied with their jobs, their performance would have increased. In this era, it is hard to find skilled and loyal labor. Firms must provide the best working atmosphere for their employees, so they work in a healthy work environment that satisfies them with their jobs. Social recognition, acceptance, and praise significantly impact the employee has good reputation and motivation to have such social approvals (2).

It is essential to understand that retaining essential employees serves what purpose in the company while maintaining their performance up to the maximum level. According to earlier research, the typical business loses $1 million for every ten managers and professionals leave. More than 2 years of compensation and benefits are required to replace an exempt employee who is terminated for cause (3). When a key employee departs from a firm, valuable knowledge is lost that might significantly impact the company's financial health. Through the use of this information, customers' needs and expectations are satisfied. The term "knowledge management" refers to creating, gathering, and using data to benefit a company's operations. While information is recognized as an organization's most valuable asset today, many firms lack the mechanisms necessary to preserve and use its value (4, 5). Companies must actively participate in knowledge management rather than depending on the premise that employees are acquiring and using information and that knowledge sources are freely available. Firms are designing systems that use the value of information to sustain their competitive advantage. It's easy to see the consequences of losing individuals with access to critical information. Human capital and knowledge management are based on the premise that workers are a company's most crucial asset due to their diverse range of skills, information, and perspectives. Skills, knowledge, and experiences are regarded as capital because of their ability to boost output (6, 7). To the extent that more resources are allocated to a machine, it is more probable that it will be productive. This is according to the human capital idea. According to human capital theory, business investments in human capital are more profitable and more likely to last for a longer period of time. Keeping your personnel is critical to getting the most return on your investment. Human capital theory uses an employee's length of service as a proxy for their job-related knowledge or ability. A person's work-related knowledge or ability affects everything from pay and progress to job type (8, 9). People who have worked for an organization for a long period of time have a high level of intellectual capital. It was said that intellectual capital is "competence multiplied by commitment," which indicates that a company's knowledge, talents, and traits are amplified by the will to work of everyone inside it. Recognizing employees' commitment to a firm and creating an environment that encourages long-term commitment will be crucial in the future years. Individual knowledge that has been developed through time must be preserved or organizations will continue to lose valuable intellectual capital. A company's deep awareness of its sector is one of the most important factors that contribute to today's success in the global marketplace (10, 11).

The small firms act like cushions to economic shocks for the country's economic stability. In Pakistan, primarily small firms remain small a few of them expand. In this study, the main focus is on the employee productivity and satisfaction by giving them social and psychological rewards. The social exchange theory argues that social behavior is motivated by the ratio of social rewards. According to this theory, people involved in social behavior when there is any benefit for them, not only monetary but social acceptance from others (12). COVID-19 has a significant influence on society. The economic conditions are also affected by this situation. In this situation, the firms can only give the salary to their employees. The firms focus on enhancing the employee's productivity by providing them social and psychological rewards that are not monetary. So the firms do not have to invest money in this critical situation.

Many researchers do their research on employee performance in small firms (13). Understand the impact of employee learning on staff motivation (14). Research about the effects on employee performance and satisfaction (15). This study measure job attitude among 80 employees of four different small businesses. Each employee filled a survey form. Employees show clear difference in their job satisfaction.

Research gap

The gap of this research is that there are two mediator studied in this research. There are millions of other variables that are affecting on employee performance. In previous studies, researchers did not study specific variables like social rewards, psychological rewards, and employee motivation and satisfaction with employee performance, especially in Pakistan, but they studied it with different variables. Other researchers studied employee performance and satisfaction together but they did not study in perspective of social and psychological rewards (16).

Research objective

The study seeks to achieve the following objectives:

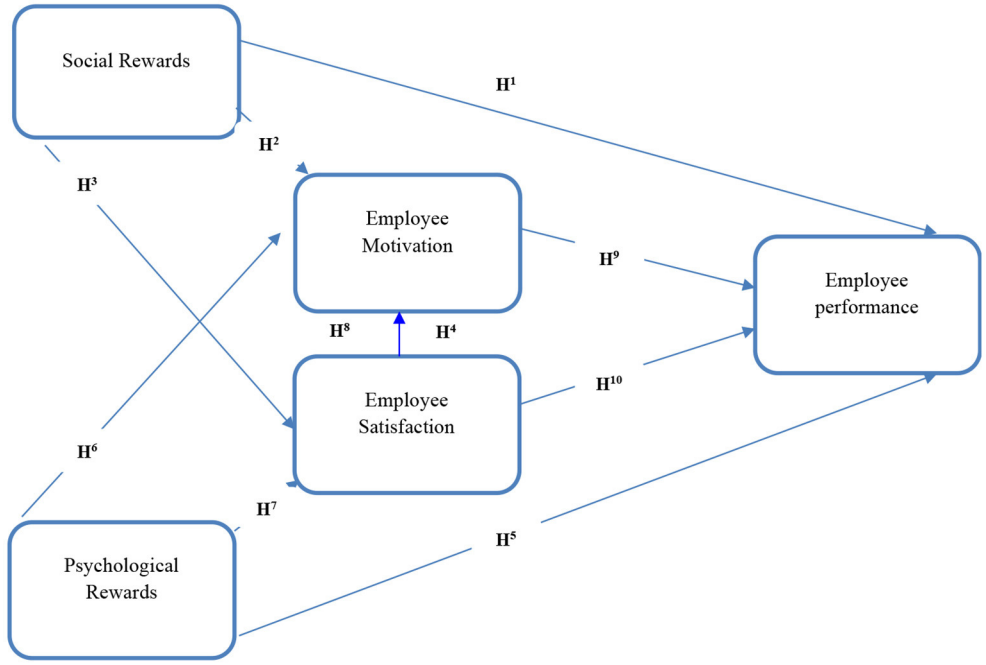

FIGURE 1
Theoretical model.

1. Examine the link between employee contentment and productivity.
2. Employee happiness and motivation to understand the practical effects of social incentives on workplace performance.
3. To determine the practical effects of psychological incentives on the performance of employees *via* the pleasure and motivation of employees.
4. Find out what reward is most suited for a small family-owned business.

Research questions

This research question is more clarified with sub-questions:

1. Is there any effect of social rewards on employee performance in firms?
2. Is there any effect of psychological rewards on employee performance in firms?
3. Is there a correlation between employee happiness and productivity?
4. This research is conducted to answer the following question; what is the impact of social and psychological rewards on employee performance affecting employee satisfaction?

Significance of the study

To maintain its finest personnel for the long term, every sector uses a combination of financial and non-financial incentives. In this research, small businesses and industries learn how to boost employee happiness and productivity by creating a healthy work environment. This study also helps firms to know that the social or psychological rewards help to attract the employees.

The purpose of this research is to get insight and understanding of employee's minds for their satisfaction by social and psychological rewards to increase their performance. The study's objective is to provide information to small firms to keep employees satisfied and increase their performance by non-monetary rewards.

Literature review

Theoretical model development

Before moving on to the literature review, it is important to understand why these variables need to be studied together and what theories supported this theoretical framework which is depicted in Figure 1, and why could

it be considered an important management problem? The theoretical framework used in this study is backed by the Componential Theory of Creativity (17). According to this theory it specifically focuses on the social and psychological rewards given by the organizations, which could ultimately enhance the level of creativity of its employees. This level of creativity could lead toward the improved performance of employees in the organization. This kind of theoretical framework and research work is also supported by different studies (18–20) which focuses upon the need of finding effective non-monetary rewards which could lead toward the enhanced employee performance through motivation and satisfaction.

Social rewards

It's not always as easy to achieve social objectives as achieving more fundamental physiological ones, like getting enough food. Many of society's aspirations are nebulous and ill-defined. When a person's hunger causes them to seek out cake, they can readily determine whether they achieved their aim or not. As a result, it is less evident how to go about finding a social connection, and whether one has really succeeded is a matter of debate. No crumbs or chocolate-smeared surfaces are left in the aftermath of social aims, in contrast to cake. How might readers connect proximal reward signals to their ultimate goals (21, 22). Previous studies have identified two main problems in understanding how proximate incentives assist individuals attain their ultimate social objectives. The first step is to identify the fundamental social values and incentives that drive ordinary social conduct. What are the underlying principles of human behavior (23, 24). Second, how people's social activities help them achieve their ultimate social objectives, what determines the degree to which an action may attain those goals. Existing research suggests two complementary methods for dealing with each problem. Decontextualizing social incentives to understand how proximal components (i.e., social rewards) influence social actions is the first step they advocate (25). The strength of each fundamental element may be gauged by measuring its value. These elements that remain valued even when separated from the rewarding outcomes they are meant to anticipate serve as the most strong or fundamental drivers of social conduct. Those who cherish the presence of others may seek out ways to see others (e.g., look at photos of their faces) even if they cannot communicate with them directly. Fundamental motivations should be quantifiable even if the final aim is not achieved. These fundamental societal ideals may be identified by decontextualization (26). As a follow-up, they advocate recontextualizing incentives by returning motivation and context to social conduct in order to comprehend how social actions support their ultimate aims. Several variables might affect whether or not a person's purpose is met, such as the social context and the individual's motives. Approaching a smiling friend should strengthen social connection, yet approaching an adversary who smiles could put one in danger. As well as influencing action like approaching a smiling person, context also affects the perceived value of fundamental social elements. For example, a grin from a foe has less value than a smile from a friend. This reassessment illuminates the ultimate societal objectives that a smile's social worth is pointing toward societal behavior and its ultimate social purposes are examined *via* various complementary perspectives. Evaluating people's social values and the forces that may and cannot influence those values is at the heart of both methods. It's possible to get insight into social rewards and the higher-level objectives that motivate them by looking at how our brain's reward system promotes social conduct. Each method is discussed in turn, and the framework's consequences for our knowledge of the building blocks of social incentives, their growth, and their influence on employee performance are discussed (27).

Although social rewards are not tangible, they are generated through social encounters. The social reward dimension refers to many aspects of social conditions and employee work relationships, and it measures the degree of external public recognition and internal social support as felt by employees (28). It also created a pleasant sensation of wellbeing when one feels accepted and belongs during social encounters. Social rewards were typically feelings of wellbeing, enjoyment, and interactions with others (29).

Social incentives are vital in promoting and retaining employee happiness in all industries. It is possible that social incentives might be a key factor in enhancing employee efficiency. If a company is serious about increasing productivity, it has to know how to encourage employees and ensure that they are adequately rewarded for their efforts (30).

Social rewards contribute to a positive sense of wellbeing because one feels like they belong, are recognized by others through social activities, and can feel superior through tasks and social interactions (1). The social reward aspect relates to many aspects of the social environment and employee work relationships. It measures the degree of exterior public recognition and internal social support that workers feel. It also produces a favorable sensation of wellbeing when one feels accepted and belongs in social interactions. The most common social rewards were feelings of wellbeing, enjoyment, and social interactions (6).

H^1: Social rewards create a positive impact on employee's performance.

H^2: Social rewards mediated by employee motivation positively impact employee's performance.

H^3: Social rewards mediated by employee satisfaction positively impact employee's performance.

H^4: Social rewards positively impact employee performance through serial mediation of employee motivation and the employee satisfaction.

Psychological rewards

Employees' wellbeing may be improved in five ways: by providing them with meaningful work, flexibility, a variety of challenges, and a work environment they appreciate. When workers connect with their responsibilities and find them rewarding, their employment is meaningful, according to previous studies. When workers have the freedom to act on their own initiative, it is seen as flexible; on the other hand, it is seen as demanding when employees are given the chance to use their talents (31). Employees will be more engaged in their work if their tasks are fascinating and gratifying. According to early research, a combination of extrinsic and intrinsic incentives has been shown to motivate and maintain effective human capital. Other people or organizations give cash or non-financial incentives to workers, known as extrinsic rewards. An employee's job provides the reward when it comes to intrinsic incentives (32). As a result, psychological benefits result from one's labor when it is relevant and well-executed. Workers' psychological needs are met *via* intrinsic rewards, which are internally mediated and contribute to employees' sense of self. Psychological incentives play a particularly crucial role for workers of small family businesses since they are often paid less than their counterparts in larger enterprises. Small family businesses in developing nations are thought to have the lowest real pay increase budgets and compensation range changes (33). Full-time workers are more likely to be paid less than their private or government colleagues. These findings show the need to research intrinsic incentives in the context of small businesses. There are, however, just a few studies that use quantitative instruments that have been shown to be trustworthy when testing across cultures to determine intrinsic rewards. HR managers who advise small family business workers might benefit from an accurate assessment of intrinsic job incentives (34).

Employees benefit from psychological benefits that strongly link job satisfaction and firm performance. Personality attributes such as confidence, assertiveness, and the ability to see the importance in one's work all contribute to a person's overall wellbeing and fulfillment. For example, an employee's capacity to express a feeling of achievement or duty is a psychological reward, as is the ability to convey a sense of accomplishment to the employee (35).

By giving the psychological rewards to the employees, that are interest of many employees, the satisfaction of the employees toward their job is increased. In this way the employees remain motivated and their performance also enhanced that the firms want. When a task is completed effectively, it is usual for individuals to feel a feeling of accomplishment and satisfaction. In order to keep the good sentiments going, the employee must continue to perform well in his or her job (36). Workplace intrinsic benefits may include things like pride in one's work, respect from superiors and/or coworkers, personal development, increased trust in management, satisfaction from one's job and belonging to a team, and the acquisition of new skills a sense of success. For many people, being free to select the job they wish to do is an innate joy. Incentives have been demonstrated to improve employee productivity in studies (37). In the workplace, psychological reward refers to the benefits that employee receives as a consequence of favorable professional interpersonal interactions with his or her clients, coworkers, or supervisors, such as trust, recognition, and praise. Psychological benefits do not need monetary inputs since they just call for dedication, dedication, and effort on the part of the recipient (38).

Individuals' work attitudes may be positively influenced by psychological rewards, which serve to increase morale. Psychological reward serves as a supply of motivating resources in the pursuit of happiness as a form of innate psychological need. That is, if it is not met, it may have a negative impact on people's subjective wellbeing.

H^5: Psychological rewards create a positive impact on employee's performance.

H^6: Psychological rewards mediated by employee motivation positively impact employee's performance.

H^7: Psychological rewards mediated by employee satisfaction positively impact employee's performance.

H^8: Psychological rewards positively impact employee performance through serial mediation of employee motivation and the employee satisfaction.

Employee motivation

Motivation's major goal is to make it simpler for people to modify their behavior. Intrinsic motivation is the driving force behind a person's actions toward a certain objective. In a study on employee motivation, the results showed that motivation influenced outcomes such as productivity, performance and persistence. Studies show that motivated employees are more self-driven than their less motivated counterparts because they are more focused on their own independence and autonomy. As a result, highly motivated employees are better equipped to take advantage of the many opportunities for professional advancement that exist. In a similar line, motivated employees are more committed to their jobs than their less motivated counterparts, resulting in better quality work (39).

If you want your dreams to come true, you must have a strong drive to succeed. Whatever influences people's behavior in order to reach a certain objective qualifies as a motivator. Our definition of "motivation" is the means through which an individual's desire to achieve their goals is accounted for, together with their interactions with their environment and the results of that interaction (40). Motivational processes significantly impact a person's overall strength and direction of action. Although motivated behavior happens only in the here and now, its attention is on the future within this time. Workers'

work habits are influenced by their degree of motivation at the time. Workplace motivation, whether intrinsic or extrinsic, is critical to employees' wellbeing since it is the fundamental driver behind their attendance. An intrinsic motivation is fueled by a person's interest, pleasure, or enjoyment in a certain activity. Extrinsic motivation occurs when you engage in a task because you like it or find it pleasant (41).

If you want to be inspired, you must know what drives you and what inspires you. Therefore, it is difficult for a person to feel motivated by just partially addressing their needs. One set of demands is fulfilled and another is created; motivation leads to goal-directed behavior; a person behaves in order to achieve their own aims and wants; and there is no one-size-fits-all philosophy or approach to motivation since individuals have varied motivations; Managers need to have an understanding of many different types of motivating elements in order to be effective (42).

Today's competitive business world necessitates that successful organizations find new and innovative methods to motivate and inspire their employees. This is contrary to the findings of earlier research, which reveal that no organization can progress or flourish if its employees are not motivated to do their duties. Every organization's success is closely linked to its employees' motivation, dedication, and perseverance (43). As a consequence, one of the most important jobs or obligations of a leader is to inspire others. An organization's leadership begins with the initial effort to hire a new employee and continues through the whole induction process and every day until the person quits the organization. The importance of leadership to a firm is once again highlighted in the process of bringing in new employees (44). Employee motivation depends on the quality of the boss-employee relationship. Employees who are surrounded by colleagues who exhibit a professional, happy, and polite demeanor are more inclined to follow suit. Organizational culture directly influences employee engagement, productivity, wellbeing, and overall wellbeing in the workplace. Some experts in the field believe that a company's management style affects employee motivation. A lot of individuals disagree on whether or not it's possible to cultivate leaders from scratch. From the discussions on motivation, it's evident that individuals have a broad variety of traits. Many of these effects may be handed down *via* DNA or acquired through exposure to various environmental stressors (45).

The topic of motivation is covered in more depth in the field of organizational behavior, which includes a wide range of models and theories that are pertinent to the topic of motivation. Significant emphasis is placed on the development and advancement of staff members. According to a number of studies, growth is the single most significant incentive for those who attempt to maximize the potential of their staff. It has been discovered that there is an indisputable connection between the motivation of workers, their level of job satisfaction, and their level of commitment to their organizations. The motivation of workers is the single most crucial factor in every company's success, regardless of whether the business in question is public or private. According to the findings of a study that investigated the connection between employee motivation and job satisfaction, businesses that used a variety of motivational programs that centered on three distinct concepts namely, camaraderie, equity, and achievement were judged to be more successful than businesses that either had no "enthusiastic" employees or twice as many of them. Participants in the research numbered 135,000 and came from a wide range of nationalities and cultural backgrounds (46). The researchers that conducted the study to establish the link between employee motivation and employee performance came to the conclusion that an increase in employee motivation leads to an increase in employee performance as a direct consequence of the rise in employee motivation (47).

H^{9}: Employee Motivation creates a positive impact on employee's performance.

Employee satisfaction

Employee satisfaction has been examined extensively in various sectors, including army, healthcare, civil service, business, psychology, and sociology, according to a review of the literature. Over time, the concept has evolved. However, no significant implication was produced. It is a complex phenomenon that is influenced by a variety of circumstances.

Employee satisfaction has been shown to have a major impact on employee performance, retention, and turnover. Locke (48) "a pleasant or good emotional state arising from the evaluation of one's employment or job experience" was characterized as employee satisfaction. Negative sentiments reflect dissatisfaction with one's job. The positive sentiments that an employee has about their work are what constitute employee satisfaction.

A company's ability to succeed depends critically on the happiness of its employees. Low staff turnover is associated with high levels of employee satisfaction. Keeping employees happy is thus a top priority for any organization. Amidst economic downturns like the one we're experiencing, employers appear to be ignoring a well-known reality about management: managers know this (49).

The level of employee performance in the company grew as a direct result of the rise in employee happiness. The workers will be pleased and motivated about their employment if they are satisfied with the incentives they are receiving. These benefits will boost their performance if they are satisfied with the awards they are getting (50).

H^{10}: Employee satisfaction creates a positive impact on employee's performance.

Employee performance

The term "performance" refers to the result that knowledgeable individuals working in a certain environment are able to produce. The productivity and production of an individual as a direct consequence of their progress is referred to as that person's employee performance. The effectiveness of an organization is directly proportional to the performance of its employees. When conducting a performance review of an employee, the things that the individual does and does not do are considered. An employee's performance is evaluated based on the quality and quantity of their production, their level of attendance at work, how accommodating and helpful they are, and how quickly their output is completed. The findings of an investigation into individual performance, which was carried out by, suggest that it is impossible to verify individual performance (51). In addition to this, he claims that if an employee's performance can be measured, then employers have the ability to provide direct bonuses and incentives depending on the individual's level of success.

Companies will go to tremendous efforts to ensure that their clients are happy, but they will not go to the same measures to ensure that their staff are happy. On the other side, customers won't be happy until and until staff members are pleased both before and after they place their orders. Because if workers are content, they will put in more effort, ultimately leading to contentment on the part of the company's clients.

When employees are inspired, they put more effort into their work, which leads to an increase in their performance as a result of their motivation (52).

The quality of a person's work is strongly related to how satisfied they are with their job. Employees who are satisfied with their occupations are more likely to have a positive outlook on their work, which in turn helps them remain motivated while they are at work.

The ability of an organization to achieve its objectives is strongly linked to the performance of its workforce (53). To some extent, one's professional values, level of commitment to one's work, and ability to contribute to a cohesive workplace environment may all be markers of this characteristic. In this context, both quantity and quality must be taken into account. Additionally, it takes into consideration the output in terms of timeliness and attendance, as well as the efficiency and effectiveness of the job accomplished.

An person or a group's ability to effectively do a task that has been defined and assessed by a supervisor in a firm is referred to as "employee performance". Standards must be met while using resources in an effective and efficient manner in a changing environment, which calls for adherence to previously specified and accepted standards (54).

Research methodology

In order to understand the nature of the link between the variables that are the subject of the understudy, a hypothesis study was used in this research. The human resources departments of the various private small family businesses provided the data of their workers, which were then used in this study. The decision to go with private, smaller family businesses was made because these establishments do not provide long-term employment opportunities as public or government-owned companies do. Because of this, they need to place a greater emphasis on the atmosphere of their workplace and the rewards they provide. In this way, businesses will have a better chance of keeping their important staff members in the long term.

The correlational method of inquiry was used for this study since it needed to test hypotheses on the relationships between the different variables. The fieldwork for this study was carried out in its natural setting. Because of this, the research context will be seen as one that was not artificially created. Regarding the completion of the questionnaires, this study has a low level of influence from the researchers toward the participants. Because the data for this research comes from individuals who work for small family businesses, the person serves as the unit of analysis for this particular study. For the purpose of this study, the researcher used a technique known as a cross-sectional study. It entails the investigation of a whole population or a representative sample of the population at a certain instant in time.

In order to obtain data from the staff members working at these small family businesses, the approach of purposive sampling is used. The term "judgmental sampling" may also be used to refer to this procedure. The researcher may be able to obtain data from the responder who is the best fit for the topic at hand, which is one of the reasons why this approach was selected.

The demographic framework for this study is the employee's attendance register, and the way that data is obtained for this research study is *via* the use of the register. In some companies, the researcher was the one who gathered the data. While in other instances the information is gathered with the assistance of pertinent friends in the proper settings.

Empirical settings and data collection

These investigations were carried out on workers of various private small family businesses in the province of Punjab which's complete data is given in the Table 1. Four hundred questionnaires were sent out to those employees, and roughly 270 questionnaires were returned, resulting in a response rate of fifty-five percent. In order to conduct this research, a trustworthy and comprehensive questionnaire was used. There

TABLE 1 Demographic profile of the respondents.

Demographic profile of the respondents

Category	Subdivision	Frequency	Percentage
Marital status	Married	75	30
	Un-married	175	70
Currently held position	Senior Manager	05	2
	Manager	13	5.2
	Assistant Manager	25	10
	Officer	40	16
	Supervisor	70	28
	Worker	97	38.8
Age	Below 25 years	86	34.4
	25–30	70	28
	31–35	37	14.8
	36–40	30	12
	40 and above	27	10.8
Education	Intermediate	70	28
	Bachelors	130	52
	Masters	40	16
	M.Phil	10	4
	Phd	0	0
Experience	Below 5 years	150	60
	6–10 years	57	22.8
	11–15 years	28	11.2
	16–20 years	10	4
	Above 20 years	5	2
Departments	Marketing	50	20
	Finance	50	20
	Supply chain	50	20
	Human resources	50	20
	Information echnology	50	20

TABLE 2 Pooled CFA model fitness tests.

Pooled CFA model fitness tests

Name of category	Name of index	Index full name	Value in analysis	Acceptable value	References
Absolute fit	RMSEA	Root mean square of error approximation	0.070	>0.06	(61)
Incremental fit	CFI	Comparative fit index	0.915	<0.95	(62)
Parsimonious fit	Chisq/df	Chi square/degrees of freedom	2.534	<3	(63)

was a total of 250 replies included for the study, out of which 20 surveys had information that was either missing or incorrect. The demographic profile of the respondents is provided further down.

The respondents were employees who worked for a variety of different small companies. The data were acquired both during and after the pandemic scenario *via* the use of a variety of resources in an effort to minimize human interaction to the greatest extent feasible. To approach our target respondents, we used the attendance register maintained by the concerned organization's human resource office, which served as a sampling framework for this study. Every privately held business has various departments, including marketing, sales, finance, supply chain management, human resources, and information technology. As a result, we shall use a methodology known as Stratified Sampling. We may be able to collect data from a

TABLE 3 Pooled confirmatory factor analysis (independent, mediating, and dependent variable).

Pooled confirmatory factor analysis (independent, mediating, and dependent variable)

Scale	Items	Factor loadings	Scale reliability
Social rewards	The firm provides opportunities for social contact at work.	0.655	0.749
	The firm provides opportunities for social contact with your colleagues after work.	0.831	
	Firm's administration provides opportunities to interact with other disciplines.	0.859	
	Firm's administration provides opportunities to interact with knowledgeable resource.	0.653	
Psychological rewards	You were admired by your immediate supervisor.	0.614	0.700
	You have received recognition for your work from superiors.	0.676	
	You have received recognition for your work from peers.	0.596	
	You have received a fair amount of encouragement and positive feedback on your work.	0.889	
	You have given control over your work setting.	0.729	
Employee motivation	You have given opportunities for career advancement.	0.776	0.784
	You have a given amount of responsibility.	0.778	
	You have given control of your work conditions.	0.805	
Employee satisfaction	I am very satisfied with my organization policies and practices.	0.437	0.708
	I am very satisfied with the social status which my organizations provide to me.	0.761	
	I am very satisfied with the overall compensation which my organizations provide to me.	0.875	
	I am very satisfied with the level of responsibility which my organizations provide to me.	0.759	
Employee performance	My performance is better than that of my colleagues with similar qualifications.	0.732	0.803
	I am satisfied with my performance because it's mostly good.	0.865	
	My performance is better than that of bankers with similar qualifications in other banks.	0.843	
	I would like to perform best for my organization	0.775	

TABLE 4 HTMT analysis.

HTMT analysis

	Social rewards	Psychological rewards	Employee motivation	Employee satisfaction	Employee performance
Social rewards					
Psychological rewards	0.048				
Employee motivation	0.274	0.037			
Employee satisfaction	0.259	0.107	0.406		
Employee performance	0.293	0.051	0.495	0.418	

The shades indicates that the variables are the same and according to HTMT analysis values cannot exist or mention for the same variables.

representative number of workers in each division if we proceed in this manner.

Measure and methods

Instrument

This research will employ the Mueller-McCloskey Satisfaction Scale (MMSS), created in for social and psychological rewards (1990). This scale has been adjusted and adapted for use in this research of small family businesses' workers since it was originally created to measure nurse employees' satisfaction with their jobs (55). While for measuring the moderating variables which are employee motivation and satisfaction and dependent variable which is an employee performance the scales are adapted and then significantly modified from the research studies of Tremblay et al. (56), Probst (57), and Ramdani et al. (58), respectively. The

TABLE 5 SEM, model fitness tests.

SEM, model fitness tests

Name of category	Name of index	Index full name	Value in analysis	Acceptable value	References
Absolute fit	RMSEA	Root mean square of error approximation	0.080	>0.06	(61)
Incremental fit	CFI	Comparative fit index	0.935	<0.95	(62)
parsimonious fit	Chisq/df	Chi square/degrees of freedom	1.534	<3	(63)

TABLE 6 Results of structural model: direct effects.

Hypothesis	Causal path	*P*-value	Standardized estimated
H^1	Social rewards→Employee performance	0.685	−0.019
H^5	Psychological rewards→Employee performance	0.001	0.347
H^9	Employee motivation→Employee performance	0.001	0.329
H^{10}	Employee satisfaction→Employee performance	0.001	0.243

complete measurement model is run and applied to test the effectiveness of this modified scale and reliability and validity of this instrument is checked as whole in a pooled confirmatory factor analysis test.

Confirmatory factor analysis

In order to get reliable and exact answers for all variables, a confirmatory factor analysis must be performed. A pooled CFA analysis will be used in this investigation. To reach the desired level of model fitness, it simultaneously runs all of the latent variables. Since the pooled CFA approach runs all the latent variables concurrently, it is more efficient than Individual CFA (59, 60).

As per the information given in Table 2 the model fit indices show an acceptable fit between the data and the proposed measurement model. The values of the Comparative Fit Index (CFI = 0.938), Root Mean Error of Approximation (RMSEA = 0.049). Chi-square to Degree of Freedom Ratio (x^2/df = 1.590) are all meeting the cut-off criteria, so the values of the fitness indices meet the excellent standards for model fitness (64–66).

Pooled CFA Model Fitness TestsAfter running the pooled CFA, it is also necessary to check and verify each item's reliability for further research. CFA of this study's data was used to measure reliability, convergent validity, and discriminant validity. The reliability of the measurement scales was measured with composite reliability, which is preferred to report a scale's reliability (67), a widely used indicator. As per the Table 3 the reliability and convergent validity are accurate and fine because the factor loading of each item is grather than 0.5 which shows the convergent validity of the scale is sufficient and also the combine composite reliability is also above or equal to 0.7 which shows that reliability of the scale is also fine.

If the measuring scales are different from other measures, they are said to have discriminant validity. HTM analysis was used to test discriminant validity and found that 0.850 was the cut-off for tight discriminant validity and 0.900 the cut-off for liberal discriminant validity (68). Because all of the assessment scales utilized in our research vary from each other, the data used in our study meets discriminant validity standards as per the data given in Table 4 and is eligible for further investigation.

Structural equation modeling

Structural equation modeling (SEM) was used in the Structural model to test the hypotheses, using AMOS 24. As the proposed model contains mediation, the SEM technique was used to analyze all of the paths simultaneously (65, 69, 70). The model fit indices for the structural model are meeting the acceptance criteria as per the information given in Table 5.

Hypothesis testing

The results of the direct effects in structural model are shown in the Table 6.

The SEM statistics show that **H^1 (Social Rewards→Employee Performance)** is rejected on the grounds of significance level, as the SEM results show that the *P*-values of this hypothesis is not significant. These results suggest that social rewards do not have a direct significant positive impact on employee performance. While **H^5 (Psychological Rewards→Employee Performance), H^9 (Employee Motivation→Employee Performance), H^{10} (Employee Satisfaction→Employee Performance)** are accepted on the grounds of significance level, as the SEM results show that the *P*-values of these hypotheses are significant. These

TABLE 7 Results of structural model: indirect effects.

Results of structural model: indirect effects

Hypothesis	Causal path	Lower bound	Upper bound	*P*-value	Standardized estimated
H^2	Social rewards→Employee motivation→Employee performance	0.001	0.057	0.082	0.026
H^3	Social rewards→Employee satisfaction→Employee performance	−0.04	−0.001	0.088	−0.017
H^4	Social rewards→Employee satisfaction→Employee motivation→Employee performance	−0.018	0.000	0.09	−0.023
H^6	Psychological rewards→Employee motivation→Employee performance	0.033	0.13	0.005	0.053
H^7	Psychological rewards →Employee satisfaction→Employee performance	0.03	0.118	0.001	0.044
H^8	Psychological rewards→Employee satisfaction→Employee motivation →Employee performance	0.014	0.054	0.001	0.063

results suggest that these variables have a direct significant positive impact on employee performance.

The results of indirect hypothesis which are shown in Table 7 depicts the complete picture of this research study. The study showed that **H^2 (Social Rewards→Employee Motivation→Employee performance, $\beta = 0.026$, $P = 0.082$)** is insignificant because the *P*-value is more than 0.05. It also suggests that when organizations provide social rewards to their valuable employees, it does not have any kind of significant impact on the performance of their employees while mediated through employee motivation.

The study showed that **H^3 (Social Rewards→Employee Satisfaction→Employee performance, $\beta = -0.017$, $P = 0.088$)** is also insignificant and suggests that when organizations provide social rewards to their valuable employees, it does not have any kind of significant impact on the performance of their employees while mediated through employee satisfaction.

For another hypothesis which is **H^4 (Social Rewards→Employee Satisfaction→Employee Motivation→Employee performance, $\beta = -0.023$, $P = 0.09$)** is also insignificant and suggests that when organizations provide social rewards to their valuable employees, it does not have any kind of significant impact on the performance of their employees while mediated through employee satisfaction and then employee motivation simultaneously.

The study showed that **H^6 (Psychological Rewards→Employee Motivation→Employee performance, $\beta = 0.053$, $P = 0.005$)**. This hypothesis is also significant because the *P*-value is <0.05. It suggests that when organizations provide psychological rewards to their valuable employees, it does have significantly positive impact on the performance of its employees while mediated through employee motivation.

The second hypothesis which is relevant to the psychological rewards is **H^7 (Psychological Rewards→Employee Satisfaction→Employee performance, $\beta = 0.044$, $P = 0.001$)**. This hypothesis is also significant because the *P*-value is <0.05. It suggests that when organizations provide psychological rewards to their valuable employees, it does have significantly positive impact on the performance of its employees while mediated through employee satisfaction.

For last hypothesis which is relevant to the psychological rewards is **H^8** which is determining the results of **(Psychological Rewards→Employee Satisfaction→Employee Motivation→Employee performance, $\beta = 0.001$, $P = 0.063$)**. This hypothesis is also significant because the *P*-value is <0.05. It suggests that when organizations provide psychological rewards to their valuable employees, it does have significantly positive impact on the performance of its employees while mediated through employee satisfaction and then employee motivation.

Discussion

Small family businesses may secure the performance of their employees using psychological incentives while considering employee motivation and pleasure as a mediating component. Considering the findings of this research, we might say that organizations are still reeling from the financial toll that COVID-19 has taken. COVID-19 findings are supported by earlier investigations, despite the lack of COVID-19 circumstances (71, 72). Another study done by Ma et al.

(73) suggests that psychological rewards played a vital role in changing employee behavior toward their organization. They remain loyal to their organizations and their performance continuously upsurges. It is also suggest by De Gieter et al. (74) and Hinds (75) that employee performance resulted through the enhanced employee satisfaction and motivation lead toward the low turnover ratio ensures they have a high level of employee performance, leading to customer satisfaction.

While looking into the results, the answers related to the social rewards are interesting as well as worth noting. The study suggests that the social rewards have insignificant impact on the employee performance while mediated through employee motivation and employee satisfaction. These kinds of results require more in-depth approach to understand the scenario in which the results are gathered. As discussed by Anderson (76), Berman et al. (77), Heerey (78), and Rademacher et al. (79) the social rewards could have a different impact on different respondents in a different geographical, economic and cultural scenario. Social rewards are considered as non-monetary rewards which could be considered as viable solution to boost the performance of employees in an organization while considering this fact that they are already receiving appropriate monetary benefits (80, 81). Introducing social rewards to enhance the employee performance through motivation and satisfaction, in presence of inappropriate monetary benefits could be considered as a non-functional approach in some cases.

Conclusion

It is concluded from the above discussion and findings that small family firms which could be considered as a basic and essential part of any countries' economy is primarily based upon the performance of its employees. If employees are unable to perform well then the organization will not be able to sustain its self in a longer run. It is imperative to keep employees happy and loyal with their organization to work more in the same organization (82), thus generating more productivity and successful work. To complete that kind of task, in a post COVID-19 scenario when organizations are still fighting to maintain sustainable financial stability to run the firm smoothly. They are somehow forced to evaluate the non-monetary rewards in connection with the employee performance due to their lack of financial stability. While the most discussed non-monetary rewards are the social and psychological rewards. According to this study findings, the psychological rewards will help the organizations keep their employee satisfied and motivated enough so they could perform really well for the organization (9, 11). While applying social rewards for the respondents with these psychographic and geographic credentials are not helpful at all. Investing any kind of resources which could include time or research to enhance employee performance will go in vain. It could be possible to apply social rewards in any other psychographic and geographic scenario with positive and significant results, which could lead toward a more accurate path that how the organizations could keep the performance of their employees elevated while considering different non-monetary rewards on their disposal (83).

Managerial implications of the study

This research might also be used to examine the behavior of huge corporations and organizations, such as schools, banks, and airlines. Managers will benefit from this information as they reexamine their management policies related to their employee's management. In order to improve productivity and increase employee loyalty, they may implement a more comprehensive and realistic non-monetary incentives system in their company. Manager, could learn more about the psychological incentives which are needed by the employees of their organizations through this research study. This study also provides guidance to the management of different organizations which have the employees belongs to the demographic profile of the respondents used for this study. In this way they could be able to apply more focus on providing the psychological incentives to its employees rather than focusing upon the social rewards, which according to this study don't have any positive impact on the employee performance through satisfaction or motivation.

Limitations of the study

Because this study was undertaken particularly for small family businesses in a single province, it is unable to be applied to other regions. The study's geographic scope might potentially be seen as a drawback. This research is also constrained by a lack of funding and time. It's also feasible that the findings might vary dramatically over a short period of time of COVID-19 pandemics. Because of their busy schedules, it's possible that workers won't be able to concentrate on this questionnaire. There's no way around it: this restriction is correct. Because of the extreme level of stress they are under in the COVID-19 scenario.

Additionally, they must take care of their personal and family affairs during these frantic times. As a result, gathering the study's data was a very difficult task. In this survey, participants fill out a questionnaire that has been validated, authenticated, and shown trustworthy. The majority of respondents said it was well-written and easy to grasp.

Data availability statement

The datasets presented in this article are not readily available because of the privacy of its respondents. Requests to access the datasets should be directed to MS, waqas_sadiq2011@hotmail.com.

Author contributions

MS, JH, and CH: conceptualization. MS and MA: data curation. MS and JH: formal analysis, validation, and writing—review and editing. CH and MA: methodology and supervision. MS, JH, and MA: writing—original draft. All authors have read and approved the final version of the manuscript.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Occupational stress and health risk of employees working in the garments sector of Bangladesh: An empirical study

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The present study was conducted with a view to examining the impact of occupational stress on employees' health risk. A total number of 350 garment employees (114 supervisors and 236 workers) were selected from 25 readymade garment factories of Dhaka, Narayanganj, and Gazipur industrial areas of Bangladesh on a random sampling basis. Occupational stress was estimated using an ERIs modified questionnaire; when self-reported health problems, work related information and socio-demographic information were obtained using face-to-face interviews using a pre-formed questionnaire. The survey was conducted for 2 years from January 2020 to December 2021 in Dhaka, Narayanganj and Gazipur districts where most of the garment industries in Bangladesh are located. All data were processed by using Statistical Package for Social Sciences (SPSS) and Decision Analyst Stats, Version 2.0. For analyzing data, suitable statistical tools such as two-way ANOVA, *z*-test, chi-square test, Pearson's product-moment correlation, stepwise multiple regressions, and descriptive statistics were used. The results of the present study reveal that the occupational stress had a significant positive influence on health risk. The findings also reveal that both the male and female employees perceived garment job highly stressful and risky for their health causes many dies and sickness, but it was higher among the female employees than their counterparts. Study suggests that due to major illness and diseases garments' employees are lacks of sound health that have to consider remedying for reducing occupational stress and health risk.

KEYWORDS

stress, health risk, garments, occupation, employees

Introduction

Bangladesh's ready-made garments industry started in the sixties. But in the last decade of the 1970s, this industry continued to grow as an export-oriented sector. Garment industry has been playing an impeccable role in the economy of Bangladesh as the number one sector in earning foreign currency (1) with the highest

employment rate. Currently the garment industry accounts for 81.16 percent to total exports valued at USD 31456.73 million in the world as a largest export oriented industry of Bangladesh (2). Bangladesh's ready-made garment industry's strategy is to provide quality clothing at a low price to the world market. The demand for Bangladeshi garments in the international market is increasing day by day due to its producing quality garments and supplying them to the world at comparatively low prices. One of the reasons for the global attention of Bangladesh's garment industry is the empowerment of women and created employment opportunities for a large number of women workers (3). Over the past few decades Bangladesh's garment industry has been able to come to this position as a result of continuous development. The journey of the garment industry was no easy. The journey started with a handful of garment factories. In 1983, the number of garment factories was only 50, in 2000 it increased to 4,000 and in 2009 the number was 4,500 (3). And in the twentieth century the number has risen in FY 2019-20 of 500,000. The garment industry is also a major source of employment for a large number of people in this country. The garment industry in particular continues to play a huge role in employment of women. Eighty (80%) percent of workforce employed in the garment industry is women. The contribution of garment industry to the economy and GDP of Bangladesh is much higher than other sectors. The artisans behind it are a huge workforce in the garment industry, so garment workers are the pride of the nation and its women workers are recognized as the golden girl of the country. Four out of five of the 4.4 million workers employed in the garment industry in Bangladesh are women, so one can often consider issues facing this industry to be feminist issues. That is why the issues of safety, occupational stress and health risks of the labor force engaged in industry come up again and again especially after collapse Rana Plaza Building (4). We know that work and health are closely related. Most of the health problems faced by the garment workers are due to occupational stress including low wages, long working hours, reduced leave, and unhealthy working environment, working conditions, working in a crowded premise, misbehaver of supervisor and lack of safe health facilities. Stephen et al. (5) stated that the deleterious belongings of job stress are acknowledged as a challenge for both employers and employees. Work-related stress has been linked to numerous health hazards. The effects of work-related stress include the impact on workers' satisfaction, productivity, absenteeism, turnover and health (6). Occupational pressures are becoming increasingly important due to the constant changes the organizational structure (7). Garment workers feel a unique feebleness vulnerabilities in the workplace worldwide (8). However, health problems are the most significant among the vulnerabilities that workers face while working in the garment industry in Bangladesh (9). It is evident that Garments sector, workers of Bangladesh are the most affected by the unhygienic and unsafe nature of their workplace conditions (9–11). Nag et al. (12) revealed that the growing world market competitions are utterly affected the health of employees of garments sector that's in the context of Bangladesh. While physical work-related menaces like respiratory disease allied with occupational exposure (13) that have been studied in a limited number of prior researches in the field of RMG (14, 15), psychologically adverse work situations and their potential health effects have been inadequately addressed and have affected mental well-being (7, 16). Present study therefore set out with two objectives. Firstly, we aimed to analyze the level of occupational stress of the garments workers and secondly, to examine the impact of occupational stress on employees' health risk of garment industry in Bangladesh. In addition, in this research the interdisciplinary methodology used may be of concern to impend studies endeavoring to slant work stress as a racially entrenched phenomenon (17).

Literature review

Occupational stress

ILO define that occupational stress is the harmful emotional and psychological responses. Occupational stress is generally acknowledged by organizations that have trends of inefficiency, high turnover, due to absence illness, poor quality of work and increase healthcare costs and reduce employment satisfaction. Occupational stress is an emotional and physical condition, which affects person productivity, efficiency, personal health (18) and its quality work life. The experience of victims of occupational stress at work decreases performance and increase health risks (19, 20). Cao et al. (21) has described that Stress is described as, "a physical or psychological stimulus that can produce mental tension or physiological reactions that may lead to illness the occupational stress adversely affects the health and performance of the employees of an organization. Occupational stress is a complex psychological state of mystery. Occupational stress is a universal and common challenge to organization and employee productivity, it is the reality of modern day workplace (22), Stress contributes to decreased organizational performance, decreased employee overall performance, high error rate and poor quality of work, high staff turnover, and absenteeism (23). Based on Health and Safety Executive (24), role ambiguity, organizational change, job demands, bullying and violence are some of the common stress factors happening in the workplace today (25). Occupational stress is common among garments workers in Bangladesh due to many antecedents of stress (26). Redfearn et al. (27) revealed that occupational stress has a negative impact on life satisfaction (28); the study argued that occupational stress is an important factor in determining the life satisfaction and burnout levels (29). Occupational stress may have a

negative effect on companies, such as increased absenteeism and employee turnover, decreased productivity and rising health care costs (30, 31). World Health Organization's (WHO) definition, occupational or work-related stress is the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope. Denning et al. (15) defines stress as a physical, chemical, or emotional factor that causes physical or emotional arousal and can cause illness. This is a normal reaction when the brain receives a threat. When a threat is felt, the human body secretes hormones that activate its "fight or flight" response. Occupational stress can lead to a person's physical or mental condition in response to the workplace which creates a challenge for that employee. Causes of occupational stress include the environment, organizational climate, and the emergence of conflicts over employee job demands (32).

Demographic factor and occupational stress

Occupational stress is common among garments workers in Bangladesh due to many antecedents of stress (26). Occupational stress and demographic factors are related. Occupational stress of workers of garments industry is sometimes influenced by demographic factors. The availability of the studies among garments employees to detect issues that concomitant with work place stress remain a noteworthy challenges, outcomes from different studies showed that age (33, 34), education (35–37), experience (38, 39), marital status (37) and gender (34) significantly associated with occupational stress. Gebisa (33) found that age positively affect the occupational stress, high aged workers are felt high stress in the work place, it does not help denote positive influences as well as (35). Ajayi (40) argued that occupational stress has a positive association with gender; their study revealed that women workers suffer more from stress at work (41). In one survey 60% of employed women cited stress as their number one problem at work. Another study proved that in garment industry occupational stress are strongly linked to gender (42), and different hierarchical level of workers like workers suffer from greater work pressure than supervisors. Various studies have shown that occupational stress higher where the work experience is more, Personality factors have shown inclination toward stress (43). They also revealed stress related to the worker status and showed an association with education level and the occurrence of occupational stress. Another study (44) found that subordinate's workloads were associated with their leader's stress. Dey et al. (45) found that female workers had significantly more job stress than male workers and lowest salary ranges workers had significantly more job stress than highest salary ranges workers. Aderibigbe et al. (46) studied on occupational stress and found that graduate employees with more work experience expressed a significant higher level of occupational stress than their counterparts with less work experience [$t = 4.43$, $df_{(1,530)}$ $p < 0.05$]. Chandra and Parvez (47) studied effect of occupational stress and found that a negative relationship between demographic factors (age, experience, education and marital status) and stress.

Thus, we propose the following hypothesis:

H1a. Demographic factors and occupational stress have a significant relationship between each other.

H1b. There is no relationship between level of employees and occupational stress.

H1c. There is no relationship between gender and occupational stress.

Job related factor and occupational stress

There is a close relationship between occupational stress and job related factors. Various studies have demonstrated that a positive significant relationship is observed between occupational stress and job related factors like Pay (34, 38), Promotion (48), job status (49), Job security (37), working condition (38). Morke et al. (38) revealed that occupational stress negatively affects work safety, social security, interpersonal relationships in the workplace, conflict of responsibility and uncertainty, lack of autonomy and participation in the workplace, organizational arrangements and environment, career prospects, work and family balance problems, unequal work stress, health and safety risks, low wages etc. Most workers in the workplace face stress with work conditions work stress (50), little control over work; Role ambiguity and conflict, job insecurity; Bad relationships with colleagues and supervisors (51). Murali et al. (52) found that time pressure and role ambiguity have significant and negative influence on employee stress. Some of the recent findings unveiled that workload, time pressure, role conflict, lack of motivation, role ambiguity, reduction of resources, harassment, and many other factors impact employee performance (3). Time pressure seemed to become increasingly a main issue of work in most developing countries (22). Chaturvedi and Kumar (53) and Khan et al. (54) found that workload as a cause of occupational stress. As per Wang et al. (55) occupational stress is high due to the income level of the female workers in the garment sector is very poor. Ashton (56) found that workload, role conflict, and inadequate monitory reward are the prime reasons of causing stress in employees that leads to reduced employee efficiency. Predominantly, the garments sector was one in which workers were heavily influenced by work stress due to job uncertainty, long working hours, overtime, lack of administrative support. Therefore, employers need to identify the symptoms of work stress, and have the necessary knowledge and skills to manage and reduce the stress levels of their employees before the company itself is endangered (34). The study postulated that:

H2. There is no relationship between job related factors and occupational stress.

Demographic factors, job factors and health risk

Workers faced numerous risks such as safety risks, mechanical risks, biological risks, ergonomic, physical risks and psychological risks (7). Many problems of garment workers are getting worse day by day due to occupational stress (23). That's why work environment should be stress free and safe, risks setting up and keeping up an unharmed workplace (57). Furthermore, according to Khan et al. (54) occupational safety and health can also reduce employee injury and illness related costs, including medical care, sick leave and disability benefit costs, etc. Talapatra and Rahman (23) and Chegini et al. (58) revealed some common health hazards of the garments factory premises including excessive sound and temperature, lighting and unclear working environment, exposure to undue vibration and dust, poor ventilation and work safety, and lack of disposal of wastes and effluents. Thatshayini and Rajini (59) also argued same types of health hazards in the garment industry which are liable to physical diseases and mental disorders. Legesse (60) noticed that the personality factors have shown inclination toward stress; stress causes anxiety, and other occupational health risk. It was found that working in garment factories harshly pretentious the health of workers because they were confined to a closed environment (53). The special nature of working on ready-made garments in the study area creates a variety of health risks. Many working conditions contribute to stress among women (61). Enyonam et al. (62) studied on health hazards of female garments' workers and noted that women workers in the garment sector mainly sew clothes and therefore have to breathe in the dust of the clothes which is a risk to their health. Dey et al. (45) showed that job stress was negatively correlated with mental health. Further, many of these health vulnerabilities arise from the nature of the RMG workplace, and include unhygienic and unsafe working environments, hazardous conditions of the factories, and lack of safety equipment (63). Chandra and Parvez (47) argued that workplace stress and female workers' health risk positively associated. Therefore, we proposed that:

H3a. Demographic factors and health risk have a significant relationship between each other.

H3b. Job related factors and health risk have a significant relationship between each other.

H4a. Gender and health risk have a significant relationship between each other

H4b. Level of employee and health risk has a significant relationship between each other

Mediating effect of stress on health risk

Stress is a predictable cause for occupational injuries and health risks. Occupational stress is presently one of the most costly occupational health problems (64). Ornek and Sevim (65) suggested that occupational stress occurs when job demands and responsibilities are not commensurate with employees' abilities or when the time allotted for work is insufficient. Therefore, they cause many negative organizational consequences and unhealthy behaviors. Considered a public health problem due to its impact on workers' health, work-related stress can be seen as an illness that has emerged in modern society. Different reports indicate that workplace stress affects workers' health risk i.e., physical health, mental health, and behavior (33, 66, 67). Stress contributes to decreased organizational performance, decreased employee overall performance, high error rate and poor quality of work, high staff turnover, absenteeism and health risk. Due to occupational stress arise health problems such as anxiety, emotional disorder; work life imbalance; depression and other forms of ailments such as frequent headache; obesity and cardiac arrests. Study found that there are many cardiovascular disease related to stress, with being the main stress-related disease (68). Furthermore, levels of stress-related illness are nearly twice as high for women as for men. It has been observed that garment factory workers are confined in a closed environment which has a detrimental effect on their health. The special nature of the work done in the research area created a variety of health risks for selected respondents such as headaches, malnutrition, muscle aches, eye strain, loss of appetite, chest pain, back pain, unconsciousness, diarrhea, hepatitis (jaundice), food poisoning, asthma, fungal infections, helminthiasis, dermatitis and lose their eyesight (69). The Bureau of Labor Statistics in the US reported that in 2011, 58,860 job-place injuries and illnesses that made workers to absent from work occurred in Hospitals due to occupational stress. Sharif et al. (70) point out that female workers in the garment sector are more likely to feel overwhelmed by work stress, which poses a risk to health and ultimately leads to diseases such as asthma, shortness of breath, shortness of breath and conjunctivitis and visual discomfort. Occupational stress has increased risks of work-related diseases and accidents (71). Hafeez (72) argued that stress effects health and may lead to disease, Stressful working conditions can lead to behavioral, physical, and psychological strains. Stress related disorders encompass a broad array of conditions, including psychological disorders and physical diseases (blood pressure, headaches, diabetes, chronic pain, cardiovascular disease, and gastrointestinal disease. The present study also assessed mediating effect of occupational stress health risks. Thus, this study postulated that:

H5. Occupational stress mediates the effect of health risk on (a) physical diseases (b) mental diseases

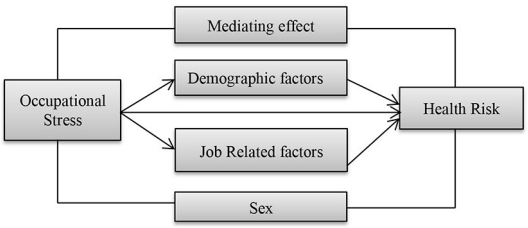

FIGURE 1
Research framework.

H6. Occupational stress and health risk have a significant relationship between each other

Based on the above literature review, this study attempts to draw the following proposed research framework. The proposed structure indicates the effect of occupational stress which ultimately affects the health risks of garment industry workers as shown in Figure 1.

This systematic review emphasis on understanding the effects of occupational stress and the health risks of garment workers. Therefore, this study was conducted to find out the occupational stress and health risks of workers in selected garment factories in Bangladesh due to the importance of occupational health.

Research methodology

Operationalization of constructs

The present study focuses whether occupational stress puts workers at heath risk. The study used Statistical Package for Social Sciences (SPSS) developed by Nie et al. (73). A structured questionnaire was used to collect the relevant data from the respondents which were; Scale for measuring occupational stress (SMOS) (36). Questionnaire for measuring health risk; and Open ended questionnaire for measuring major causes of diseases and major problems related to work. To measure the perceived job stress of the respondents, a single itemed 5-point scale consisting of simple statement ("Is your job stressful?") was used. The respondents would indicate their feeling of stress by checking any one of the five categories of proposed pre-coded answers ranging from "not at all stressful" (1) to "Heavy stressful" (5). Higher scores indicate higher stress and the vice-versa. Different statistical tools ANOVA, Correlation, Regression etc. were used to test the hypothesis. Another measurement scales were developed on the basis of previous studies which are assumes to contribute to the edifice of occupational stress. One of the broadly used stress measurement scale is ERI that modified for this study (74) and measure the workers' occupational stress, Bengali version was used (75, 76). We used modified an eleven-item version of the Effort Reward Imbalance (ERI) (77) (Table 1).

Occupational stress assessment was performed using scientifically verified tools: Karasek's Work Content Questionnaire (JCQ) and Siegrist's Scale. In a combination of the two models, the author attempts to provide a comprehensive overview of multiple factors that affect health in the work environment. The health system included items on self-rated health (SRH) and self-reported physical symptoms (23, 78, 79). The response was delivered using a 5-point liqueur-scale (very good, good, medium, bad, very bad) of health of workers in garment factories in Bangladesh (26, 54).

Survey administration and sample

The Garment Factories are mostly concentrated within the city limits of Dhaka, Chittagong, Narayangangj, and Gajipur in Bangladesh. Presently three types of garment factories are running in Bangladesh such as Woven Garment, Knit Garment, and Sweater Garment. To select the sample factories for the present study, two lists of total Garment Factories were collected from the Bangladesh Garment Manufacturers and Exporters Association (2) and Bangladesh Knit Manufacturers and Exporters Association (80). From these lists 25 Garment Factories were selected randomly as sample covering 10 Woven Garments, 12 Knit Garments, and 3 Sweater Garments factories from Dhaka, Narayanganj, and Gazipur districts of Bangladesh. To make the sample representative total 350 employees including 114 supervisors and 236 workers were selected from above 25 factories considering three sections of each (Table 2).

Several important factors have been considered behind the select of the proposed research areas. For example, firstly, selected areas are known as the estate of garments industry. In 2019, there were about 4.62 thousand garment factories in Bangladesh 85 percent of them are in Dhaka, Narayanganj, and Gazipur, published by Bangladesh Bureau of Statistics Department, March 29, 2021 (81). Secondly, garment factories have been established in all these selected places historically and in the generation to generation inheritably. Thirdly, due to the densely populated areas and the predominance of poor class peoples, there are advantages in providing low to those whose socio-economic status is not better. Formula by Andrew Fisher written permission was taken from the concerned authority of each of the selected garment factories. After getting permission each respondent was contracted personally, and data were collected individually from the respondents after making him/her convinced about the objectives of the study. The sittings were arranged in a suitable room provided by the authority of the factory concerned. Data were collected during the period from July to December 2020 by the researchers. When the respondents faced any

TABLE 1 Overview of the work stress items Modified ERI and SMOS.

Work stress items	Full questions	Source reference
Pay	Are you stressed with the salary/wages that you draw from your present job?	ERI
Promotion	Are you stressed with the promotional opportunity at your present job?	ERI
Job status	Are you stressed with the job status at your present job?	ERI
Job security	Are you stressed with the job security at your present job?	ERI
Working condition	Are you stressed with the working condition of your present job?	ERI
Behavior of boss	Are you stressed with the behavior of your present boss?	ERI
Open communication	Are you stressed with the opportunity for open communication with your present boss?	ERI
Autonomy in work	Are you stressed with the autonomy in work at your present job?	ERI
Recognition for good work	Are you stressed with the recognition that is given for good work at your present job?	ERI
Participation in decision making	Are you stressed with the opportunity of participation in decision making at your present job?	ERI
Relation with colleagues	Are you stressed with the relation with colleagues at your present job?	ERI
Full questions	**Items**	**Source reference**
Is your job stressful?	Not at all stressful	SMOS
Is your job stressful?	Somewhat stressful	SMOS
Is your job stressful?	Quite stressful	SMOS
Is your job stressful?	Very much stressful	SMOS
Is your job stressful?	Extremely stressful	SMOS

TABLE 2 Sample distribution according to type of organizations and level of employees ($N = 350$).

Type of organizations	Level of employees				Total	
	Supervisor		Worker		($N = 350$)	
	No.	%	No.	%	No.	%
Woven	51	14.6	109	31.1	160	45.7
Knit	55	15.7	105	30.0	160	45.7
Sweater	8	2.3	22	6.3	30	8.6
Total	114	32.6	236	67.4	350	100

problem, necessary clarifications were given to them. Employees with less than 2 years of experience were excluded. The interviews were taken during the working hours, lunch hours, and after office hours also. Each subject took about 40–50 min to finish the necessary information required to fill-up the questionnaire.

Reliability and validity

Cronbach's consistency coefficient was employed in this study to examine the reliability and Fornell and Larcker's (82) convergent and discriminant validity test was used to investigate validity of the present study.

According to Cronbach's Alpha results, if the Coefficient Alpha is greater than 0.6 and the Composite Reliability is greater than 0.7, then the Purpose of Scale and questionnaire Used will be reliable. According to Table 3, Occupational Stress and Health Risk Related Measurement Scale and questionnaire have been found fit. In the case of occupational stress, Cronbach Alpha and composite reliability are 0.849 and 0.626, respectively. On the other hand, Cronbach Alpha 0.698 and Composite Reliability 0.69 in case of Health Risk.

According to Fornell and Larcker's formula, the AVE must be at least 0.5 and above for convergent tests. Thus the AVE value of Table 4 accepts convergent validity. On the other hand, the discriminant validity test is also valid because the diagonal value is higher than the off diagonal value.

TABLE 3 Reliability indices.

Components	Cronbach's alpha	Composite reliability	Description
Occupational stress	0.749	0.827	Reliable
Health risk	0.698	0.769	Reliable

TABLE 4 Validity analysis.

Components	AVE	1	2
1. Occupational stress	0.658	0.794	
2. Health risk	0.611	0.762	0.831

Ethical statement

Prior to the commencement of the present study, the approval of the researchers from the academic institution was optional, but they agreed verbally during discussions with the heads of the departments concerned. Permission was obtained from the Bangladesh Garment Industry Regulatory Authority BGMEA during the collection of research data. All participants are asked whether they are willing to participate independently and voluntarily when collecting information in person. They voluntarily provide information without any interference. Necessary information is collected without identifying the names of the participants to ensure that the information provided will be used for research purposes only. Non-interested people are also applauded. However, the research team that assisted the helpers in data collection respectfully acknowledged their time and labor and provided compensation in certain cases. However, the research team recognizes the time and labor of the helpers in respecting the data collection and provides compensation in certain cases.

Data analysis and results

Socio-demographic information of the respondents

It is revealed from Table 5 that 56.00 percent of the respondents were male and the rest 44.00 percent were female. Among the supervisors, 73.68% were male and the remaining 26.32% were female. On the other hand, among the workers 47.46% were male and rest of the 52.54 was female. Among the total respondents, 52.3% were unmarried and the remaining 47.7 percent were married. Among the supervisors, 55.26% were married and rest of the 44.74% was unmarried. On the other hand, among the workers 55.93% were unmarried and the remaining 44.07 % were married. Furthermore, Table 5 reveals that the highest percentage (44.86%) of the respondents was from 22 to 29 age groups. Among the supervisors was 49.1% from 22 to 29 age group. On the other hand, among the workers the highest percentage (44.86%) was from 14 to 21 age groups. It was also observed that average age of the supervisors was higher (27.15) than that of the workers' (23.14).

Again, Table 5 shows that 8.57% of respondents were fully illiterate among 12.3% of the workers was fully illiterate, and the highest number of the respondents (35.71%) was from Class 1–5 (class I-V) 1–5 years of schooling group. It appeared from the Table 5 that the highest (248) number of respondents, (70.86%) income level were Tk.5000–7500 of the supervisors' was higher (3392.54) than that of the workers (3236.02). It is also observed that the second dominating income group (82) of the supervisors and workers was from TK. 7501–10000 (21.43%). Lastly, It is seen from Table 5 that the highest number (153) of the respondents (43.72%) were from 2 to 5 years of experience group where supervisors (48.2%) and workers (41.5%).

Statistical assessment and results

To see whether there is any significant difference and association between occupational stress and demographic factors Siegrist Scale was applied (Table 6).

The results of the Table 6 suggest that there is a significantly associated with age ($P \leq 0.05$) those who are comparatively young age (Mean = 78.55) the felt more occupational stress than higher age (mean = 60.26). According to Siegrist Scale the strongest association observed when considering the level of employees ($P \leq 0.01$) and mean difference between job stress of the workers and supervisor are 60.49 and 58.79 as respondents. Occupational stress is additionally linked to level of education. The application of Siegrist Scale showed that significantly ($p \leq 0.05$) more stress are related to the low educational level (mean = 89.32) but higher educated (mean = 59.38) also have occupational stress ($z = -0.078$). Furthermore, low income level employees are more stressed (66.29) than high income and statistically significant ($p \leq 0.05$). The results also show that the mean difference between job stress of the male

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TABLE 5 Socio-demographic profile of the respondents.

Characteristics	N	%	Characteristics	N	%
Gender			**Marital status**		
Male	196	56.00	Married	167	47.7
Female	154	44.00	Unmarried	183	52.3
Total	350	100.0	Total	350	100.0
Education			**Age**		
Illiterate	30	8.57			
Class 1–5	125	35.71	14–21 years	127	36.28
Class 6–9	96	27.43	22–29 years	157	44.86
S.S.C.	53	15.14	30–38 years	56	16.00
H.S.C.	36	10.29	30 and above	10	2.86
Degree and above	10	2.86	Total	350	100
Total	350	100			
Experiences			**Monthly income**		
2–5 years	153	43.72	Tk.5000–Tk7500	248	70.86
6–9 years	125	35.71	Tk.7501–Tk10000	75	21.43
10–13 years	52	14.86	Tk.10001–Tk12500	15	4.28
14 and above	20	5.71	Tk.12501 and above	12	3.43
Total	350	100	Total	350	100

and female respondents. The direction of the results indicates that occupational stress was significantly ($p \leq 0.01$) higher among the female respondents than that of their counterparts. But marital status and occupational stress are not significantly associated even though unmarried (77.05%) employees are more stressed than married. The Result of the Table 6 also reveals that there was a significant mean difference of occupational stress between the supervisors and workers. The direction of the results indicates that occupational stress was significantly higher among the workers than that of the supervisors.

The response patters of the respondents according to their occupational stress also assessed and the results are show in Table 7.

The above Table 7 shows that 68.4% of the supervisors expressed that their job was very much stressful and 30 and 29% of the workers expressed that their job was very much stressful and extremely stressful, respectively. On the other hand, 58.8 and 76.2% of the supervisors of Woven & Knit and Sweater Garments expressed that their job was very much stressful, respectively. But, 50.5% of the Woven Garments workers opined that their job was extremely stressful while, 48% of the Knit and Sweater Garments workers perceived that their job was not at all stressful. Table 7 also shows that respondents opined regarding stress related questions, only 1 (0.9) respondent agreed that not at all stressful in garment industry. But all the workers have admitted that there is more or less work in the garment industry. However, a large number of workers (68.4%) opined that the occupational stress in the garment industry is too mush (very much stressful). The results suggested statistically significant of all items of response pattern for measuring occupational stress ($P < 0.05$).

The comparisons between the type of organizations (Woven and Knit and Sweater Garment) and level of employees (Supervisors and Workers) on job stress, and the ANOVA results to these effects are presented in Table 8.

A close study of Table 8 reveals that the main effects and the interactions, if any, between type of organizations (Woven and Knit and Sweater) and level of employees (Supervisor and Worker) on job stress. It is evident from the results that F-ratios for two-way interactions and for the main effects of type of organizations and level of employees were statistically significant. This means that both the independent variables individually and interactionally produce significant difference on occupational stress.

Rates of agreement with the individual work stress items can be found in Table 9 shows that the rates of agreement with the individual work stress items. Pay, Job security and Participation in decision making were each stated by about 90% of the participants. It's observed that promotion, job status and autonomy in work support in either the foremen or workers were reported by about 70%. The results in the above table also indicate that significantly higher numbers of the respondents were stressed with their job security, pay, participation in management, promotional opportunity, autonomy in work, and job status. However, significantly higher numbers of respondents were not stressed with their behavior of boss, working condition, open communication, and recognition for work.

TABLE 6 Occupational stress based on Siegrist Scale and distribution of demographic factors.

Variables	No stress N (%)	Stress N (%)	Mean	S.D.	z	Chi-square	*P*-value
Age							
14–30	103(30.29)	237(69.71)	78.55	7.00	−2.26	29.92	<0.05
30 above	2(20)	8(80)	60.26	7.11			
Experience							
2–13 years	111(33.64)	219(66.36)	69.43	7.35	0.284	1.819	<0.01
14 and above	5(25)	15(75)	48.21	6.66			
Level education							
Literate to HSC	112(32.94)	228(67.06)	89.32	6.24	−0.078	119.52	<0.05
Graduation and above	3(30)	7(70)	59.38	8.00			
Level of employee							
Workers	50(21.19)	186(78.81)	60.49	7.53	2.12	-	<0.05
Supervisor	71(62.28)	43(37.72)	58.79	6.82			
Marital status							
Married	93(55.69)	74(44.31)	59.76	6.41	1.05	-	NS
Unmarried	42(22.95)	141(77.05)	58.96	7.66			
Gender							
Male	82(41.84)	114(58.16)	3.13	1.56	−6.83	-	<0.01
Female	14(9.09)	140(90.91)	4.11	0.097			
Income	118(33.71)	232(66.29)	59.25	6.72	−0.359	-	<0.05

It is observed from the Table 9 that mean overall job satisfaction of the stressed respondents was significantly higher than that of those who were not stressed with the specific aspects of job, except only one job factor i.e., relation with colleagues.

To see whether there is any significant difference of the mean health risk of the level of workers (supervisors and workers) and, male and female respondents' *z*-test was applied and the results are shown in Table 10.

Table 10 showed that 90.29% of the respondents opined that the workers in the garment industry work under extreme health risks whereas only 9.71% of the workers believed that there is no such health risk that are statistically significant ($P < 0.05$). Furthermore, 220 workers (93.22%) orated they are at health risk and only 16 (6.78%) workers believed there is no health risk in the garment industry. On the other hand, total 96 (84.21%) supervisors commented that they work in the garment industry within health risk. However, the study found that the health risks of workers are higher than supervisors and was a significant difference between health risk of the workers and supervisors. The results of the Table 10 suggest that there was a significant mean difference between health risk of the male and female respondents. The direction of the results indicates that health risk was significantly higher among the female respondents than that of their counterparts.

The comparisons between the type of organizations (Woven and Knit and Sweater Garment) and basis of job stress on health risk, and the ANOVA results to this effect are presented in Table 11.

A close study of Table 11 reveals that the main effects (i.e., type of organizations and basis of occupational stress) were significant on health risk. The significant results suggest that type of organization and basis of occupational stress individually produce significant difference on health risk ($p < 0.01$).

The general illness as faced by the respondents according to the level of employees and type of organizations were seen and the findings are show in the Table 12.

It appears from the findings (Table 12) that the major illnesses as faced by the Woven Garment supervisors were: headache (47.1%), weakness (43.1%), body pain (41.2%) eye trouble (33.3%), and mental pressure (74.51). While, the major illnesses as faced by the Knit and Sweater Garment supervisors were: headache (47.6%), weakness (38.1%), eye trouble (36.5%), body pain (33.3%), and mental pressure (46.03). On the other hand, major illnesses as faced by the Woven Garment workers were: weakness (46.8%), body pain (39.4%), headache (33.0%), cold and cough (24.8%), and mental pressure (79.82). While, the major illnesses faced by the Knit and Sweater Garment workers were: weakness (44.9%), headache (40.9%), eye trouble, and body pain (26.8), and cold and cough (17.3%), mental pressure (73.23).

The diseases frequently attack the respondents according to the level of employees and type of organizations was also assessed and the results are show in the Table 13.

It appears from the findings (Table 13) that 75.4% Woven Garment supervisors did not suffer from any diseases. The major diseases as suffered by the Woven Garment supervisors

TABLE 7 Response patterns of the employees on the Occupational Stress based on Scale for measuring occupational stress (SMOS); ($N = 350$).

Response patterns	Woven garment ($N = 160$)		Knit and sweater garment ($N = 190$)		Total respondents ($N = 350$)	
	Supervisor ($N = 51$)	Worker ($N = 109$)	Supervisor ($N = 63$)	Worker ($N = 127$)	Supervisor ($N = 114$)	Worker ($N = 236$)
Not at all	0	1	1	61	1	62
stressful	0	−0.9	−1.6	−48	−0.9	−26.3
Some what	1	1	0	18	1	19
stressful	−2	−0.9	0	−14.2	−0.9	−8.1
Quite	3	11	3	4	6	15
stressful	−5.9	−10.1	−4.8	−3.1	−5.3	−6.4
Very much	30	41	48	30	78	71
stressful	−58.8	−37.6	−76.2	−23.6	−68.4	−30.1
Extremely	17	55	11	14	28	69
stressful	−33.3	−50.5	−17.5	−11	−24.6	−29.2
Total	51	109	63	127	114	236
	−100	−100	−100	−100	−100	−100

Response patterns	Total respondents ($N = 350$)		Z-value	p
	Yes	No		
1. Not at all stressful	1(0.9)	62(26.3)	0.588	(P<0.05)
2. Somewhat stressful	1(0.9)	19(8.1)	0.342	(P<0.05)
3. Quite stressful	6(5.3)	15(6.4)	0.648	(P<0.05)
4. Very much stressful	78(68.4)	71(30.1)	4.679	(P<0.05)
5. Extremely stressful	28(24.6)	69(29.2)	0.397	(P<0.05)

Figures in the parentheses indicate percentage.

TABLE 8 Summary of two-way ANOVA for nature of occupational stress by type of organizations and level of employees ($N = 350$).

Sources of variation	Sum of square	df.	Mean square	F	P
Main effects (combined)	229.26	2	114.63	98.20	<0.01
Type of organizations	168.41	1	168.45	144.27	<0.01
Level of employees	60.85	1	60.85	52.13	<0.01
2-way interactions	64.98	1	64.98	55.67	<0.01
Residual	403.88	346	1.17		
Total	698.12	349	2.00		

were diarrhea (11.8%), pox (9.8%), and female diseases (7.8%). While, (84.1%) Knit and Sweater Garment supervisors did not suffer from any disease. The major diseases suffered by the Knit and Sweater Garments supervisors were diarrhea (7.9%), and pox (4.8%). On the other hand, 70.6% Woven Garment workers suffered from no disease. The major diseases suffered by the Woven Garment workers were pox (11.0%), female diseases (9.2%), and jaundice & typhoid (7.3%). While, (71.7%) Knit and Sweater Garments workers suffered from no diseases. The major diseases as suffered by the Knit and Sweater Garments workers were diarrhea (11.8%), and pox (9.4%).

The interrelationships of some of the major variables of all 350 respondents (age, education, total income, work experience, nature of occupational stress, and health risk) find the nature and extent of the correlation that exists between those variables.

The results of the Table 14 reveal that there are significant positive correlations between age and total income, age and work experience, age and job stress, age and health risk, total income and education, total income and work experience, health

TABLE 9 Deals with individual occupational stress items ($n = 350$).

Work stress items	Full questions	Source reference (Yes)	Source reference (No)	*P*
Pay	Are you stressed with the salary/wages that you draw from your present job?	331 −94.57	19 −5.43	<0.01
Promotion	Are you stressed with the promotional opportunity at your present job?	245 −70	105 −30	<0.01
Job status	Are you stressed with the job status at your present job?	217 −62	133 −38	<0.01
Job security	Are you stressed with the job security at your present job?	338 −96.57	12 −3.43	<0.01
Working condition	Are you stressed with the working condition of your present job?	145 −41.43	205 −58.57	<0.01
Behavior of boss	Are you stressed with the behavior of your present boss?	139 −39.71	211 −60.29	<0.01
Open communication	Are you stressed with the opportunity for open communication with your present boss?	160 −45.71	190 −54.29	<0.01
Autonomy in work	Are you stressed with the autonomy in work at your present job?	233 −66.57	117 −33.43	<0.01
Recognition for good work	Are you stressed with the recognition that is given for good work at your present job?	166 −47.43	184 −52.57	<0.01
Participation in decision making	Are you stressed with the opportunity of participation in decision making at your present job?	291 −83.14	59 −16.86	<0.01
Relation with colleagues	Are you stressed with the relation with colleagues at your present job?	16 −4.57	334 −95.43	N. S.

risk and work experience; but there were significant negative correlations between education and work experience, job stress and total income, job stress and work experience. It also reveals that there is significant positive correlation between, job stress and health risk.

The results in Table 15 show that There was positive significant correlation between occupational stress and health risk (0.567***). Positive significant correlation had been found among almost all job facets and occupational stress except relation with colleagues and promotion. There was significant positive correlation among health risk and promotion, health risk and pay, health risk and job status, health risk and promotion, health risk and working conditions, health risk and behavior of boss, health risk and autonomy in work, and health risk and participation in decision making.

To observe as consider the contribution of independent variables (occupational stress) on a dependent variable: health risk; inter-correlations between the variables were studied. The

TABLE 10 Mean difference of health risk according personal factors of respondents based on Siegrist Scale ($N = 350$).

Variables	No health risk N (%)	Health risk N (%)	Mean	S.D.	z	df	P-value
Respondents' opinion	34(9.71)	316(90.29)	175	199.40	11.80	348	<0.05
Level of employee							
Workers	16(6.78)	220(93.22)	118	144.25	10.08	358	<0.05
Supervisor	18(15.79)	96(84.21)	57	55.15	5.98		
Marital status							
Male	19(9.69)	177(90.31)	98	111.72	8.378		<0.05
Female	15(9.74)	139(90.26)	77	87.68	7.94	358	

TABLE 11 Summary of two-way ANOVA for nature of health risk by type of organizations and basis of job stress of employees ($N = 350$).

Sources of variation	Sum of square	df.	Mean square	f	P
Main effects (combined)	558.502	2	279.251	694.050	<0.01
Type of organizations	168.405	1	168.405	418.553	<0.01
Basis of occupational stress	390.097	1	390.097	969.546	<0.01
2-way interactions	68.67	1	67.75	56.94	<0.01
Residual	139.615	347	0.402		
Total	698.117	349	2.000		

results of inter-correlation and contribution of independent variables on dependent variables are shown in Table 16.

The results in the Table 16 indicates the correlation between health risk & occupational stress, it show the following significant correlation for workers: There was positive significant correlation between occupational stress and health risk. Positive significant correlation had been found between occupational stress and health risk.

Since, correlation between occupational stress and health risk is statistically significant, so linear regression analysis can be performed. These are shown in Table 17.

Since, P-value of F-statistic is significant, so overall model is significant. In addition, significant P-value of Beta indicates that occupational stress has significant positive influence on health risk (Table 17).

Discussion

There are 6 hypothesis were formulated on the basis of the review of literatures and in the light of the objectives of the present study stated earlier. The findings of the present study will be discussed in accordance with each hypothesis.

The results suggest that the out of five personal factors that are age, education, experience, and gender and income status had significant influence on job stress (35). Tables 6, 14 shows that there was significant difference between age group and stress level of the respondents; the results also indicated that the total 69.71% of the respondents was faced highly stress. The results revealed from Table 6 that there is no significant influence of the marital status on job stress but unmarried employees (141 = 77.05%) are more stressed and unhappy. Income level and occupational stress are found positive significant relationship. The work stress of low income workers is high whereas high income workers suffer less from work stress (43). The Tables 6, 14 also found that the stress level was significantly different among level of education. The table further implies that stress level was significantly different among level of experience. Thus, the results confirmed the 1st hypothesis. Several studies in home and abroad also found a significant influence of personal factors on the overall job stress e.g., Gebisa et al. (33), Jin et al. (34), Mathangi (37), and Aderibigbe et al. (46) which has confirmed the results of the present study.

Aderibigbe et al. (46) and Jin et al. (34) also found that have the co-relation between employee's personal profile and their stress with the job. Aderibigbe et al. (46) concluded that demographic factors have a role in occupational stress. The results of Table 6 showed that the job stress level was significantly different between workers and supervisor ($z = 2.12$). Out of 236 workers 186 (78.81%) workers opined they have serious occupational stress and out of 114 supervisors 43 (37.72%) supervisors' had work stress. The results in Table 7 showed that based on Scale for measuring occupational stress only 62 workers (26.3%) from three sections of garments industry opined that "not at all stressful" whereas only 0.9% supervisors expressed same opinion like workers. Furthermore, the results (Table 8) provided statistically significant recommendations for all items in the response pattern for occupational stress

TABLE 12 General illnesses as faced by the different category of respondents ($N = 350$).

General illnesses	Woven garment ($N = 160$)		Knit and sweater garment ($N = 190$)		Total respondents (350)	
	Supervisor ($N = 51$)	Worker ($N = 109$)	Supervisor ($N = 63$)	Worker ($N = 127$)	Supervisor ($N = 114$)	Worker ($N = 236$)
1. Headache	24	36	30	52	54	88
	(47.1)	(33.0)	(47.6)	(40.9)	(47.4)	(37.3)
2. Weakness	22	51	24	57	46	108
	(43.1)	(46.8)	(38.1)	(44.9)	(40.4)	(45.8)
3. Fever	8	26	14	32	22	58
	(15.7)	(23.9)	(22.2)	(25.2)	(19.3)	(24.6)
4. Cold and cough	7	27	10	22	17	49
	(13.7)	(24.8)	(15.9)	(17.3)	(14.9)	(20.8)
5. Eye trouble	17	20	23	34	40	54
	(33.3)	(18.3)	(36.5)	(26.8)	(35.1)	(22.9)
6. Body pain	21	43	21	34	42	77
	(41.2)	(39.4)	(33.3)	(26.8)	(36.8)	(32.6)
7. Stomach pain	3	14	3	13	6	27
	(5.9)	(12.8)	(4.8)	(10.2)	(5.3)	(11.4)
8. Mental pressure	38	87	29	93	67	180
	(74.51)	(79.82)	(46.03)	(73.23)	(58.77)	(76.27)

i) Figures in the parentheses indicate percentage.
ii) Each respondent mentioned two major illnesses.

measurement ($p < 0.05$). The F-ratio was statistically significant ($p < 0.01$) for the two-way interaction and the major effects on the level of employees (workers and supervisors). Thus, the results rejected the null hypothesis 1b. Several studies such as Pindek et al. (44), Czuba et al. (31), and Redfearn et al. (29) found similar findings of the present study. Few studies (20, 21) revealed that less powerful employees are more likely to suffer stress than powerful workers and found high occupational stress in junior level. Islam et al. (26); found that in a workplace particularly stress-inducing are high- and low-status workers.

Study found that there is a relationship between gender and occupational stress. The results showed that mean job stress of the female employees was significantly greater than that of the male employees (Table 6), which rejected the null hypothesis number-1c i.e., the results confirmed the alternative hypothesis. Several studies also indicated higher job stress among the female employees than that of the male employees (42, 83). For instance, Khalid (42) found a significantly higher job stress among the female employees than that of the male employees. A female garment worker has to work from 8 a. m. to at least 8 p. m. in their working place (45). In addition, they are to perform their family duties. As a result, they get very little time for taking rest, which might affect both physical and mental health resulting in higher stress.

It is observed from the Table 9 that mean overall job stress of the respondents was significantly higher with the specific aspects of job, except only one job factor such as relation with colleagues. The results suggest that almost all job related factors (pay, open communication, job security, promotion, job status, participation in decision, working conditions, behavior of boss, autonomy in work and recognition for good work) had a significant influence on the job stress except relation with colleagues. Thus, the results rejected the 2nd null hypothesis and confirmed alternative hypothesis there is relationship between jobs related factors and occupational stress. Several investigators i.e., Jin et al. (34) and Jeong et al. (51) found a less or more significant impact of specific job factors on the overall occupational stress of the respondents, which confirmed the findings of the present study.

Demographic factors and health risk have a significant relationship between each other. Table 12 showed that the co-relation matrix indicates clearly the significant association between demographic factors and health risk. Study found positive correlation between health risk and age (0.414*), income (0.017**), and work experience (0.558**). Several studies found same results (7, 23, 53, 59). Thus, hypothesis 3a is accepted. Similarly, the hypothesis 3b also accepted because study found that job related factors and health risk had positive significant correlation. Results of the Table 15 have

TABLE 13 Major diseases frequently attack the different category of respondents ($N = 350$).

Major diseases frequently attack	Woven garment ($N = 160$)		Knit and sweater garment ($N = 190$)		Total respondents (350)	
	Super-visor ($N = 51$)	Worker ($N = 109$)	Super-visor ($N = 63$)	Worker ($N = 127$)	Super-visor ($N = 114$)	Worker ($N = 236$)
1. Female diseases	4	10	0	1	4	11
	(7.8)	(9.2)	(0)	(0.8)	(3.5)	(4.7)
2. Diarrhea	6	6	5	15	11	21
	(11.8)	(5.5)	(7.9)	(11.8)	(9.6)	(8.9)
3. Jaundice	2	8	1	5	3	13
	(3.9)	(7.3)	(1.6)	(3.9)	(2.6)	(5.5)
4. Typhoid	2	8	1	3	3	11
	(3.9)	(7.3)	(1.6)	(2.4)	(2.6)	(4.7)
5. Urinal infection	0	6	0	1	0	7
	(0)	(5.5)	(0)	(0.08)	(0)	(0)
6. Pox	5	12	3	12	8	24
	(9.8)	(11.0)	(4.8)	(9.4)	(7.0)	(10.2)
7. No diseases	40	77	53	91	93	168
	(75.4)	(70.6)	(84.1)	(71.7)	(81.6)	(71.2)

i) Figures in the parentheses indicate percentage.
ii) Each respondent mentioned two major diseases.

TABLE 14 Correlation matrix showing inter-correlations among some selected major variables (age, education, total income, work experience, nature of occupational stress, and health risk) of all the category of respondents taken together ($N = 350$).

Variables	Age	Education	Total income	Work experience	Occupational stress	Health risk
Age	1.00					
Education	0.099	1.00				
Total income	0.322 **	0.156 **	1.00			
Work experience	0.540 **	−0.231**	0.420**	1.00		
Occupational stress	0.534 **	0.103	−0.535**	−0.241 **	1.00	
Health risk	0.414*	−0.054	0.017**	0.558**	0.567**	1.00

*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed).

been found significant positive correlations between almost all aspects of work and professional stress, except relationships and promotion with colleagues. Several studies also supported same results and findings i.e., Mahmud et al. (84), Thatshayini and Rajini (59), Mohibullah et al. (57), Chaturvedi and Kumar (53), and Polat and Kalayci (85).

Table 6 showed that the gender and health risk have a significant relationship between each other. Among the male workers only 19 (9.69%) workers argued that there is no health risk whereas 177 (90.31%) workers believed there is health risk in garments industry. Again, among female workers those 139 (90.26%) workers noticed about health risk availability in the garments factories premises. Hence, the results confirmed the 4a hypothesis. Several studies also found the similar results. For instance, Chandra and Parvez (47) found women workers are more sufferers regarding health risk in garments factories. Some others Studies (59, 63, 84) which confirmed the findings of the present study. There is statistically significant health risks ($P < 0.05$) between supervisors and workers (Table 11). In addition, 220 workers (93.22%) said they were at health risk and only 16 (6.78%) workers believed there was no health risk in the garment industry. On the other hand 96 (84.21%) supervisors commented that they work in the garment industry at health risk (Table 10). Thus, the results confirmed the hypothesis noumber-4b. The findings of the present study supported by the results of some garment related studies [e.g., (7, 53, 54, 86)].

Occupational stress mediates the effect of health risk on physical diseases and mental diseases. The general major

TABLE 15 Correlation matrix among dependent (occupational stress and health risk) and independent (job related factors) variables ($N = 350$).

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1.Occupational stress	1												
2. Health risk	0.567***	1											
3.Pay	0.572***	0.338***	1										
4.Promotion	−0.217**	0.129*	0.205**	1									
5.Job status	413**	0.146*	0.185**	0.405**	1								
6. Job security	0.758***	0.069***	0.13 *	0.190**	0.385**	1							
7. Working condition	0.299**	0.267**	0.140*	0.183**	0.220**	0.276**	1						
8. Behavior of boss	0.208**	0.224**	0.111	0.001	0.116*	0.169**	0.483**	1					
9. Open communicat-ion	0.187**	0.143	0.115*	0.002	0.060	0.007	0.164**	0.432**	1				
10.Autonomy in work	0.321**	0.126*	0.097	0.046	0.103	0.169**	0.140*	0.13*	0.196**	1			
11.Recogniti-on for good work	0.129*	0.099**	0.085	0.195**	0.160**	0.061	0.208**	0.18**	0.225**	0.147*	1		
12.Participat-ion in decision making	0.278**	0.295**	−0.091	0.063	0.043	0.039	0.251**	0.280**	0.183**	0.174**	0.361**	1	
13.Relation with colleagues	0.044	0.041	−156**	−0.007	0.010	−0.019	0.061	0.021	0.013	0.033	0.043	0.130*	1

The * symbol indicate the correlation is significant at the 0.05 level (2-tailed).
The ** and *** indicate the correlation is significant at the 0.01 level (2-tailed).

TABLE 16 Correlation and regression analysis to explore the influence of Occupational stress on health risk.

Variables	Job stress	Health risk
Occupational stress	1	0.567**
Health risk	0.567**	1

**Correlation is significant at the 0.01 level (2-tailed).

illnesses as faced by the respondents due to occupational stress were also studied (Table 12). Again in case of mental pressure total 58.77 percent supervisors and 76.27 percent workers are faced problem. It indicated that the general major illnesses as faced by both the groups were almost same. Several studies [e.g., (64, 67, 68, 78)] also found similar results, which confirmed the findings of the present study. Stressful occupation causes some major diseases, which frequently attacked the respondents, were also investigated. The respondents were asked to mention the two major diseases as faced by them. It appears from the findings that 81.6% supervisors and 71.2% workers were not attacked with any disease at all (Table 13). It indicated that the major diseases as faced by both the groups were almost same. In addition, female employees were suffering from female diseases. Several studies [e.g., (23, 65, 66, 72)] also found similar diseases as faced by the garment employees, which confirmed the findings of the present study. Thus the hypothesis no 5 is accepted (87–91).

Entire the study has proved that occupational stress and health risk have a significant relationship between each other. The results in Tables 11, 15, 16 showed that the direct positively significant association between occupational stress and health risk (0.567**). Correlation and regression analysis also supported same findings (Tables 16, 17). The findings of the present study supported by the results of some recent garment related studies [e.g., (18, 23, 26, 46, 49, 51, 71, 78)]. Hence, the results confirmed the 6th hypothesis.

Conclusion

Garment industry is the single largest foreign exchange earner in Bangladesh. The garments made with the touch of modernity and tradition are not only earning foreign currency but also establishing Bangladesh in the world arena. It is undeniable that employment opportunities are being created for a large number of unemployed people especially women and their contribution to women's empowerment is undeniable. There are no good facilities including salary, there is no suitable healthy working environment. In addition, In addition, various work stressors exist everywhere. Lack of advantageous work environment, lack of proper healthy factory premises and

TABLE 17 Regression analysis to explore the influence of occupational stress on health risk (Regression analysis).

Variable in the equation	R square	F statistic	*P*-value	Beta	*P*-value for Beta
Occupational stress	0.334	90.806	0.000<0.01	0.567	0.000<0.01

incidence of mental abuse is one of the longest standing forms of the garment industry in Bangladesh. Different types of existing problems create work pressure in the garment industry. They suffer from constant work stress which is affecting their physical and mental health. Women workers have higher occupational stress and health risks than male workers and general workers suffer more health risks than supervisors. The present research is being conducted on garment workers to measure the workload of Bangladesh garment workers and to determine what kind of health risks they are facing as a result of work stress. Research has shown that personal factors and job factors are helpful in creating occupational stress. And stress is creating health risks all the time, that's why there are different types of physical diseases and mental problems. Study observed that the stress level was the lowest (30.29%) in the age group of 14–30 years respondents. The results further indicated that 80% of the respondents faced high stress and 20% in the respondents of age groups 30-above years. This study found everyone is worried about income (232 = 66.29%) and have significant relation with experience level. Most of the respondents were argued that they have moderate stress on regarding all education level. There was a significant mean difference in occupational strain between supervisors and workers. Results revealed that both of workers and supervisors are under occupational trauma. the reasons for higher job stress among the female employees were due to multiple roles played by the female employees in their lives. They had to work outside the home, and at the same time they were fully responsible for the household affairs. As to garment employees, these arguments are also applicable. Personal factors and health risk have a significant relationship. It is observed that female workers' health risk is higher than male workers. Results revealed that gender and health risk have a positive significant connection. The findings of the present study observed from Table 8 that only 9.71% respondents argued that there is no health risk but 316 (90.29) employees found health risk. Comparatively workers are victims regarding health risk than supervisors. The respondents were asked to mention two general major illnesses as faced by them. It appears from the findings that the major general illnesses as faced by the supervisors were: headache (47.4%), weakness (40.4%), body pain (36.8%), eye trouble (35.1%), fever (19.3%), and cold and cough (14.9%). On the other hand, major general illnesses as faced by the workers were: weakness (45.8%), headache (37.3%), body pain (32.6%), fever (24.6%), eye trouble (22.9%), and cold and cough (20.8%) The major diseases attacking by the supervisors were: diarrhea (9.6%), pox (7.0%), and female diseases (3.5%). On the other hand, the major diseases attacking the workers were: pox (10.2%), diarrhea (8.9%), jaundice (5.5%), and typhoid and female diseases (4.7%). Current research demonstrates that work stress affects health risks. Excessive stress plays a positive role in creating various health risks and mental problems. It is very unfortunate that the main driving force of the garment industry is the protection of the rights of the working class and no government or non-government organization has come forward to solve the problem. Immediate action is needed to reduce work stress and health risks by improving the work environment. The results of the present study will be able to give some idea about the occupational stress and health risks of the workers. We believe that by implementing these results, the policy makers, sociologists, psychologists, NGOs, women's rights organizations, social workers and the government will play a role in protecting the interests and health of the workers in this industry. This study was conducted at a time when there was an epidemic in the world which was not considered in this study.

Limitations of the study and future research directions

Every scientific and social research has some limitations, considering the limitations the door to future extended research is opened. The current study is not out of bounds and paves the way for future research. There are also limitations to the questionnaire used in the present study. The factors that led to the collection and analysis of the data are largely old-fashioned. There are many more aspects of occupational stress that affect and accelerate stress. Researchers fail to consider possible unique stressors and dangerous working circumstances, which have a significant impact on occupational stress. It is suggested that particular stressors and concerns connected to occupational stress be assessed, including a comprehensive questionnaire covering various areas and dimensions of stress that may improve the interpretation and cross-referencing of data. Self-report based data collecting techniques were also used in this study to measure health risk. Self-report assessments have been shown to suggest biases like acquiescence. Several methodologically biased sources should be taken into account. Determining additional statistical techniques and taking into account the inclusion

of adjuvant scales designed to evaluate and manage potential sources of bias that might affect the outcomes of prognostic and illustrative studies is what we advise for future field research and interventions. The survey was conducted on only 350 respondents in a large sector like garment industry which is one of the weaknesses of the study. Questionnaire and assessment scale was not modern. A longitudinal research might employ qualitative data from questionnaires or some more sophisticated approaches to gain a better understanding of what causes workplace stress. In the future, researchers will be able to provide better analytical results if they conduct research work considering a large number of samples, updated classical measurement scales, detailed facts and contemporary conditions. The present research work has not been financed sufficiently and has not been given enough time to complete. Due to limited funding and time allocation, Due to limited funding and time allocation, it was not possible to expand the research volume. As a r esult, the study was forced to complete a small number of samples in a short period of time. With adequate time and money allocated, the study would probably have had more scientific, promising accurate results.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding authors.

Author contributions

Conceptualization: MG. Data curation: AR. Formal analysis and methodology: MG and AR. Investigation: DY and MAR. Project administration: DY and AR. Resources: BD and MAR. Validation and visualization: DY and BD. Writing—original draft: MG and AR. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Awareness of occupational health hazards and occupational stress among dental care professionals: Evidence from the GCC region

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A hazardous work environment creates critical concerns, and resultantly, workers may suffer from job-related stress. So, this study aimed at identifying the nature of hazards prevailing in dental hospitals and their role in increasing job-related stress. The study also assumes that awareness of the existence of health hazards and their possible risk will originate the stress. To conduct the study, close-ended questionnaires were administered to 300 workers having more than 1 year of experience in Oral and Dental Health Services provided by the Kingdom of Bahrain. In total, 222 responses with an acceptable level of accuracy were included for statistical treatment. Results confirmed the prevalence of ergonomic, biological, physical, and, to some extent, chemical hazards in the workplace. Results revealed that stress befalls the employees as they know their exposure to these hazards. Ergonomic hazards have the highest prevalence, chemical hazards are the least prevalent, while biological and physical hazards fall in between. This study enriches the related bank of literature by tapping the hazards specifically in the dental hospitals' environment with the degree of intensity of their prevalence within the context at hand. The study of the impact of these workplace health hazards on occupational stress with mediating effect of awareness is also an addition to the existing literature. The findings may help hospital administrators to take correct measures to manage job-related stress that is counterproductive and take remedial steps to mitigate these hazards.

KEYWORDS

occupational hazards, dental professionals, ergonomics, safe environment, GCC region

Introduction

Prevalence of workplace safety issues is a common phenomenon in the world, and it is more serious in developing regions in particular. Many employees may get affected physically and mentally due to working in an unsafe work environment and may carry the consequences to their families and immediate social circles. An occupational hazard is an injury or ailment resulting from the work one does or from the surrounding

in which one works (1–3). The consequences of workplace hazards could be trauma, even posttraumatic stress disorder (PTSD), loss of dignity, anxiety, depression, suicide attempt, decreased self-esteem, lack of trust in people, premature aging, losing autonomy, injuries, absenteeism, and physical and musculoskeletal injuries (4, 5).

The environment of a dental hospital is a complex setting. Medicines, chemicals, blood, waste disposal, laboratory, laundry, engineering, sanitation, maintenance, and other services enable the provision of dental care services (6). According to the literature on occupational hazards, research carried out on employees exposed to gold or mercury, mostly in dental hospitals, reveals that workplace risk from metallic and organic mercury exists in the ecosphere, and genetic elements are precarious in shaping resistance or risk sensitivity (4, 7). Sodium hypochlorite is usually used in endodontic therapy to dissolve organic elements and eradicate microbes (6, 7). Musculoskeletal complications are common among the employees of dental hospitals (8, 9). The effect of workplace hazards begins with the entry of a student into a dental college, with 79% of students complaining of back or neck pain at the undergraduate level in UK dental schools (8, 10). However, the (11) reported that the effect of ergonomic involvement in managing musculoskeletal illnesses among dental professionals is insignificant (11). The predominant sources of biological hazards are injury due to needle prick (80%) followed by the risk of contaminated substances (75%), whereas the most prevalent non-biological risks are back-ached (79%) followed by extra work hours (72%) (12, 13).

Working in a dental hospital is a stressful occupation. Curing and caring for distressful patients, increasing workload, and a hazardous work environment consistently make service providers stressed (14, 15). Stress itself is an emotional, mental, or physical factor that produces mental or physical strain. Occupational stress is psychosomatic stress related to one's job (16). Workplace stress usually comes from demands that don't match a person's abilities, knowledge, and skills (10). What one perceives as a threat or a danger can be perceived as a challenge or motivation by someone else (17). Work-related stress is common in dental hospitals and may compromise both the health of the staff working at health services and the quality of the work for the patients they serve (5). The corresponding productivity losses have economic implications for the employer of a health service. When occupational stress is caused, for example, by a physical agent, it is paramount to eradicate it at the source(s) (18). Studies have been carried out to show that employee awareness of occupational hazards positively affects employee stress levels; however, it is seen that stress levels are more in employees who have experienced hazards at work (19). According to a study, employees are less likely to experience work-related stress when demands and pressures of work are matched to their knowledge and abilities, control can be exercised over their work and the way they do it, support is received from supervisors and colleagues, and participation in decisions that concern their jobs is provided (10, 17).

The aim of this study is the context (Bahrain) where, to the best of our knowledge, such kind of research is scarce. The context is not identical to others in terms of infrastructure, resources, human development, and culture. Being in an emerging country, dental hospitals in Bahrain are possibly more prone to environmental hazards, and the workforce is more vulnerable. The study aims at identifying the prevailing hazards and their degree of intensity in dental hospitals. The study also aims to test whether the prevalence of workplace hazards creates work-related stress and whether employees are aware of workplace hazards and their consequences are more stressful. The analysis of mediation in the model is a somewhat novel addition to the literature. So, this study aimed to assess whether occupational hazards at the workplace cause occupational stress and whether awareness regarding occupational hazards mediates occupational stress.

Theory and hypotheses

The relations of stress with occupational hazards and employee awareness have been explained by various theories. The Stress Concept Theory states that the resistance or vulnerability of an employee who is exposed to a stressful stimulus that hosts resistance is a crucial factor in the outcome of stress or the effect of stress on health (20, 21). Two factors are central in defining the intensity of a person's host resistance: the capacity to cope and social support (20, 22). Accident Theory that unifies productivity and safety together defines risk as a phenomenon attached to negative outcomes such as loss, damage, and regret (23, 24). In workplace health and safety (WHS) management, it is produced by the incidence of hazards that may generate harmful consequences such as injury or damage to property/environment (25, 26). Likewise, the Domino Theory of Safety says that it is the series of happenings that leads to an incident (27). The possible injury occurs as a result of an injury (Final Domino). An accident only occurs as a consequence of a mechanical or personal hazard. Hazards only arise as a result of the faults of people. People's faults are inherited and educated (22, 28). So, elimination of a visual domino caused the effect not to happen, and it is possible by training employees and making them aware of hazards in the work environment (29, 30). The ABC Theory states that the attitude, behavior, and conditions that follow due to risk factors encountered result in a change of behavior. In fact, everyone is motivated differently, and thus, understanding safety motivation in individuals becomes critical for long-term change of behavior (21, 29). The theory states that the typical hazards are structural, biological, mechanical, electrical, chemical, and physical hazards (29, 31).

Since this article focuses on the effect of occupational hazards on occupational stress with mediating role of employee awareness, Accident Theory, Domino Theory of Safety, and Stress Concept Theory provide a basis for this study because they state that to minimize hazards in the workplace, they need to be identified and eliminated. Risks include mechanical, chemical, and psychosocial hazards. Domino Theory states that hazards at the workplace can be minimized by staff training and being aware of their surroundings. Stress Concept Theory states that host factors need to be taken into account when assessing stress. Our assumption focuses on making employees aware of policies and procedures at the workplace to reduce occupational hazards encountered.

Conceptual definition of variables

Occupational hazard

Occupational hazard is the independent variable, which includes chemical, physical, biological, and psychosocial hazards. These hazards are the potential causes of injuries in the workplace.

Chemical hazards include questions on dental allergies and eye/mouth splashes or injuries (32).

Biological hazards include questions on needle stick/sharps injuries leading to infectious diseases like HIV/Hepatitis (33).

Ergonomics include musculoskeletal injuries. Questions were related to back pain and sprains. Dentists are most prone to these injuries due to the posture in which they sit in dental chairs (34).

Physical hazards include questions on electric and safety wiring and physical obstacles at the workplace (35).

Occupational stress

Occupational stress is the dependent variable. It is defined as a cognitive state that occurs when the demands of a job are not aligned with the capabilities, knowledge, resources, and needs of the employee (36).

Employee awareness

Employee awareness is the mediating variable that explains the relationship between occupational hazards and stress (37). Employee awareness refers to the degree of employee knowledge and behavior related to workplace health and safety (38).

Hypotheses

Keeping in view the underlying assumption of Stress Concept Theory, it is stated that the vulnerability of employees who are exposed to undesirable environmental stimuli and the host resistance is a crucial factor in producing stress. In this scenario, dentists are exposed to workplace health hazards that stimulate stress in employees. Thus, this hypothesis is formulated:

Hypothesis 1: Employees who are engaged in the treatment of patients in dental hospitals suffer from job-related stress due to the existence of workplace health hazards.

ABC theory mainly helps us understand the meanings of our reactions to adversity. This promotes the belief that external conditions are cognitively evaluated, and consequently, specific mental and emotional reactions come into play. It is assumed that employees' awareness of the prevalence of workplace hazards will augment employees' job-related stress levels; however, the literature reveals that a large number of employees were not aware of the prevalence of health hazards in the workplace (36, 39, 40). It is also assumed that awareness of workplace health hazards will moderate the relationship between the prevalence of health hazards and the level of occupational stress. Thus, the following two hypotheses are developed:

Hypothesis 2: The level of job-related stress increases as employees' awareness of the prevalence of workplace health hazards.

Hypothesis 3: Employees' awareness of workplace health hazards mediates the relationship between workplace hazards and occupational stress.

Figure 1 shows schematic view of the connection of variables and hypotheses.

Methodology

Research design

This is a quantitative, explanatory, and cross-sectional study. Survey design is used to gather data from the employees working in dental hospitals in the metropolitan city of Bahrain. Due to patient overpopulation, health hazards are likely to increase. Data were gathered from the employees associated with Oral and Dental Health Services, managed by the Ministry of Health, Kingdom of Bahrain. Three hundred healthcare workers having more than 1 year of experience were randomly selected for the sample; 239 questionnaires were received back, and 222 questionnaires accurate from all respects were included for analysis. A list of 1,728 employees was provided as the total human resource strength working in oral and dental facilities. Thus, this list was used as a sample frame to randomly select the sample.

Before data collection, the authors contacted the administrators seeking permission to collect data from their employees. A written guarantee was submitted to the

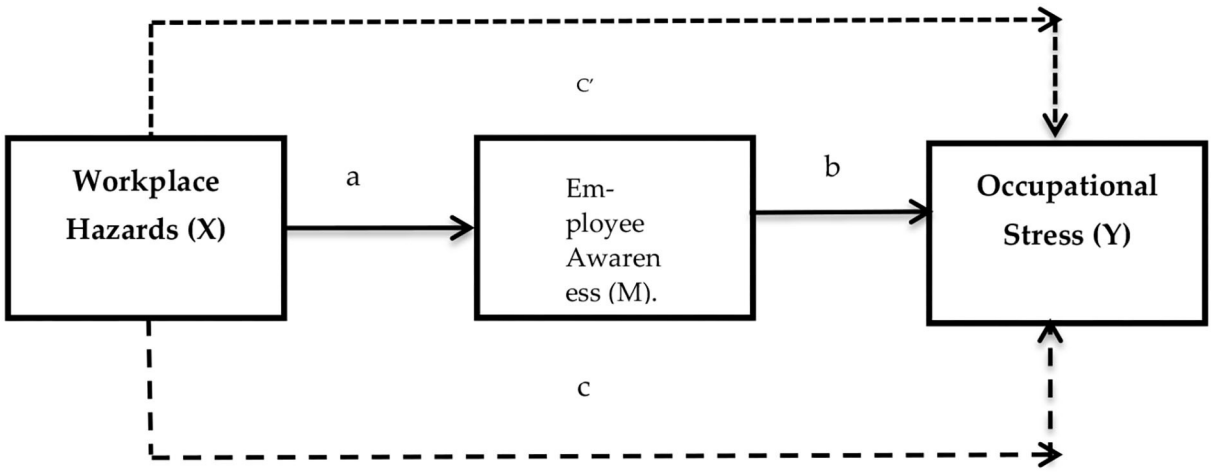

FIGURE 1
Proposed research model.

relevant body to maintain ethical standards during data collection. Furthermore, the author obtained an informed consent form from each respondent for voluntary participation in the survey. In the face of the COVID-19 pandemic hospital, administrators were kind enough to instruct their HR departments to administer questionnaires to their selected employees on behalf of the author. In this way, the stay of the author in hospital for several hours and personal contact with each employee were avoided, and observance of SOPs against pandemics was maintained. In this regard, each hospital nominated four persons for data collection. The author provided necessary brief training to them on how to collect data through questionnaires. This study was conducted as per the ethical guidelines given in Helsinki Declaration (41).

Measurement of instrument

The scale (questionnaire) had forty-four items (questions) that were responded to on a five-point Likert-type scale; 21 items for occupational hazards, 12 items for employee awareness, and 10 items for job stress were in the questionnaire. A questionnaire for occupational hazards was adopted from Viragi et al. (42), employee awareness was taken from NIOSH (43), and job stress was adopted from HSE (44). Table 1 in Annexure exhibits variables and the questions that measure them. Since standard instruments were adopted with already determined reliability coefficient, the instruments were presumed to be reliable. For the sake of this study, internal reliability analysis tests were run again to establish the reliability of instruments. The reliability test also confirmed the instrument was reliable for all the variables. Cronbach's alpha and composite reliability for chemical hazard were 0.686 and 0.724, respectively; for physical hazard were 0.630 and 0.699, respectively; for biological hazard were 0.721 and 0.802, respectively; for ergonomics were 0.724 and 0.794, respectively; for awareness were 0.865 and 0.895, respectively; and for stress were 0.756 and 0.752, respectively. Since all the scores are beyond 0.65, they are considered to be reliable.

Analysis of data

Inferential statistics were applied to analyze the data. Partial least square (PLS) was used for structural equation modeling (SEM). This method allows researchers to analyze structural components (path model) and measurement components (factor model) in one model simultaneously (45). So, SEM draws an all-inclusive picture of the validity, reliability, and causality (46).

Although the instrument was adopted with already verified reliability and validity, to be on the safer side, further tests were applied to establish the quality of the data. Besides Cronbach's alpha and composite reliability tests, the AVE test was used to check convergent validity. Discriminant validity was established using MTHT and Fornell-Larcker methods. Autocorrelation, multicollinearity, and common method bias (CBM) were also checked through different tests. All these tests confirmed that the data were free from any discrepancy. A latent variables correlation test was run to check the association of variables, while R Square was used to determine the collective effect of the independent variables on the dependent variable. Path

TABLE 1 Latent variable correlation.

	Physical	Awareness	Biological	Chemical	Ergonomic	Job Stress
Physical	1					
Awareness	0.387	1				
Biological	0.352	0.476	1			
Chemical	0.578	0.419	0.487	1		
Ergonomic	0.251	0.525	0.289	0.276	1	
Job Stress	0.393	0.649	0.450	0.335	0.482	1

The value of R square explains that 42.5% variation in criterion variable is explained by exogenous variables included in Table 2.

coefficient (Regression) was applied to test the hypotheses, and indirect effects were applied to test mediation.

Results

Demographics and quality control

Composition of respondents

The demographics of the sample were 44.1% males and 55.9% females. According to positions, 182 were general dentists, 6 were associate professors/principals, 7 were assistant professors, 20 were demonstrators, and 5 were dental technicians. As per age details, 9% of the participants were aged <23 years, 60% were aged between 24 and 35 years, 25% were aged between 31 and 35 years, and 5% were aged between 41 and 57 years. For job experience, 70% of respondents had 1–2 years of experience, 20% had 2–6 years of experience, and 10% had 8–34 years of experience. According to the nature of the hospital, 70% of participants work in the private sector and 30% work in the government sector.

Reliability

Cronbach's alpha and composite reliability scores were used to determine the reliability of the instrument (shown in Table 2 in the Annexure). All the Cronbach's alpha values were higher than 0.7 indicating high internal consistency except for physical hazards 0.63 and chemical hazards 0.69 although which is close to 0.7 and hence can be considered reliable. The values of composite reliability ensured instrument reliability as they were around or above the cutoff value which was 0.70. VIF values confirm that the data used are free of multicollinearity and common method bias (CMB). The occurrence of VIF >10 indicates the existence of multicollinearity (47), while VIF values >3.3 are proposed as an indication that a model may be contaminated by common method bias. Therefore, if all the VIFs resulting from a full collinearity test are equal to or <3.3, the model will be considered free of common method bias (48). All the VIFs extracted from our data have values <3.3 as shown in Table 3 in the Annexure.

Validity

The values of average variance extracted (AVE) were used to determine convergent validity (Table 2 in Annexure). All the AVE scores are higher than the threshold value (0.5), and thus, convergent validity is ensured. Fornell-Larcker criterion and Heterotrait-Monotrait (HTMT) ratio were used to measure discriminant validity. Assessment of discriminant validity is a must in any research that involves latent variables for the prevention of multicollinearity issues (49–51). Fornell-Larcker criterion is the most widely used method for this purpose (49, 50). It compares the square root of the value of each average variance extracted (AVE) in the diagonal with the coefficient of correlation of latent variable (off-diagonal) for each variable in the related columns and rows (50, 51). A variable must explain the variance of its indicators better than the variance of other latent variables. Thus, the square root AVE of each construct must have a greater score than the correlations coefficient of other latent variables. In our case, the square root of each AVE of a construct is greater than the correlation coefficients of other constructs as shown in Table 4 in Annexure. So, discriminant validity is established as per the Fornell-Larcker criterion. Discriminant validity is also measured by Heterotrait-Monotrait ratio. To meet this criterion, values should be 0.9 or less. For this study, all the values are <0.9 (shown in Table 5 in Annexure), and hence, the criterion is met.

Structural model

Latent variable correlation explains indicator reliability (50). Beta values indicating a correlational relationship among variables are significant (Table 1). Physical and chemical hazards are moderately correlated, while other variables show relatively strong relationships. As no coefficient of correlation is >0.8, the possibility of auto-correlation is ruled out.

The review of path coefficient (Table 3) shows that all the hypotheses have been substantiated except chemical hazards and job stress. It is evident that the majority of employees are aware of health hazards, and this awareness profoundly causes job-related stress. The coefficient indicates that 65% of occupational stress is explained by health hazards, and the *T*-value is 16.33, which is greater than the threshold point (1.96). The relationship

TABLE 3 Path coefficient.

	Original sample (O)	Sample mean (M)	STDEV	T statistics	*P* Values	Decision	Nature of relationship
Awareness -> Job Stress_	0.649	0.655	0.040	16.332	0.000	Supported	Positive
Biological -> Job Stress	0.173	0.178	0.036	4.807	0.000	Supported	Positive
Chemical -> job Stress	0.068	0.072	0.046	1.464	0.144	Not supported	No relationship
Ergonomic -> Job Stress	0.250	0.251	0.044	5.657	0.000	Supported	Positive
Physical -> Job Stress	0.088	0.093	0.039	2.245	0.025	Supported	Positive

TABLE 4 Specific indirect effect.

	Original sample (O)	Sample mean (M)	STDEV	T statistics	*P* Values	Decision
Ergonomic -> Awareness -> Job Stress_	0.385	0.383	0.058	6.616	0.000	Supported
Biological -> Awareness -> Job Stress_	0.266	0.271	0.051	5.187	0.000	Supported
Physical -> Awareness -> Job Stress_	0.112	0.124	0.062	2.528	0.020	Supported
Chemical -> Awareness -> Job Stress_	0.104	0.110	0.070	1.495	0.135	Supported

TABLE 2 R square.

	R square	R square adjusted
Awareness	0.425	0.414
Job Stress_	0.421	0.418

is significant at $P = 0.000$. An ergonomic hazard is the highest stress in the model; 25% of job-related stress is caused by the ergonomic hazard. *T*-value (5.657) and *P*-value (0.000) substantiate the relationship. Biological hazards are the second-highest stressors after ergonomic hazards. *T*-value (4.80) and *P*-value (0.000) show that this relation is significant; however, the beta value (0.173) shows that the intensity of the relationship is not that strong. The hypothesis regarding physical hazards has barely been accepted. *P*-value (0.025) and *T*-statistics (2.245) substantiate the relationship, while the beta value (0.088) shows that the relationship is very weak. The hypothesis regarding chemical hazards has been rejected through all the indicators in the table.

As far as mediation is concerned, awareness mediates the relationship between health hazards (biological, ergonomic, and physical) and occupational stress, while mediation between chemical hazards and occupational hazards is not significant (Table 4). Since the direct relationship of biological, ergonomic, and physical hazards toward occupational stress was significant, however, due to the introduction of mediating variables, the degree of intensity of the relationship has increased. So, the author confidently affirms the existence of partial mediation. The beta value for ergonomic hazards has increased from 0.250 to 0.385; for biological hazards, the beta value has increased from 0.173 to 0.266; and for physical hazards, it has increased from 0.088 to 0.104 after mediation by awareness. In the case of chemical hazards, both the relationships (direct and mediated) remained insignificant.

Discussion

With the support of literature and some hands-on experience, four occupational health hazards were selected for investigation regarding the given context. Literature exhibits quite deep stress among the workers in the dental health industry (52–55) that makes employees demonstrate unproductive or even counterproductive behaviors (56–58). In the same vein, literature regrettably affirms that large numbers of employees are unaware of occupational health hazards and their fatal consequences. Consistent with the Stress Concept Theory, Domino Theory, and ABC Theory, the model designed for the study at hand consisted of health hazards (ergonomic, physical, biological, and chemical), awareness regarding the prevalence of health hazards, and stress borne by the employees of dental hospitals. The services provided by dental hospitals are sensitive and important. Due to their relevance to human health, the quality of service cannot be compromised. The results of the study show that musculoskeletal (ergonomics) causes maximum stress among dental employees working in the selected hospitals. The chemical hazards have a minimum relationship with variables in the study despite previous studies indicating a significant relationship.

Exposure to chemicals such as formaldehyde, ethylene oxide, and antineoplastic drugs has caused many types of oncological diseases such as nasopharyngeal cancers and hematological cancer (29). Exposure to latex and other chemicals in disinfecting and cleaning is linked with work-related asthma (19, 59). Dental professionals are usually vulnerable to a variety of chemicals during their duty hours and

may suffer permanent or temporary injury (60). Employees of dental hospitals mostly experience work-related eczema due to chemical irritation and allergies (61). Exposures to the chemical can initiate from dental materials, where reactive chemicals are released during preparation, polishing, and removal or restorations (62). Other sources of exposure are medical gloves containing rubber, chemicals allergenic latex protein, and different biocides/chemical disinfectants for infection control purposes (63).

The results of the study indicate that the chemical hazard attribute has a 1.04% (beta value) influence on stress at work with mediating role of employee awareness. The *T*-values <0.9 show that this variable has a minimum relationship with other variables in the study, despite some positive relationships between this hazard and stress found in the literature. The reason for this could be that the incidence of allergic reactions is less as allergic-free dental materials are now widely available and used in hospitals. Also, the subject under study dentists is not directly involved in handling chemical materials at the workplace. Many new advancements and research in dentistry have resulted in the formation of dental material with new chemical compositions. This could be the reason for fewer occurrences of chemical hazards in the population under study now.

According to Scully, due to the design of work and the equipment they use, dental professionals are at high risk of sharps injuries caused during any exposure prone procedure (EPP), where the employee's gloved hands can be in contact with the equipment in use, needle tips, or sharp tissues, e.g., spicules of bone or teeth (16). Results of the study showed that biological hazards have a beta value of 26.6%, and so, their effect on stress at work is more than chemical hazards. The reason for the strong relationship between biological hazards and stress is that dentists are more prone to getting infected by instruments as well as patients they treat. Dental professionals are directly involved in handling needles and sharps. The *T*-value of biological hazard is 5.18 (more than 0.9), which shows a strong relation between biological hazards and job stress.

According to the literature review, one comparative study by Rambabu on dentists showed that musculoskeletal diseases were found to be in high frequency among dentists than among other healthcare workers, and 60% of dental professionals reported complaints of more than one site (20). The results of the study show that the ergonomics attribute has a 38.5% (beta value) influence on stress at work with mediating role of employee awareness. Ergonomics or musculoskeletal injuries cause the highest level of stress among dental professionals. The *T*-value of ergonomics is 6.18, which shows a strong relationship between stress and musculoskeletal injuries. This shows that the working posture of dentists makes them prone to these injuries as they have to work in the same posture for long hours. Stress itself is the major cause of the development of musculoskeletal issues. Dentists are more prone to these injuries due to the nature of the job as well as stress. Previous studies in the literature found a strong association of stress with musculoskeletal hazards.

As most of the employees of dental hospitals possess medical knowledge and know the risk factors that exist in their work environment, the knowhow existence and prevalence of health hazards and their potential consequences create stress for the employees at work (64).

It is established that the theories used in the study provided sound bases, and the findings of the study enhanced these theories. The selected workplace hazards including ergonomic, physical, and biological hazards cause stress to the respondents, which depicts the application of Stress Concept Theory to the context as well as the respondents. The results of the study confirm the relevance of ABC Theory to the population under study, as the respondents were aware of the conditions where the existing health hazards had a different attitude and demonstrated a stressful behavior. There is a series of causes that eventually harm workers' health (Domino causation and control) like the existence of health hazards that cause stress and other mental disorders followed by compromised wellbeing. The workers actually experience stress as a result of the presence of health hazards.

Contributions and recommendations

The study identifies the health hazards that exist in the work environment of dental hospitals. The composition of the dental healthcare working environment is not identical to other healthcare organizations. Work setting, posture to work, materials used, and nature of patients and their ailment are different from that of other hospitals, so the intensity of risk of health hazards is also different.

Ergonomic, biological, and physical hazards are more prevalent in the work environment that could harm the health workers. Apart from casting harmful effects on the health of workers, these hazards create stress in them. As most of the employees are educated and aware of the possible prevalence and risk of health hazards, consequently they suffer from stress. Ergonomic and biological hazards had severe prevalence, physical hazards had a moderate prevalence, and chemical hazards had minimum prevalence in these dental hospitals.

The study has significance in terms of its both theoretical and managerial implications. The study showed the least existence of chemical hazards, while literature portrays the otherwise. Due to certain structural interventions, chemical hazards have been reduced to a considerable level. The introduction of employee awareness as a mediating variable presents interesting findings. Employee awareness of workplace hazards makes them careful of keeping themselves safe from these hazards. At the same time, awareness creates job stress, and the stress itself negatively impacts employee wellbeing. On the contrary, unawareness makes employees carefree of workplace hazards falling prey to them. So, in the light of

the results of the study, it is suggested that workers should be given enough awareness of the risk and dangers inherent in their work at the workplace, and through education, some of these accidents could be reduced if not eradicated. Jobs can also be designed in such a way as to remove all inherent potential dangers to make the work secure for employees. Management should work on both addressing workplace issues and creating awareness among employees regarding these hazards.

Recommendations in brief

1. Ergonomic and biological hazards are intensely prevailing in the workplace and need some corrective measures.
2. Causes of the existence of ergonomic and biological hazards need to be explored to take corrective measures.
3. As stress is found among the respondents, it is necessary to adopt stress management strategies.
4. There is a need to make the hospital waste management system more effective. Improper disposal of wastes generates health hazards in the work setting.
5. Workers to ensure the complete observance of standard operating procedures and follow safety measures to avoid many health hazards.
6. Periodic training and workshops on workplace safety measures are to be conducted to enable workers to keep themselves safe from workplace hazards.

Conclusion

The research findings reveal that health workers are exposed to occupational hazards that encompass biological needle stick injuries (viruses, bacteria, and parasites), chemical hazards (drugs and diagnostics), and ergonomic hazards due to poor body postures and irrational work programmed hours. Healthcare workers who encounter patients affected by HIV, TB, and Hepatitis B and C are exposed to these blood-borne infections. The results derived from the study indicate the higher prevalence of back pain among healthcare workers, in contrast to other occupational hazards. Consequently, the study emphasizes the need for organizations to address the issues associated with injuries occurring at the workplace by taking effective preventive measures. Substantial morbidity and mortality among these workers inevitably lead to the loss of skilled personnel, which adversely impacts healthcare services.

The research also brings out the analogy that victims of occupational hazards are more likely to encounter stress while at work. Resultantly, job-related stress is rapidly emerging as the major cause of work-related issues such as depression, anxiety, cardiovascular diseases, and stress-related disorders. The health sector at large and health professionals, in particular, are subject to these issues.

In short, workers irrespective of their field of work, when exposed to these vulnerabilities, inevitably fall prey to varying stress disorders. Hence, the research emphasizes the importance to address this stress-related issue as it not only adversely affects the smooth functioning of the organization but impede both patient care and service. The study shows that employees who are conscious of their surroundings are less prone to hazards and that leads to the fact that the key to preventing hazards is to know your surroundings, formulate policies and standard operating procedures, and periodic awareness training for hazard management. The outcomes derived from this study will supplement future research in this area. The study encompasses the source of hazards, the means to minimize and prevent the occurrence, and the realization of its importance among the health workers.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the author, without undue reservation.

Ethics statement

This study was conducted as per the Ethical guidelines given in Helsinki Declaration. Written informed consent was obtained from all participants for their participation in this study.

Author contributions

The author confirms being the sole contributor of this work and has approved it for publication.

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpubh.2022.922748/full#supplementary-material

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Impact of less social connectedness and fear of COVID-19 test on employees task performance: A multi-mediation model

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The core objective of this study is to examine the impact of less social connectedness and testing fear on employee health. This study also investigates the mediating role of psychological strain between the relationship of less social connectedness, testing fear and employee health. Furthermore, this study also assesses the impact of employee health on employee performance. The study's target audience consisted of employees in the electronics industry in China. The convenience sample method was used in this study to collect data from respondents. Data analysis of this study was performed by using the structural equation modeling technique. The statistical software used for data analysis is Smart PLS 3. The results of this study show that less COVID-19 testing fear has a negatively significant impact on employee health, but less social connectedness has not significant direct impact on employee health. Furthermore, psychological strain was discovered to mediate the relationship between less social connectedness and employee health and testing fear and employee health. In addition, this impact of employee health on employee performance was found significant. This study provides theoretical and practical implications. In the context of practical implications, this study provides valuable insights for the organizational management to develop a healthy and positive working environment and adopt healthy behavior among their employees which ultimately foster their job performance.

KEYWORDS

less social connectedness, testing fear, psychological strain, employee health, employee task performance

Introduction

Pandemic and other stressful life events can have a detrimental impact on an employee's psychological health and task performance. These psychological health disorders include anxiety, stress, cognitive disorientation, social difficulties, and depression (1). Employees who are isolated because of coronavirus disease 19 (COVID-19) feel anxiety, fear, and dissatisfaction. Likewise, uncertainty due to COVID-19 is

linked to substantial changes in daily routines. This uncertainty may lead to increased anxiety, despair, and stress (2). Similarly, Vindegaard and Benros (3) published a comprehensive study about the effects of COVID-19 Pandemic on mental health. Giorgi et al. (4) published a narrative review on COVID-19 related health effects in the workplace.

These studies conclusively proved that COVID-19 has resulted in significant symptoms of distress, anxiousness, and disturbance during sleep. Earlier research has looked into the impacts of work stress on various work practices under normal settings (5). The researchers did not look into the effects of stresses on employee task performance (ETP) under unknown situations like the COVID-19 Pandemic (5). Task performance is linked with an employee's work performance in terms of job-related objectives and duties. Task performance represents an employee's capacity and capability to accomplish the tasks. It is regarded as one of the most important indices of organizational performance (6). ETP contributes to the efficiency, productivity, and better environment of working in the organizations (6). Organizations are always trying to survive and grow. To achieve this growth target, they need high-performing employees. The unpredictable external events impair the well-being of employees. Therefore, it becomes challenging for organizations to stay consistent in their operations (7). Unexpected circumstances like COVID-19 can develop discomfort among employees and affect ETP. Pandemic-related dangers at the workplace not only divert employees' attention away from their tasks, but also jeopardize their survival at work by causing health complications (5). In recent decades, scientific studies have focused on the evaluation of ETP. Occupational stress, job satisfaction, disagreement, punctuality, leadership relationships, health, and other aspects have all been studied extensively in task performance studies across the world (8, 9).

According to research, additional stressors occurred amid pandemics. These stresses are linked to the development of several diseases (10). During the recent Pandemic, health issues have grown increasingly evident (11). Furthermore, during the epidemic, employees of different enterprises experienced greater difficulties maintaining themselves healthy (5). It is worth mentioning that the mental health of employees gets improved when they interact with their colleagues (12). Authorities have employed quarantine, lockdowns, and social distancing measures in an attempt to halt the virus's spread. The people were forced to withdraw from their usual routines and acquire physical distance in a relatively short time. The social, economic, and health-related effects of COVID-19 have now become clear (13). The preventive measures have impacted the nature of social connectedness by limiting social relationships with colleagues and friends. Whereas, social connectivity is an important aspect of human existence (14). Its quantity and quality may have a significant impact on the health of employees (15). There is a lack of empirical research on the impacts of social connectedness of employees during COVID-19. There is a need to evaluate the psychological, behavioral and social repercussions of less social connectedness on employees' health and task performance (16, 17). As per some of the previous studies, workplaces play an influential role in improving employees' health (15). According to recent studies, the frequency and persistence of less social connectedness during COVID-19 at workplaces are higher than in domestic lives (14).

Less social connectedness may raise the risk of unfavorable behavioral, social, and health outcomes (13). For several people, physical distance was also associated with discomfort and anxiety (18). Prior literature has indicated that a lack of social connection, persistent stress, and extended emotions of distress may contribute to greater exhaustion and other health issues (18, 19). The distress is a natural response to a lack of social connection. Uncontrolled social isolation causes unpleasant feelings, which may be harmful to employees' mental and physical health (13). Along with the detrimental effects of less social connectedness, fear of testing during COVID-19 was a prevalent stressor which led to disturbed health of employees (20). There have been very limited studies on behaviors associated with testing of COVID-19 (20).

According to literature, several barriers exist in various regions. For example, developing nations have significant challenges in terms of restricted access and counterfeit kits for testing (20). In developed countries, like United States, where medical insurance may not cover the tests, cost may be an issue (20). Particular communities, like immigrants and non-citizens, are disproportionately affected, as they may fear legal and financial consequences if they test positive. Additionally, regardless of COVID-19 exposure, testing may be restricted to particular criteria, such as just if you have symptoms (21). This is common owing to a shortage of supplies or health workers. There may be delivery and samples transportation challenges in rural places (20).

There are challenges associated with poor communication. This is due to lack of public understanding about symptoms. The particular symptoms necessitate testing, and the people are unaware of the procedure (21). There were also structural impediments identified. Delivering testing and transferring samples from far locations were among the problems. In a less developed nation, structural constraints took the shape of insufficient testing centers and the lengthy time it takes to give findings to those who have been tested (22). There are certain emotional and cognitive obstacles in testing COVID-19. These are influenced by personal factors. Such fears include the worry of being in pain while being tested, a lack of understanding about how to get tested, and the fear of contracting a disease at the testing site (22). The COVID-19 affected the employees of various organizations worldwide. The health, lifestyle, financial, and societal changes in addition to increased morbidity and death were the outcomes of this pandemic (23). It is generally agreed that the psychological health of

employees has been impacted due to this. A disturbance of work and lost wages due to lockdowns and limitations have been one of the most prominent indicators of psychological health concerns. Employees experience substantial stress, burnout, anxiety and depression during COVID-19 (23). Employees in many industries also experienced an increase in psychological strain (23). The psychological strains negatively influence the health of employees at any workplace. These strains are generally associated with stresses like less social connectedness and COVID-19 testing fear in this study.

Previously in context of COVID-19, psychological strain proved to be a significant mediator between some socio-ecological elements and quality of life (24). This study left a gap in evaluating the mediating role of psychological strain between stressors and employees' health. To fill this gap, current study prospects the role of psychological strain of employees as a mediator between less social connectedness, COVID-19 testing fear and employees' health. No prior study looked into the impact of COVID-19 testing fear and less social connectedness on employees' health. This posed a huge gap for researchers. Furthermore, in context to less social connectedness and COVID-19 testing fear, impact of employees' health on their task performance was also not studied before. This study tries to fill these gaps by evaluating the impacts of both stresses on employees' health leading to ETP.

The current study tries to find the answers to following questions.

RQ_1. What is the possible relationship between a preventive measure such as less social connectedness on employees' health?

RQ_2. What is the role of fear associated with COVID-19 testing on employees' health?

RQ_3. How does employees' health influence the employees' task performance?

RQ_4. How can employees' health be affected due to psychological strain?

Theoretical support and hypothesis development

This research gets support from Person-Environment fit theory (25). This theory is suitable for examining the perceived discrepancies. According to this theory, congruence, match, or likeness between personal and environmental elements is defined as fit (26). According to studies that examine the relationship between social connectedness and employee health, the match between an employee's desire for social connections and the environment's supplies has a favorable impact on employee health. Employee health improves when the supply of social connection grows in terms of quantity and quality to meet the demands of the employee. Employees feel stress and loneliness when the workplace resources fall short of their demands, resulting in health problems (25). On the other hand, a lot of social connectedness may obstruct the desire for privacy or prevent task performance which needs isolation (25). This kind of excessive social connectedness may harm the employees' health. Support from friends and family has a comparable impact. A higher imbalance between required and given social support is linked to more depression symptoms. Although, the relationship is asymmetrical having depressive symptoms at peak when requirements outweigh supplies (27). Based on the Person-Environment Fit theory, this study looks into reduced social connectedness at work and the health of employees during the COVID-19 epidemic.

This study is related to psychological aspects of the employees and their performance. Previously, studies like this got support from several theories including demands-control model, job demand-resources theory (JDR), conservation of resources theory (COR) and person-environment fit theory. All these theories are related to work stress and have shown impact on work and health related psychology of people (28). The JDR theory looks at how working environments affect workers and how people affect employment conditions. At organizational, team, and individual levels, variables of employees' health and organizational behavior impact each other throughout time (28). The JDR hypothesis describes how job demands can affect an employee's health, behavior, and task performance. Workplace stresses are detected quite precisely based on the emotions and opinions of employees. In a same way, Pandemic related difficulties might be described as disruptions in task performance of employees. The authors look at the COR theory's theoretical underpinnings as well as previous studies that used it to look at anxiety and responsibility in companies and mental health care settings (29). The COR theory is a suggested descriptive framework for exploring how employees get influenced by extreme situations, recognizing such events, and theorizing on how employees collaborate to deal with problems. Burnout, heavy workload, and lack of administrative and institutional resources have all been linked to the use of COR theory (28). In current research, the COVID-19 related stressors include less social connectedness and fear of testing COVID-19 positive. This theory helps in providing theoretical support for these stressors to evaluate their impacts on employees' health and employees task performance.

Less social connectedness and employees' health

The subjective experience of having strong links to the social sphere is referred to as social connectedness (30). This is based on Lee and Robbins' (30), fundamental concept of a sense of affiliation and interpersonal interactions in their study report. When working in remote places, social connectivity is described as closeness and a feeling of connection with relatives,

family, and society in the home environment. Connectedness, according to Hong et al. (31), It is a multifaceted construct that has a key role in enhancing self-esteem, contentment, and optimism. Employee happiness and productivity are affected by social life, particularly for employees working in remote locations (32). Moreover, in distant places, there are fewer institutions and educational places for employees' children to seek a regular education. This also has an impact on mental health and job performance of employees (33). This happens because social connectedness is a basic human need. Employee motivation and health are both influenced by social connectivity. Disruptive interactions with individuals like family members may undoubtedly have serious consequences for overall health (34). Frequent interaction with coworkers and acquaintances is strongly linked to feelings of fulfillment and contentment. The work–family integration study backs up this theory, suggesting that strong family ties can improve emotional responses at work (35). Moreover, researchers noted that working in remote places has a detrimental influence on employee health and productivity (35).

There has been a lot of research going on to reduce the bad effects of less social connectedness on employee's subjective well-being. One of the coping strategies has been proposed as long yearly leave for employees to give them time to connect with their families and friends (36). This strategy may lead to fighting the psychological health degradation of employees. The employees have limited opportunities to connect with their families and friends as they are working in remote areas. There is a need to find ways which may help the employees to work better with sound psychological health. Furthermore, human resource professionals are researching on how to provide flexible timing to employees working in isolated workplace settings (36). All efforts are oriented toward solving this difficulty that might negatively affect employee health leading to poor task performance.

Authorities and researchers have expressed concern that individuals would be socially isolated for lengthy periods of time as a result of worldwide policies. This type of exclusion is characterized as the lack of social relationships, or as a lack of social connectedness (37). There is scarce literature available on the relationship between less social connectedness and mortality. An investigation reveals that the real and desired connectedness has a greater impact on employees' health than the lesser or no social connectedness. When looking at the effects of the COVID-19 outbreak in the workplace, this disparity should be taken into account as a possible avenue (38). The COVID-19 and its preventive measures like social distancing may harm employees' health (38). Following this perspective, the following hypothesis was developed.

H_1. *Less social connectedness of employees has a significant but negative association with employees' health*

COVID-19 testing fear and employees' health

Fear is a natural human emotion which intimates about harm (39). The unpleasant sensation has negative consequences for people's overall health. Employees' health is harmed by fear, which leads to an increase in depressive symptoms. This is a mental illness which exacerbates feelings of low morale, sadness, grief, and stress. It negatively impacts an individual's mental health (40). Pandemics instill in the community a feeling of despair throughout time. Nowadays, the corona virus has increased the reactivity of depression amongst employees by accelerating their fear. Employees' depression symptoms were dramatically increased when COVID-19 levels rose, negatively impacting their psychological health (41).

In support of this, a study looking at the psychological symptoms linked to fear of testing COVID-19 positive, found a significant frequency of anxiety and depression among Chinese healthcare employees (42). Employee work performance was significantly impacted by the fear of testing positive for COVID. According to the findings, increasing COVID-19 anxiety caused the health workers to demonstrate poor task performance, dramatically affecting working practices. Fear of testing COVID-19 positive for infectiousness caused frontline employees to take on too much work, which hampered their performance (43). Due to the higher psychological concerns, employees' performance suffered as a result of the increased Fear of COVID-19. Employees' work performance is influenced by their mental health in particular. Employees of many organizations have been forced to execute their responsibilities at all hours of the day and night due to the present epidemic. Undoubtedly, the epidemic increased psychological concerns, making it harder for staff to do their jobs (44). Fear necessitates a protective reaction. Whenever fear becomes unmanageable, it transforms into anxiousness. Increasing COVID-19 positive fear testing has taken a heavy emotional strain on employees' psychological health in recent years, effectively forcing them to work with a panic illness. The COVID-19 dread produced serious health problems, which had an impact on the caregivers' life. Mertens' (45) research backs this and reveals that the Pandemic generated anxiety and panic among the workforces.

Moreover, the spread of corona virus showed the pandemic as a major factor in people's stress symptoms. Stress is a coping mechanism that necessitates physiological, psychological, and cognitive adaptation. Stress affects everyone differently depending on behavioral, physiological, and emotional factors (46). The worry of testing positive for COVID-19 has a major impact on people's mental health, inflicting severe anguish on them. Individuals were negatively affected by increased emotional tiredness, energy loss, and fatigue. It made it harder for them to manage with the COVID-19 pressures (47). Employees reacted negatively to challenging events as a result of

the COVID-19 scenario, negatively affecting their psychological well-being. In China, more than 100 million people reported experiencing signs of high stress, according to the survey (47). All these arguments suggest that fear of testing COVID-19 positive may lead to disturbed health of employees so, the authors proposed the following hypothesis.

H_2. *COVID-19 testing fear has a negative relationship with employees' health*

Employees' health and employees' task performance

Employee task performance may be described as an employee's effort to complete certain job obligations. According to researchers, employees' task performance is associated with cognitive health of employees (48). The conservation of resources theory (COR) is based on the idea that people want to get, keep, nurture, and defend the assets they care about most. As a result, their health is heavily reliant on the inflow and preservation of essential resources like spouse assistance and work performance. Employees participate in practices to prevent the damaging effect of loss of resources on their health. For years, scholars have tried to figure out how distinct work-family investment needed strategies which affect job performance and happiness (48).

According to some researchers, positive job experiences are related to better emotional health. Employees with greater levels of mental health are able to perform better at work (49). Employee health appears to play a larger influence in generating instead of forecasting variation in task performance. Employees who are in better health have more emotional stability. They are more positive, adaptable, and capable of dealing with problems. Employees' health is directly linked to a variety of beneficial elements of their domestic lives and professional careers (49). This notion must be handled comprehensively rather than temporally to be completely understood. Although it is not a wholly context-dependent phenomena, it may be impacted by ecological, organizational, and social activities and therefore should be addressed. Employee health has been shown to affect employee task performance in previous research. Employee efficiency and performance are linked to their well-being. Employees who are happier make better decisions, have more social behaviors, and have higher performance appraisal (50). Employees must be mentally fit in order to reach desired aims and create predicted outputs, suggesting that their mental attention should be completely on job duties. So, based on this notion that healthy employees may perform better and accomplish their tasks diligently, authors tried to figure out the relationship between employee health and their task performance during COVID-19 pandemic. It is therefore assumed that stressors have negative impact on employee's health while employees' health is directly associated to employee task performance. So, the following hypothesis was built.

H_3. *Employee health has a strong association with employee's task performance.*

Psychological strains

Individuals' symptoms of depression were amplified during the Pandemic as psychological strain escalated. These growing public health concerns exacerbated the link between both the COVID-19 spread and anxiety. A rise in psychological strains exacerbated the connection between employee engagement and anxiety. An unfavorable encounter with workers' health led health workers to be concerned about their own mental health (51). As per the findings, patients having severe anxiety experience tiredness, lethargy, and a lack of vitality. Workplace detachment is commonly reported as a result of psychological strain, causing unhappiness among employees. The current Pandemic puts employees of numerous organizations under a great deal of psychological strain (52). Therefore, psychological strains must be examined to match up the demanding expectations of the professions.

Workers were scared by the thought of infecting their relatives and friends during COVID-19. Workplace wellness is critical to providing safe services to customers. Scholars have given positive psychological well-being a lot of thought. They understand the importance of employee health. Employee satisfaction may be influenced by psychological well-being. As a result, data of psychological stress were collected during the COVID-19 phase (53). The study illustrated how unpredictable condition of the outbreak caused workers to give up control over their job. Employees were concerned about the virus's growing infectivity due to its vast dissemination.COVID-19 caused substantial psychological strains that harmed people's health (54). Considering the explanation, the authors conclude that employees had stress-related symptoms during the COVID-19.

Depression, a negative state of mind, has far-reaching implications that affect an employee's motivation. During the outbreak of COVID-19, depression was often noticed among employees of numerous enterprises. COVID-19's elevated complaints rendered the business sector the most sensitive to serious depression. Employee productivity and performance are severely hampered by depression (55). Employees are fatigued and disengaged from their jobs as their depression levels rise. As a result, it may have an influence on their capacity to give high-quality solutions. The goal of a corporate employee is to deliver high-quality service to customers. Perhaps, in order to achieve professional success, workers' psychological well-being must be safeguarded (56). Studies have discovered anxiety as the primary cause of compromised job performance. Anxiety is a distressing emotion which impairs one's mental abilities. Anxiety

may lead employees to be concerned about their jobs, thereby it may increase their productivity. While employees' productivity is affected by anxiety, and it hinders their work performance. According to the research, there is a substantial negative association between anxiety and performance of employees (57). All this supported literature suggested that stressors like less social connectedness may produce psychological strain on employees. Similarly, testing fear for COVID-19 positive may also contribute to psychological strains of employees. The result of supported literature also suggest that psychological strain leads to poor health of employees. Employees' health is disturbed due to depression, stress and anxiety which are the contributors of psychological strain. Employees having sound health in return, may help in improving ETP. Therefore, authors suggested the following hypothesis.

H_4. *There is a significant but negative mediating association between less social connectedness and employees' health*

H_5. *There is a significant but negative mediating association between fer of testing COVID-19 positive and employees' health*

The current study is summarized in the following conceptual framework (see Figure 1).

Methodology

This study gathered data from employees of various electronics industries in China under a convenient sampling technique for empirical analyses. For data collection, the author first contacted the managers of the electronics industries and had a detailed conversation regarding the purposes of being contacted. After knowing the academic purpose, managers agreed to a face-to-face meeting. The meeting has been fixed as per time and visited personally to meet them. The author explained the study objective and outcomes' usefulness for the organizations in the meeting. The author also promised that the practical implication of this study would be shared with them at their request. In this way, managers showed their consent and agreed and permitted the author for data collection.

The author adopted a questionnaire survey method for data collection. A dual-language questionnaires for data collection has been developed. So for this purpose, the author translated questionnaires into Chinese as well for easy understanding of employees. For translation, the help has been taken from senior researchers, and under their guidance, the questionnaires were translated into the Chinese language for a better understanding of the employees. The author collected sample base data from students for further clarity of the Chinese language. Hence, the to revised the difficulties in this way, and the final version of the questionnaires was ready for distribution. The questionnaires were also developed, including a cover letter. This cover letter trusted the employees that their data would be used only for academic purposes. The cover letter also ensured the employees' about their data confidentiality as individual-level responses would be destroyed, and aggregated results would be revealed. Moreover, the Cover letter also explained that no answers are right and wrong as your true answer would be treated right for this study. Hence, this step boosts the employees' confidence, and they would have filled questionnaires of their own will.

The author also decided to collect data at different waves to avoid common method bias. Hence, to utilized a time lag data approach to questionnaire distribution among employees. For this purpose, the questionnaires were also developed based on a hidden code to recognize the same respondents in all waves. The questionnaires has been distributed in three waves. In the first wave, the author distributed questionnaires regarding independent variables such as less social connectedness and testing fear. In the second wave, the author collected data on mediator variables such as psychological strain and employee health and in the last/third wave, the data has been collected on dependent variables such as employee task performance. In the first wave, the total of 750 questionnaires distributed among employees. Out of 750, the author collected complete and valid 630 questionnaires. In the second wave, the author collected 505 valid and complete questionnaires, and in the last/third wave, the author collected 467 complete questionnaires. Hence, this study is based on a 467 sample size.

Scales

In this study, respondents' responses were captured using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The previously validated items were considered to measure the present study model variables.

Less social connectedness

The less social connectedness variable was measured with eight items scale developed by (58) and validated by (59). The sample item included "I feel disconnected from the world around me." The Cronbach alpha value of construct less social connectedness is 0.906 showing the acceptability of scale.

Testing fear

The variable "testing fear" was measured on seven items scale developed by (60) and validated by (61). The sample item included "It makes me uncomfortable to think about coronavirus-19." The Cronbach alpha value of testing fear is 0.883 showing the acceptability of scale.

Psychological strain

The psychological strain variable was measured with eight items scale developed by (62) and validated by (63). The sample item included, "Even at home I often think of my problems at

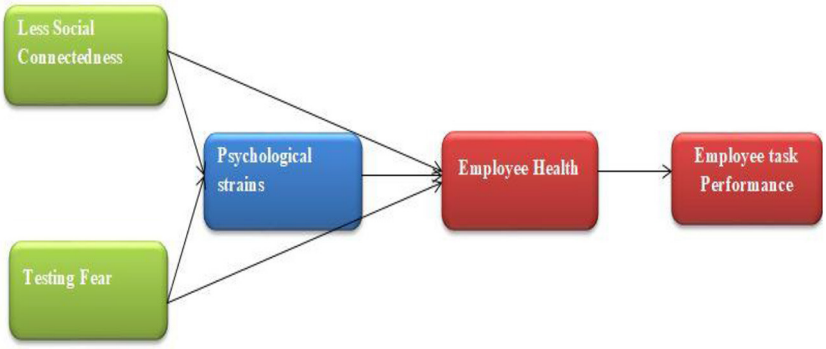

FIGURE 1
Conceptual framework.

work." The Cronbach alpha value of psychological strain is 0.885 showing the acceptability of scale.

Employee health

The employee health variable was measured with five items scale developed by (64) and validated by (65). The sample item included, "Most of the time, I think my health is not good." The Cronbach alpha value of employee health is 0.911 showing the acceptability of scale.

Employee task performance

This study measured task performance with seven items scale developed by (66) and validated by (67, 68). The sample item included, "I fulfill responsibilities specified in the job description." The Cronbach alpha value of employee task performance is 0.886 showing the acceptability of scale.

Results

Common method bias

The present study incorporated different methods to ensure avoidance of common method bias issues (69). First, for this purpose, this study collected data in three waves as common method bias mostly occurred in cross-sectional studies during single source data collection. The detail of this method application is addressed in the data collection part. Second, this study applied Harman's (70) single factor test to ensure further clarity about common method bias. For this purpose, SPSS software was used, and under this examination, all factor items were forced into one single factor to evaluate variance. As per the output, single factor variance explained $< 50\%$ (40.144%), confirming that common method variance is not an issue in this study. Third, this study applied Bagozzi's method (71). According to Bagozzi's, focal study constructs correlations >0.9 shows the presence of common method variance. However, **Appendix 1** shows the highest correlation between the two constructs is 0.737. Fourth, collinearity examination was conducted through variance inflation factor (VIF). The outcomes revealed that the highest VIF value is less than 3.3, indicating that model is without a common method bias issue (72).

Assessment of measurement and structural model

This study utilized the partial least square structural equation modeling (PLS-SEM) method to assess empirical outcomes. The PLS-SEM technique is different from the covariance-based technique (73). PLS-SEM is widely acknowledged because it supports both studies, such as confirmatory and exploratory (74–76). Structural equation modeling (SEM) consists of two methods, i.e., partial least square structural equation modeling (PLS-SEM) and covariance-based structural equation modeling (CB-SEM). PLS-SEM is acknowledged to advance and extend the theory. In contrast, CB-SEM is known for accepting and rejecting the theory (77). Hence, this study assessed model results using Smart PLS software under the PLS-SEM method. PLS-SEM measured data in two parts. The first part considers the measurement model, and the second examines the structural path.

Outcomes related to measurement consist of two different parts such as model reliability and validity. This study assessed the reliability of the present study model through Cronbach alpha, roh-A, composite reliability, and average variance extract (AVE) (77, 78). Table 1 presents the reliability values of model variables. As per the threshold of Cronbach alpha, a value >0.7 is considered appropriate for Cronbach alpha reliability (74). This study models variables (less connectedness, testing fear,

psychological strain, employee health, and task performance). Cronbach alpha values are (0.906, 0.883, 0.885, 0.911, and 0.886) according to the given standard as above 0.7, respectively. Hence, Cronbach alpha reliability is achieved in this study. Similarly, the composite reliability should also be >0.7 (79). All variables' composite reliability values are as per the criteria as >0.7. Hence, composite reliability is achieved. The roh-A values are also as per the standard. Thus, all values are accepted (79). Moreover, as per the threshold, AVE values should be above 0.5. Our model variables' AVE values are >0.5. Thus, AVE values are accepted (79).

Outer loading of all the construct items is also depicted in Table 1. The outer loading value is accepted if above 0.7 (68). In the present study model, all variable items have >0.7 outer loadings values (Figure 2) except for psychological strain item PS2, testing fear item TF7, and task performance item TP7, thus deleted. In this way, the model reliability was increased. The variance inflation factor (VIF) values of all variable items are also presented in Table 1. VIF is the source to assess the collinearity issue in the model. A value <0.5 is considered appropriate for the model as it shows the model is without a collinearity issue (79)s. The variable task performance item TP3 has the highest VIF value (3.245). Hence, it confirmed that the present study model is free from collinearity issues.

The model latent construct R^2 examines the model strength. For instance, the value near 0.5 explains moderate strength and above 0.5 shows substantial strength (80). The present study's latent variables psychological strain, employee health, and task

TABLE 1 Reliability and convergent validity of the study constructs.

Construct	Item	Outer loadings	VIF	Alpha	roh-A	Composite reliability	AVE
EH	EH1	0.833	2.346	0.911	0.913	0.934	0.739
	EH2	0.876	2.870				
	EH3	0.882	2.916				
	EH4	0.860	2.555				
	EH5	0.846	2.367				
LSC	LSC1	0.763	2.064	0.906	0.907	0.924	0.603
	LSC2	0.754	1.934				
	LSC3	0.746	2.023				
	LSC4	0.812	2.428				
	LSC5	0.789	2.253				
	LSC6	0.811	2.478				
	LSC7	0.776	2.111				
	LSC8	0.759	2.020				
PS	PS1	0.806	2.188	0.885	0.888	0.910	0.593
	PS3	0.731	1.789				
	PS4	0.759	1.897				
	PS5	0.763	1.948				
	PS6	0.783	1.984				
	PS7	0.775	2.078				
	PS8	0.768	1.931				
TF	TF1	0.794	2.085	0.883	0.890	0.912	0.633
	TF2	0.741	1.814				
	TF3	0.792	2.119				
	TF4	0.870	2.907				
	TF5	0.811	2.509				
	TF6	0.759	1.961				
TP	TP1	0.803	2.639	0.886	0.890	0.912	0.635
	TP2	0.780	3.208				
	TP3	0.779	3.245				
	TP4	0.784	2.205				
	TP5	0.826	2.949				
	TP6	0.807	2.489				

EH, Employee Health; LSC, Less Social Connectedness; PS, Psychological Strain; TF, Testing Fear; TP, Task Performance.

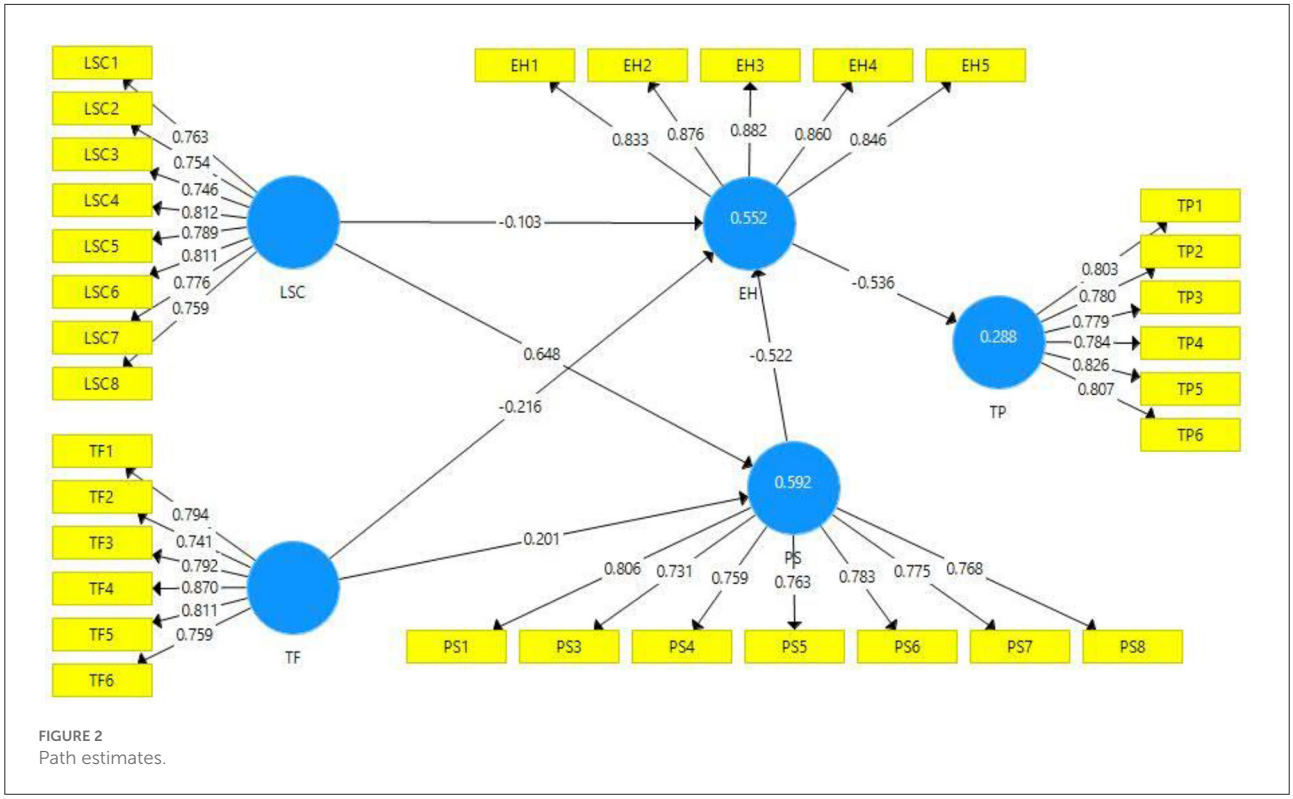

FIGURE 2
Path estimates.

performance R^2 values are 0.592, 0.552, and 0.288, respectively, revealing that model has moderate and substantial strength. The model latent constructs Q^2 values are accepted if greater than zero. The present study's latent constructs have more than zero value. Thus, it is a sign of a significant model.

This study considered widely familiar and accepted methods to measure the model's discriminatory validity. For instance, Fornell-Larcker and hetrotrait-monotriat (HTMT) criteria were applied to evaluate the discriminant validity of the present study model (77). The Fornell-Larcker criterion was measured by taking model variables AVE values square roots (78, 81). Table 2 explains the Fornell-Larcker values of the present study model. As per the standard, the above values in the table column should be greater than the below values (73). The outcomes revealed that the above values in the Table 2 column shown in bold were greater than their below values. Hence Fornell-Larker discriminant validity is achieved. According to the HTMT criterion, values <0.85 is considered appropriate for the model (79). Table 3 explains that the present study model constructs HTMT values according to the given criterion, such as <0.85. Hence HTMT discriminant validity is achieved.

Hypotheses testing

The present study applied 5,000 samples of the bootstrapping method for the empirical analysis of the model. The direct, indirect, and total path outcomes are presented in Table 4 (77, 78). The hypotheses of the present study were accepted and rejected based on t and *p*-values (78). Table 5 depicts the hypotheses results. According to the proposition of H1 of this study, it assumed that less social connectedness has a negative impact on employee health. The outcomes ($t = 2.297$, $p \leq 0.05$) revealed that less social connectedness negatively influences employee health. Hence, H1 is accepted. The path value of H1 explains that one unit change in less social connectedness would result in −0.103 change in employee health. Proposition H2 of this study predicted that testing fear has a negative impact on employee health. According to the statistics results ($t = 5.959$, $p \leq 0.001$), it is confirmed that testing fear negatively influences employee health. For instance, as per path value, one unit change in testing fear would cause a −0.216 change in employee health. Hence, H2 is accepted. H3 of this study proposed a strong association between employee health and employee task performance. The outcomes ($t = 8.730$, $p \leq 0.001$) confirmed that employee health negatively influences the employee task performance. Such as path value confirmed that one unit change in employee health will cause −0.536 in employee task performance.

The present study also assessed the mediating role of psychological strain as a mediator between less social connectedness and employee health and testing fear and employee health. For this objective, this study proposed H4, which predicts the mediation role of psychological

TABLE 2 Discriminant validity (Fornell-Larker-1981 Criteria).

Construct	Employee health	Less social connectedness	Psychological strain	Testing fear	Task performance
Employee health	0.859				
Less social connectedness	−0.604	0.777			
Psychological strain	−0.714	0.750	0.770		
Testing fear	−0.544	0.506	0.529	0.796	
Task performance	−0.536	0.577	0.720	0.375	0.797

TABLE 3 Discriminant validity (HTMT).

Construct	Employee health	Less social connectedness	Psychological strain	Testing fear	Task performance
Employee health	–	–	–	–	–
Less social connectedness	0.660	–	–	–	–
Psychological strain	0.790	0.832	–	–	–
Testing fear	0.601	0.563	0.592	–	–
Task performance	0.585	0.631	0.799	0.415	–

strain between less social connectedness and employee health. According to the statistics outcomes ($t = 8.040$, $p \leq 0.001$). it is confirmed that psychological strain mediates the relationship between less social connectedness and employee health. The path value (−0.338) confirmed that psychological strain negatively mediates this relationship. Hence, H4 is accepted. The H5 of the present study predicts the mediation role of psychological strain between fear testing and employee health. The outcomes ($t = 4.344$, $p \leq 0.001$) confirmed that psychological strain mediates the relationship between testing fear and employee health. The path value (−0.105) confirmed that psychological strain negatively mediates this relationship. Hence, H5 is accepted.

Discussion

This research focused on some of the stressors during the COVID-19 Pandemic. This study aimed to evaluate the impact of stressors on employees' health because it is directly associated with employees' task performance. Employees' task performance is a phenomenon that deals with the productivity and efficiency of employees regarding specific tasks in an organization. This study dealt with employees' responses from the electronic industries of China, which is a progressive sector in the country. The negative consequences of the Pandemic have adversely hit the employees of this sector during the last 2 years (82). According to this research, employees associated with the electronic industry of China are more at risk of contracting health-related concerns as government is unable to implement proper health regulations in this industry. During COVID-19, this industry was also affected like other industries (42).

This study is based on direct relationships of stressors with employees' health. First of all, current research looked into the direct impact of less social connectedness on employees' health. The results showed that less social connectedness reduced employee health (Table 5). Due to the restrictions imposed by the Government of China to curb the spread of the virus, this study assessed that socially distanced employees might show weaker psychological and mental health. The fact that employees, like other humans, want a basic need for connectedness. Due to imposed lockdown and forced stay at homes during the Pandemic, less connectedness may negatively impact their health. This study's outcomes are consistent with the prior study, such as less social connectedness and socialization have been associated with employees' better mental health and performance (33).

Social connectedness is a basic human need. Previously, it was also noted that the social connectivity of employees has a positive effect on motivation and health of employees, and the employees who were devastated due to disruptive social ties with their friends and family, were at the stake of bad and deteriorated health. These outcomes on health showed serious impacts on their job performance (34). This study's results of testing fear of COVID-19 revealed that such fears had a significant association with employees' health. These consequences were negatively associated with employees' health. The results proved that fears contribute to stress on employees' mental and overall health. The employees who fear testing for COVID-19 may downgrade their health.

The symptoms of depression in employees arise due to the fear of testing COVID-19 positive. Some researchers in the recent past have also looked into such relationships where an increased level of COVID-19 fear negatively impacted

TABLE 4 Direct, indirect and total path estimates.

	Beta	SD	*t*	Confidence interval (95%)	*p*
Direct path					
EH -> TP	−0.536	0.061	8.730	−0.650 to −0.412	0.000
LSC -> EH	−0.103	0.045	2.297	−0.193 to −0.016	0.022
LSC -> PS	0.648	0.047	13.849	0.546 to 0.730	0.000
PS -> EH	−0.522	0.049	10.614	−0.615 to −0.423	0.000
TF -> EH	−0.216	0.036	5.959	−0.290 to −0.146	0.000
TF -> PS	0.201	0.042	4.805	0.115 to 0.281	0.000
Indirect path					
LSC -> PS -> EH	−0.338	0.042	8.040	−0.336 to −0.419	0.000
TF -> PS -> EH	−0.105	0.024	4.344	−0.104 to −0.153	0.000
LSC -> EH -> TP	0.055	0.026	2.162	0.056 to 0.008	0.031
LSC -> PS -> EH -> TP	0.181	0.040	4.590	0.182 to 0.110	0.000
PS -> EH -> TP	0.280	0.051	5.516	0.281 to 0.186	0.000
TF -> PS -> EH -> TP	0.056	0.016	3.517	0.056 to 0.028	0.000
TF -> EH -> TP	0.116	0.022	5.308	0.116 to 0.076	0.000
Total path					
EH -> TP	−0.536	0.061	8.730	−0.650 to −0.412	0.000
LSC -> EH	−0.441	0.050	8.818	−0.539 to −0.338	0.000
LSC -> PS	0.648	0.047	13.849	0.546 to 0.730	0.000
LSC -> TP	0.237	0.048	4.878	0.148 to 0.338	0.000
PS -> EH	−0.522	0.049	10.614	−0.615 to −0.423	0.000
PS -> TP	0.280	0.051	5.516	0.186 to 0.383	0.000
TF -> EH	−0.321	0.042	7.592	−0.406 to −0.239	0.000
TF -> PS	0.201	0.042	4.805	0.115 to 0.281	0.000

EH, Employee Health; LSC, Less Social Connectedness; PS, Psychological Strain; TF, Testing Fear; TP, Task Performance.

TABLE 5 Hypotheses testing.

		Coefficient (Beta)	S.D	*t*	*p*	Status
	Hypotheses					
H1	Less social connectedness -> Employee health	−0.103	0.045	2.297	0.022	Supported
H2	Testing fear -> Employee health	−0.216	0.036	5.959	0.000	Supported
H3	Employee health -> Task performance	−0.536	0.061	8.730	0.000	Supported
	Mediation hypotheses					
H4	Less social connectedness -> Psychological strain -> Employee health	−0.338	0.042	8.040	0.000	Supported
H5	Testing fear -> Psychological strain -> Employee health	−0.105	0.024	4.344	0.000	Supported

the overall health of employees (41). Similarly, a recent study explored the relationship of fear of COVID-19 with psychological symptoms of depression and elevated levels of anxiety among employees. The study revealed that fear of COVID-19 was strongly associated with disturbed health of employees of healthcare in China (42). This study also looked into the relationship between employees' health and task performance. The results revealed that employees' health is linked with their task performance.

The results indicated that employees' well-being and health are strongly associated with their productivity and performance at the organizational level. Unhealthy employees are prone to several health disorders which restrict them from functioning properly and delivering performance at the organizational level. The fact is that employees' task performance is regarded as employees' efforts toward accomplishing the given task efficiently. Due to compromised health, employees are unable to deliver the assigned tasks efficiently. Some of the researchers also obtained similar results indicating that employees' task performance is an outcome of their general health. Due to the depression and anxiety developed during COVID-19, employees fell short of maintaining their health which ultimately

affected their task performance (48). Their deteriorated task performance may also be disturbed due to other factors like working from home and social isolation at work.

The current research also examined the mediating effects of psychological strains between less social connectedness, fear of testing COVID-19 positive, and employees' health. The results revealed that psychological strains strongly and negatively mediated the relationships between less social connectedness, fear of testing COVID-19 positive, and employees' health. It was first identified that less social connectedness and fear of testing COVID-19 positive was significantly but negatively associated with employees' health. The role of psychological strain added to these relationships. Psychological strain is evaluated in terms of depression, anxiety, and stress, and all of these contribute unanimously to the psychological strain of employees at work (23, 42). Previous studies also evaluated the mediating role of psychological strain regarding the outcomes of quality of life of employees and got significant results (24).

Theoretical and practical implications

The study's first and foremost theoretical contribution is examining the mediating role of psychological strain between less social connectedness of employees, fear of testing COVID-19 positive, and employees' health. Furthermore, the present study offers a comprehensive model for measuring a thorough relationship between less social connectedness and employees' health working in the electronics industries of China. The present study proposed that the lesser the social connectedness of employees at work, the worse will be the employees' health, which significantly contributes to their task performance. The current study's findings confirmed this notion and extended the literature on the lesser social connectedness construct and its negative consequences on employee health.

If employees are given more chances for social connectivity, it may improve their health and ultimately improve their task performance. Some of the practical implications of the study are as follows. Firstly, the organization's management working in electronic industries must show concern toward the overall health of employees by offering them regular opportunities to connect with their colleagues socially. The management should also focus on providing sessions to their employees about eliminating the fear of testing COVID-19 positive from their brains. This step would enhance the overall psychological health of the employees toward their task performance.

Secondly, China's electronics industry should promote a culture of providing a favorable environment that flourishes employees' performance toward the assigned tasks. Organizations can avoid psychological strain by facilitating the employees in terms of their meet-ups with their colleagues to enhance their working ability to achieve performance at the organizational level. This act would lead to higher performance and satisfaction among the employees. Thirdly, the organizations have to be careful about depression, anxiety, and stress symptoms which are found to weaken employees' health and ultimately deteriorate their performance.

Limitations and future directions

One of the limitations of the study is related to the target population. This study only included the employees of the electronic industry of China; therefore, the future study can conduct on employees of multinational firms. Another limitation of the study is the small sample size which might affect the generalizability of the study. Hence, future research can enlarge the sample size or may conduct a longitudinal study to validate the present study outcomes. Moreover, the study was conducted in China, which could be the limitation of the present study; thus, the future study can include other regions or other Asian countries to examine the present study model. The current study predicted task performance as a whole construct. Therefore, to understand the model in depth, future studies can examine other performance attributes like the contextual performance of employees and job satisfaction, and turnover intention can also be a part of future research. Furthermore, the researchers can work on the advanced technologies related to the COVID-19 as Fuzzy Inference System and Machine Learning techniques, Blockchain-based digital twins in future.

Conclusion

COVID-19 has affected the World population badly. The private business and public sectors are devastated by its detrimental effects globally. The organizations had to face many challenges to cope with the effects of COVID-19 in recent times. In this regard, almost all organizations considered various strategies to curb the speed of devastation due to COVID-19. These measures are equally taken at governmental and individual levels. Most of the efforts focused on the social distancing approaches to fighting the spread of this virus. These measures are taken to break the chains of spread. Some countries are still following the zero spread policies, and China is the most prominent participant in pursuing this strategy. Some countries follow a mixed approach to testing and maintaining the corporate sector for functioning. The corporate sectors are directly related to the economy of a country.

However, the lockdowns and social isolation approach badly affect the productivity progress in these corporations. COVID-19 has produced several stressors that affected their work performance in these organizations. This study tried to determine the impact of some of these stressors on employees' task performance. This study revealed that less social connectedness of employees due to these policies

has a negative association with employees' health. Similarly, fear of testing COVID-19 positive had a significant and negative association with employees' health. This study also concluded that employees' health is directly related to their task performance. Moreover, the psychological strain adds more to it to worsen employees' health, restricting them from performing efficiently at the workplace because it mediates the negative relationship between less social connectedness and employee health and testing fear and employee health. Therefore, the current study contributes to the literature about devising policies which may target the employees' health and restrict the stressors which contribute negatively to employees' health.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by Shandong University of Arts, China. The patients/participants provided their written informed consent to participate in this study. The study was conducted in accordance with the Declaration of Helsinki.

Author contributions

YZ: conceptualization, data collection, and writing the draft. The author agreed to the submitted version of manuscript.

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Appendix 1

TABLE A1 Correlations among model variables.

Construct	1	2	3	4	5
Less social connectedness					
Testing fear	0.496**				
Psychological strain	0.737**	0.499**			
Employee health	−0.602**	−0.517**	−0.703**		
Task performance	0.592**	−0.384**	0.717**	0.543**	

**$p < 0.01$.

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Occupational mental health of non-family members in family firms: Evidence from Pakistan

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Family-owned firms display distinct dynamics as compared to other firms. Consequently, the outcomes and consequences of these dynamics are also expected to be different. The aim of this study was to explore the impact of perceived employee-organization psychological distance (EOPD) on the occupational mental health (OMH) of the employees. Considering the complexities associated with employee–employer relationship, the study also investigated how this relationship between PD and OMH might be mediated by psychological safety (PS) perceived by the employees. Furthermore, the study also included proactive personality (PP) as a potential moderator of the relationship between PD and OMH. Results using SEM and fsQCA show a partial mediation effect on psychological safety. The study contributes by examining the distinct nature of family firms and their impact on the mental health of non-family member employees. This study contributes to the family firm literature by adopting a novel methodological approach to unveil the complexity behind the relationship between employees and owner-employers of family firms.

KEYWORDS

occupational mental health, family—owned business, psychological distance (PD), psychological safety, pro-active personality

Introduction

There has been a sustained increased interest in understanding occupational mental health (OMH) from both the academic and practitioners' perspectives. OMH has become a major concern for organizations that are finding it hard to retain talented employees who are either underperforming due to mental health issues or have decided to leave their jobs based on these concerns (1, 2). The effects of OMH are also self-reinforcing; any drop in productivity due to mental health issues will lead to further mental health deterioration as the pressure starts to build to bridge the productivity deficit (3). The severity of negative work-related outcomes associated with OMH has been exacerbated by the recent COVID-19 pandemic (4). Although OMH has received wide coverage in the broader industrial/organizational psychology literature, the convergence of OMH in the literature focused on the operations of family-owned firms is scant.

Within family firms, specifically those of mid-to-large size, most of the employees are non-family members. These employees have limited access to the organizational management both within the context of business and outside of it, as compared to the immediate or extended members of the family owning the firm. This increases their psychological distance from the management (5). The proximity to a firm's leadership has a greater effect in firms where leadership assigns greater values to the family relationship such as those that exist in collectivistic societies (6). Furthermore, research indicated that family and non-family members of family firms vary in their level of sense of ownership of the firm (7, 8). This can also be accounted for by the close psychological distance of the family firm from the family members than perceived by the non-family members.

This study contributes to the literature on OMH by exploring how it is affected by EOPD. It is proposed that the effect of EOPD on OMH is indirect and that EOPD has a negative effect on psychological safety (PS). A reduction in PS is linked with an increase in OMH. Furthermore, it is proposed that the effect of PD on PS will be mediated by the employee's proactive personality. For the purpose of this proposed study, the operationalization of EOPD proposed by Chen and Li (9) will be employed, who view EOPD as the combination of spatial distance (this can be regarded as the geographic distance – relevant for remote workers), temporal distance (amount of time spent by an individual with an organization), social distance (the distance between a focal person and other organizational foci), expectation (regarding the trajectory of the organizational decisions and its future course of action), and emotional belonging (emotional attachment to the organization). This study also postulates that the proactive personality will moderate the relationship between psychological distance and psychological safety. Specifically, this study will be interested in understanding how individuals with varying levels of pro-activeness and psychological distance develop perceptions of psychological safety. This moderation is grounded in previous research on psychological safety.

Literature review

Psychological distance

According to the construal level theory, people create preferences based on their interpretations of events rather than the events themselves (10). Their mental image is influenced not only by the events' actual characteristics but also by their psychological distance from them. According to CLT, if an event occurs far away, it is assumed to be interpreted at a high level in comparison to the proximal event. A central tenet of CLT is that when people experience psychological distance, they alter their interpretations moving from abstract to concrete. These interpretations are usually based on three criteria: if it is distant from oneself rather than close (temporal distance), if it is meaningful to a person dissimilar to oneself rather than similar (social distance), and if it is unlikely rather than likely to occur (hypothetical distance) (10).

Several lines of evidence have established individuals assign a lower probability perceived to causes that are psychologically distant from them (e.g., climate change). It is for this reason that psychological distances are listed as a major cause for the lack of interest among the general public in causes that might impact them at a distance rather than sooner (11). Furthermore, research suggests that increasing psychological proximity to a cause is the greatest technique for encouraging prosocial behaviors (12, 13). Similarly, employees who feel psychologically distant from their managers are less likely to feel negative emotions and risk. The more the psychological proximity, the lesser is the perception of risk and more of safety. In family-owned firms where the employees perceive themselves to be less distant from the managers, the employees feel more comfortable and safe and measure better on wellbeing scales. Hence, they are less likely to endure stress and anxiety associated with weaker relationships.

Psychological proximity is supposed to trigger several mechanisms, including unpleasant emotions (anxiety, rage, grief, or remorse), a more tangible understanding of the implications, and sensitivity and urgency about the situation. It also helps individuals feel more worried and willing to act and engage in prosocial activity in line with their beliefs (14).

However, in case of employee–employer relationship, the employee's psychological proximity and sense of connectedness increase the sense of safety by improving the dyadic relationship. Proximity selection is not always effective (15) and can potentially detract from behavioral intentions (16).

Being psychologically near causes the individual to focus on the feasibility (10) of the prosocial behaviors to be performed, resulting in an overestimation of the costs and an underestimation of the benefits, which are rarely instantaneous. The strategy of increasing psychological distance from the cause may be relevant because it allows the consumer to broaden his or her horizons by focusing on global values (e.g., environmental protection) and to want to act positively in relation to those values (16).

The psychological distance can also decrease desirability for future rewards and weaken positive affective reactions like hope (17), which hinders problem-solving and group action (18). Extending the above to the employees of family firms, they are expected to develop positive outcome expectations and rewards from the managers with whom they perceive to be psychologically more proximal (low psychological distance), and this should result in greater perceived psychological safety.

Psychological safety and occupational mental health

Employees who view their organization as secure, supportive, and open to receiving new ideas are more likely to reciprocate with an increased level of trust in the organization. Trust is at the core of the psychological safety (PS) construct introduced by Edmondson (19). PS is a measure of the willingness of individuals to take interpersonal risk in a group setting (19). Edmondson (19), while distinguishing between the constructs of general trust and PS, explained that their conceptualization of the PS has more to do with group norms and beliefs than individuals. As such, PS is an evaluation of the group climate to encourage experimentation and voice without the fear of reprisal or any other negative consequence.

Shain et al. (20) identified five factors on which PS can be measured, and these include job demands and requirements of effort, job control or influence, reward, fairness, and support. According to Shain et al. (20), psychological safety is negatively affected when workers are assigned tasks that are beyond their capacity, when they are offered no discretion over the task that they have to perform, when rewards for effort are withheld, when due process is not followed, and when resources such as information required to perform the assigned tasks are withheld from them. More importantly, Shain et al. (20) argued that negative effects of PS can spillover to the broader society outside of the work settings.

In their study, Erkutlu and Chafra (21) contrasted workplaces with high and low PS. The report found that in work environments with low PS, employees manage their voices according to the context of the group rather than expressing their true beliefs. They are less likely to ask for resources to complete their tasks and are more likely to overlook problems rather than report them. The results from this study indicate that all these negative outcomes associated with PS weigh heavy on the employee's mental wellbeing.

Newman et al. (22) conducted an exhaustive review of the PS literature and urged to focus explicitly on characteristics that tap into team members' wellbeing and mental health. They also suggested examining performance-related variables. A key finding from their study was that most of the extant literature PS was from research in the fields of sports and exercise sciences, which place a high importance on the criticality of mental health of individuals (23, 24). Recently, the literature on PS has also permeated the literature on work-related wellbeing in general and studies conducted in this regard are indicating that, as in sports teams, work-based teams also benefit from PS and it improves the OMH of the team members (22). In their conclusion, Newman et al. (22) encouraged future research in PS and deemed it as a significant area of research.

The positive impact of PS on work-related behavior has been reported by numerous studies, such as that by Ahmad et al. (25), who reported that employees working in an environment with high PS are more likely to express their true selves to the group members. Similarly, (26) postulated that psychological safety is a fundamental prerequisite for enhancing employee creativity. Yi et al. (27) reported that psychologically safe work environment is necessary for employees to participate in risky and creative jobs. Moreover, employees' perception of their workplace as safe is a significant motivation for them to be their genuine selves without fear (28). Furthermore, an organization's preference for considering the interests of third-party stakeholders (third-party justice) inflates employees' perceptions that their organization is not self-centered and cares equally for all, which is consistent with third-party justice, and it strengthens their sense of psychological safety (29). Employees are also major stakeholders; thus, they are required to foster the notion that their company is a safe place to work, which will improve their psychological safety perception. In earlier studies, Edmondson (19) discovered that psychological safety is a requirement for organizational learning capability. Other researchers, such as Hur et al. (30) and Ahmad et al. (25), revealed that a safe work environment reduces anxiety, which further stimulates employee creativity. In a recent meta-analysis of 117 studies (including more than 22,000 people) found that psychological safety is linked to a variety of outcomes at both the individual and group level, including communication, work engagement, task performance, and satisfaction (31). The rationale for positive outcomes concerning psychological safety allows members to seek and provide honest criticism from others, collaborate, express their thoughts, and try out new ways to old ones (22). This study will contribute to the literature on PS by specifically focusing on family firms, which provide a unique perspective considering that non-family employees have work with family-based ownership and management of the firm.

Moderating role of proactive personality

Proactive personality is considered as a personality disposition related to an individual's propensity to take initiative to instigate change in his/her environment, situations, and activities (32, 33). According to Bateman and Crant (32), individuals who exhibit a proactive personality are likely to be "unconstrained by situational forces and who effects environmental changes" (p. 105). In organizational settings, this disposition is considered as a significant indicator of an employee's ability to exert effort to improve their contributions to the workplace (34).

Proactive employees are highly motivated, self-directed, and self-reliant, and they contribute to efforts to bring about changes in the organization (35, 36). Employees with a proactive personality are less vulnerable to social stimuli (35); they initiate

more proactive behaviors and rely less on cues originated from other sources in addressing work-related problems (37). Furthermore, proactive employees are more likely to put forward alternative ideas to improve work practices, show robust commitment toward achieving goals, demonstrate high effort and performance (34), and are less reliant on their leaders (38). The primary objective of this study was to determine how perceptions regarding EOPD might affect OMH. The objective of the study with regard to proactive personality types was to determine how this relationship between EOPD and OMH might differ for individuals with high vs. low proactive personality types. The study proposes that employees with high proactive personalities will be more tolerant of psychological distance as compared to individuals who measure low on the proactive personality type scale. The implication of this is that individuals with high proactive personality type will experience less change in their OMH with an increase in their perceived EOPD. This assertion is supported by previous research that identifies low proactive employees as being less likely to take initiatives because they tend to doubt their capacity to influence the workplace and rely more on other sources for information (35) and, thus, will face reduced OMH. Thus, in line with these arguments, we hypothesized that proactive personality moderates the relationship between psychological distance and OMH in such a way that the relationship is weaker when proactive personality is high.

Methodology

Questionnaire design and data collection

The data are collected from two Pakistani cities, namely, Islamabad and Rawalpindi. The questionnaire comprised of five parts including demographic variables such as age, gender, education, and department. The second part consisted of psychological distance (PD), psychological safety (PS), proactive personality (PP), and occupational mental health. The survey was conducted from February to March 2022. The questionnaire was self-administered. The sample of the study was based on convenience sampling. Considering the research objective of this study, employees working in family-owned firms were mainly asked to participate in the survey. A total of 3,000 questionnaires were distributed, and 252 were received. Out of which, 214 questionnaires had valid responses and were used for data analysis.

The instrument used for the study was a structured questionnaire consisting of items from multiple sources. For the dependent variable, i.e., OMH, a five-item scale developed by Shamasunder et al. (39), known as the GHQ (General Health Questionnaire), was used. Psychological distance is measured using the six-item scale developed by Chan and Li (9). A seven-item scale developed by Edmondson (19) for psychological safety and a seven-item scale developed by Bateman et al. (32) were used for proactive personality measurement. All these measures consist of the five-point Likert scale.

Data analysis

In recent literature, PLS-SEM has been used in various disciplines, including accounting (40), human resource management (41), knowledge management (42), corporate social responsibility (43), technological forecasting (44), and management (45). PLS (partial least square) is a composite approach to SEM (structural equation modeling), which allows the analysis of complex models with latent constructs from a prediction perspective (46). PLS-SEM produces mean effects that quantify the average impact of every independent variable (i.e., exogenous variable) on dependent variable [i.e., endogenous variable; (47, 48)]. However, few researchers demonstrated that a mean-centric approach to estimation does not provide complete picture (49–51). To address this gap, researchers have called for using asymmetric approaches that analyze every observation as an individual case instead of treating them as a variable. Following an asymmetric approach, the objective is to explore combinations of independent variables (known as conditions) on the outcome (52).

Ragin (53) presented a prominent approach as a standard tool for asymmetric analysis, known as fuzzy set qualitative comparative analysis (fsQCA) (54). Researchers have observed an exponential increase in fsQCA application in various disciplines (51, 55–62). Many of the mentioned studies have analyzed multi-item constructs. To do that, researchers usually average the items in a set. In contrast, PLS-SEM accounts for measurement error, increasing the validity and reliability of the estimates (47). PLS-SEM also provides some additional information which can be clearly better compared to average scores (63). In doing so, combining PLS-SEM and fsQCA provides assessment facilitation for model predictive power grounded in theory and logic (64).

Many research studies have utilized PLS-SEM and fsQCA in twins. The aim of this study was to jointly apply PLS-SEM and fsQCA (47, 65–67).

Model assessment using PLS-SEM and fsQCA

SEM-PLS analysis

PLS-SEM follows 2-step process. In step 1, PLS-SEM estimates and evaluates the measurement model, which is related to variable measures. Moreover, the structural model establishes validity and reliability, and then the model focuses on its explanatory and predictive power. In step 2, researcher

extract latent variables from PLS-SEM analysis, and it helps in explaining the relation between hypotheses, r^2 (combined effect on dependent variable), and f^2 (individual effect of every independent variable on dependent variable). To estimate the path model, SmartPLS3 is used (48). The fsQCA analysis was carried out in Rstudio (68).

The PLS path model shows all item-loadings are above 0.7, supporting the reliability (69). The internal consistency reliability of all constructs falls between 0.7 and 0.95, which is acceptable (70). Moreover, the results indicate that the AVE is >0.5, indicating an acceptable range of convergent validity for all variables. To establish discriminant validity, the HTMT criterion is used. Based on bootstrapping of 5,000 subsamples and a percentile approach, the study confirms that the HTMT value of all constructs is significant at $p < 0.05$, which is lower than the threshold value of 0.85, thus establishing discriminant validity (71).

To assess the structural model, again based on bootstrapping, the path coefficients are checked for significance, the endogenous construct r^2 values and their f^2 effect are determined in Table 1 (70). The R-squared value for occupational mental health was 0.220. Overall, this study found support for all the hypotheses. The study presents that psychological distance is positively related to psychological safety ($\beta = 0.227$, $p = 0.000$), thereby supporting hypothesis one. Proactive personality is significantly related to psychological safety ($\beta = 0.280$, $p = 0.000$). Psychological safety is positively related to occupational mental health ($\beta = 0.468$, $p = 0.000$).

After testing for hypotheses, we further checked for the mediation role of psychological safety in the proposed model.

TABLE 1 Independent variable effect size.

Variables	Effect size (f^2)
PD	0.122
PS	0.282
PP	1.134

PD, psychological distance; PS, psychological safety; PP, proactive personality.

TABLE 2 Path coefficients and their significance.

Hypothesis	Path coefficient	*t*-value	Significant at 5%
PD → PS	0.227	4.636	0.000
PP → PS	0.280	14.551	0.000
PS → OMH	0.468	5.222	0.000
PD → PS → OMH	0.106	7.082	0.000
PP* PD ->OMH	0.046	1.411	0.080*

PD, psychological distance; PS, psychological safety; PP, proactive personality; OMH, occupational mental health; *, 10% significance level.

The mediation results for the study are significant. Psychological safety mediates the relationship between psychological distance and occupation mental health ($\beta = 0.324$, $t = 7.08$, $p = 0.000$). The moderating role of proactive personality is significant at 10%.

Furthermore, to assess the model's predictive power for OMH, $PLS_{predict}$ procedure was used with 10 repetitions (72). First, we assessed the PLS path model samples' indicator as evidenced in $Q^2_{predict.}$ We find that the value for $Q^2_{predict}$ for all OMH constructs was >0 (Table 2). Then, the root mean squared error (RMSE) was generated by PLS-SEM-based estimates with a linear benchmark model (73). Table 3 represents $PLS_{predict}$ results. The results show that the RMSE value for the OMH construct is lower for PLS-SEM than for the linear model. Altogether, the results indicate that the PLS model has moderate predictive power for OMH.

Fuzzy set qualitative comparative analysis

The data are further used to perform fsQCA. The data are then calibrated for the conditions (IV) and the outcome (DV). Calibration was performed using the Total Fuzzy

TABLE 3 Results of predictive power assessment using $PLS_{predict}$.

	RMSE	
Hypothesis	PLS-SEM	Linear Model
OMH1	1.203	1.253
OMH2	0.909	0.954
OMH3	1.265	1.358
OMH4	0.798	0.813
OMH5	0.906	0.905
OMH6	0.914	0.918
OMH7	0.867	0.861
OMH8	0.831	0.823
OMH9	0.882	0.879

OMH, occupational mental health.

TABLE 4 Necessity table.

Conditions	OMH	∼OMH
PD	0.636	0.720
∼PD	0.614	0.614
PS	0.764	0.729
∼PS	0.473	0.445
PP	0.847	0.731
∼PP	0.285	0.588

PD, psychological distance; PS, psychological safety; PP, proactive personality; ∼, absence of condition.

TABLE 5 Fiss chart for high OMH.

Solution	Causal conditions PD	PS PP	Metrics Raw coverage	Unique coverage	Consistency Consistency	Overall solution coverage	Overall solution consistency
1	⊗	•	0.762	0.208	0.868	0.844	0.714
2	⊗	•	0.623	0.403	0.864		

•, the presence of condition; ⊗, the absence of condition; blank space, do not care.

and Relative (TFR) method. TFR uses rank order and is used to calibrate Likert scale data. To run TFR in the R-studio, the "Calibrate" command is used to calibrate data. After calibration, the data are further tested for NCA. In R-studio, we used the command "pof" to check inclusion and "RON" of every condition on outcome. Researchers use different threshold criteria for social sciences, i.e., 0.8, 0.85, 0.90, and 0.95 (4, 52, 61, 74, 75). For any condition to be necessary, the inclusion score should be >0.8 (50). Proactive personality (PP) appeared to be a necessary condition for the presence of OMH. However, there is no necessary condition for the absence of OMH (∼OMH) as presented in Table 4.

The next step involves the analysis of the truth table. The truth table is used for logical minimization that helps the researcher to generate a solution model. For generating a truth table in R-studio, the Truthtable command computes all the possible configurations Every row represents all possible combinations for the outcome. "0" indicates the absence of a condition, and "1" indicates the presence of a condition. The column "out" explains the presence and absence of output in the form of "0" and "1."

After generating the truth table, the data are further analyzed to generate the solution model. R-studio utilizes "Quine-McCluskey" algorithm to generate three solutions, named as, complex, parsimonious, and intermediate. The intermediate and parsimonious solution is always part of a complex solution. This solution model consists of "peripheral conditions" and "core conditions" (52). Core conditions are present in intermediate as well as in parsimonious solution, but "peripheral conditions" are only present in intermediate solutions (52, 61). Generally, the solution model is presented in Fiss chart (Table 5) representing black circles (•) and crossed circles (⊗). Black circles indicate presence while crossed circles represent the absence of the condition. Moreover, the large circles represent core condition, while small circles indicate peripheral condition, and blank space refer to "do not care" condition.

The fsQCA analysis returned two paths leading to high OMH. Solution 1 that illustrates ∼PD*PS will lead to high OMH. Solution 2 that represents ∼PS*PP will lead to high OMH.

Discussion

This study aimed at finding out the impact of psychological distance from the family member owner on the mental health of non-family member employees in the family firms. Moreover, the target included checking if psychological safety mediates the relationship between psychological distance and mental health. Employee's proactive personality is taken as a moderator that, along with the perception of psychological distance, was proposed to enhance the feeling of psychological safety, hence leading to better mental health of the employees.

The results of the study confirm the partial mediation of psychological safety between psychological distance and mental health. Employees who perceive psychological distance from the firm's family member owner feel psychologically safer and thus have better mental health. The moderating role of proactive personality, however, was not validated in our research. The reason for perceptions of safety when there is more perceived psychological distance is as per the CLT. Employees at a psychological distance have an abstract image of reality due to being at a high construal level and hence are less sensitive to the risks and threats attached to it (15). This inability to sense the danger or possibility of a negative outcome of any action makes him/her feel psychologically safer.

In this study, the role of personality is found to be less important in strengthening the relationship between psychological distance and psychological safety. Proactive personality very slightly affects the probability of feeling safer while the non-family member employee is at a greater psychological distance from the family member owner/manager. That is, the direct relationship between psychological distance and psychological safety is stronger and ultimately leads to better occupational mental health. The study helps us validate the findings using the conventional SEM method along with fsQCA.

The study was conducted as a cross-sectional one. Future studies may utilize time lag data to find out overtime changes in the perceptions and occupational health impacts as the experience of an employee increases with the firm. Further studies may consider different personality traits separately, such as traits mentioned in Big Five model. Similarly, personality may be tested as a mediating variable between psychological distance and psychological safety. Furthermore, occupational

consciousness may be considered as an independent variable in the given model.

Data availability statement

The original contributions presented in the study are included in the article/supplementary files, further inquiries can be directed to the corresponding author.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Ethical behaviors by leaders act as a stimulant to the wellbeing of employees by restraining workplace embitterment

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Prior studies have revealed that leaders' ethical behaviors significantly influence employees' wellbeing. However, it's unclear how to increase the positive impact of leaders' ethical behaviors on employees' wellbeing by overseeing the negative workplace emotion. So, this study examines the salient concern of leaders' ethical behaviors that affect employees' negative emotions (workplace embitterment) and, consequently, their wellbeing according to appraisal theories of emotions. The study also investigates the active role of followers' core self-evaluation in moderating the impact of leaders' ethical behaviors on followers' emotions and wellbeing *via* the mediational chain. Data is collected in two-time intervals with 6 weeks interims through a structured questionnaire from 398 academics of public sector universities in Pakistan. The structured equation modeling and Process Macro 2017 are the tools for data analysis. Findings of this study show that (1) ethical behaviors by leaders have a negative impact on employee workplace embitterment, (2) workplace embitterment completely mediates the association between ethical behaviors of leaders and employee wellbeing, and (3) when leaders do not exhibit ethical behaviors, workplace embitterment is lessened showing high core self-evaluations by employees. In addition, the study findings also reveal that employees' core self-evaluation moderates the effect of leaders' ethical behaviors through workplace embitterment. This study validates the significant role of a leader's ethical behaviors in nourishing employee wellbeing by preventing negative emotions. The study is also significant as it examines how followers' attribute core self-evaluation: (1) can be a substitute for leaders' ethical behaviors and (2) can actively modify the effect of leaders' ethical behaviors on followers' negative emotions and then wellbeing. The study also discussed its contributions in theory and to organizations.

KEYWORDS

ethical leadership behavior, employee emotion, workplace embitterment, employee wellbeing, ethical leadership

Introduction

The survival and advancement of organizations worldwide depend on their employees' wellbeing (1, 2). Employee's poor wellbeing concerns are increasing and extending from the individual to organisational to social levels owning to its inauspicious upshots. Employee wellbeing issues in organizations ascend due to hitches, such as stress, unfairness, and bullying (3–5). However, an employee's wellbeing is snagged by negative emotions (6), such as workplace embitterment (feeling of unfairness and humiliation) that develop owing to numerous organisational events, decisions, and leaders' behaviors (4). Employees' emotions are responses followed by copious events encountered in their relationship with leaders, others, and the organisation's environment (7); they value employee wellbeing. Appraisal theorists of emotions divulge that employee emotions nourish and intensify when an event or situation is important to him [as cited in (8)].

Generally, events in organizations are initiated by leaders responsible for administration and decision-making (1). Those events escorted by injustice or controlled supervision instigate embitterment in employees and eventually influence their wellbeing (1, 9). The emergent research on ethical leadership delineates it as a leader's mechanism that governs employees' emotions either negatively or positively, depending on the genuine leader's ethical practices (5, 7). The relationship between (unethical) behavior and employee wellbeing is convoluted and complex; appraisal theorists contend that, among other processes, the impact of unethical organizational practices on embitterment negatively impacts employee wellbeing (7, 10). Giacalone and Promislo urge that organizations at effective monitoring of low ethical behavior may slacken the emergence of negative emotions and thus advance employee wellbeing (10).

Researchers have explicitly ascertained the significance of leaders' ethical practices, such as fairness, integrity, care for others, and role clarification, for managing low ethical behavior in organizations (5, 7, 11). The majority of this research, which employed the Brown et al. (12) scale and was done in the West, had limited details on South Asian territory. There are eight nations in South Asia, and although sharing borders with Iran and China, Pakistan's culture is distinct and hasn't often been questioned in the literature. Additionally, recent corporate outrages and literature highlight the growing issue of unethical behaviors in organizations of a collectivist culture where we feel obligated to favour our close ones and, developing countries that have scarce resources and poor transparent systems (13, 14). However, ethical leadership is seldom investigated Asian and developing countries, particularly in educational settings (15), significantly influencing academics' emotions and wellbeing. Academics are role models for their students who contribute vigorously to developing moral values and ethics and shaping the character of their students. Researchers have emphasized that negative academic emotions interrupt students' education and cut back the excellence of research work in universities (15). Hence, this study is intended to investigate why and how leaders' ethical behaviors nourish employee wellbeing of academicians of public sector universities of Pakistan by restraining workplace negative emotion, i.e., workplace embitterment.

Keeping into consideration the research question, the first objective of this study is to examine the emotional reaction (workplace embitterment) of followers in response to a leader's ethical behaviors (LEBs) in the relational perspective, i.e., affective events theory (AET). The prior studies that investigated the relationship between LEBs and employee outcomes were based on exchange and identity perspectives (16). Affective events theory explains a strong association between appraising a specific event and the emergence of a specific emotion (8). AET accentuates that positive events develop positive emotions and adverse events advance negative emotions.

The study's second objective is to investigate how negative emotional experiences function as a mediating mechanism for ethical leadership behaviors prioritising employee wellbeing from a relational perspective. Most studies have emphasized the investigation of positive mediating mechanisms, such as employee engagement, LMX, and perceived organizational support, in the leaders' ethical behaviors–employee wellbeing relationship (17–19). Few researchers examined how ethical leadership behaviors indirectly affect employee wellbeing through emotional responses, particularly negative emotions in the observed relationships (20, 21). Leaders' ethical behaviors help their followers cultivate their wellbeing through effective interactions that restrain their negative emotions. Investigating this process allows the management to comprehend the routine yet serious impediments to employee wellbeing.

As the perception of employees about ethical behaviors shown by their leaders varies, the employee may or may not have the presence of LEBs, which influence their emotional experience accordingly. So, another objective is to assess the effectiveness of followers' core self-evaluation (CSE) in managing the association concerning LEBs and workplace embitterment (20). This study considers core self-evaluation as a substitute for a leader's ethical behaviors, which makes either leadership redundant or minimises followers' dependency on the leader. This study highlights its significance from the following contributions.

First and foremost, this study is significant as it expands the literature on employee wellbeing by both organisational factors, i.e., leaders' ethical behaviors and individual factors, i.e., followers' traits such as core self-evaluation. The study emphasises leaders' ethical behaviors in developing countries and a collectivist culture wherein diminishing workplace embitterment and fostering employee wellbeing is mandatory (d). It helps to establish the rational relationship between ethical leadership and negative employee emotions, i.e., workplace embitterment. It also posits the significance of leaders' ethical behaviors in managing negative emotions and promoting

employee wellbeing by spotting the logical connexions between LEBs, employees' negative emotions and wellbeing.

Second, the study adds to the literature on workplace embitterment which is limited, particularly in the perspective of a leader's behaviors and leadership process. This study also investigates how leaders' ethical behaviors as a contextual variable are related to employees' negative emotions (workplace embitterment). The present investigation highlights the critical role of leaders' ethical behaviors in stimulating employee wellbeing by preventing or reducing embitterment.

Third, the study contributes to an emergent research area involved with improving employee wellbeing where leaders' ethical behaviors are either missing or limited by examining the role of followers' traits, such as core self-evaluation as a moderator, which may swap leaders' ethical behaviors. The findings of this study emphasise the effectiveness of followers' traits, i.e., core self-evaluation, in developing employee wellbeing by managing their negative emotions (workplace embitterment) in the absence of leaders' ethical behaviors. Thus, the study findings suggest followers' CSE is a swap of the leaders' ethical behaviors to foster employee wellbeing.

Likewise, with theoretical contributions, this study provides some practical benefits to both employees and organizations. This study provides the opportunity for the management to understand how leaders' ethical behaviors improve employees' wellbeing by preventing them from being embittered. Hence, it suggests a guideline for longitudinal tracking of changes in the workplace that encourage leaders to behave ethically, which uplift employees' wellbeing by avoiding negative emotional experiences. In summary, our research has two main objectives. The first is to investigate the possibility of workplace embitterment serving as a mediating mechanism between leaders' ethical behaviors and employees' well-being, as was mentioned before. The second is a test of moderating the impact of the followers' core self-evaluation on the relationship between leaders' ethical behaviors and employee workplace embitterment. In order to evaluate research theories empirically in the context of Pakistan, this study used two-wave data. In Figure 1, the research model is shown.

Theoretical and hypotheses support

Affective Events Theory (AET) contends that workplace events trigger workplace emotions (22). Events and their frequency determine the intensity of emotions and behaviors at work. According to AET, employees' exposure to negative and unjust events instigate embitterment and thus diminishes their wellbeing (23). Moreover, Lazarus et al. (24) contend that AET suggests that emotional reactions emerge in response to the arousal of emotions that further govern employee behavior. Thus, employees' perception of leaders' behaviors determines emotions or moods and then behaviors. In sum, AET conveys two main features. First, emotions regulate employees' behaviors. AET exhibits how workplace provocations and pleasures affect employees' emotions and wellbeing. Second, leaders' behaviors are significant for employees' emotions and should not be unheeded.

Leader's ethical behaviors and employee wellbeing

A leader's ethical behavior is operationalised as behaviors that serve as an informal but coherent leadership role in organizations. The essential behaviors such as fairness, honesty, justice, respect, care for others, and building a community for ethical leadership are part of ethical behaviors (25, 26). Brown and Travino defines ethical leadership and talks about behaviors based on trustworthiness, charisma, integrity, feeling of care for their employees, and fairness (11). They discussed that ethical leaders should have the qualities of a moral person and moral manager. The leader as a moral person embodies individual attributes, such as honesty and integrity.

In contrast, a moral manager is a person who is an honest person that takes fair and genuine decisions both in their professional and private life. The dimension of a moral manager discusses a leader's hands-on and active steps to develop an ethical work environment by demonstrating ethical guidelines, being a role model, and keeping ethics on the top priority of the organisational agenda (11). Watts conceptualises ethical leadership (EL) as "Ethical leadership is coordinated by regard for moral convictions and values and keeps up the dignity and privileges of others" (27). A more comprehensive description of EL has been presented: "Ethical leadership conduct manages how leaders utilise their managerial power and leadership role to empower and advance ethical standards and ethical behaviors in the organizations" (11).

As given in the literature, LEBs have a favourable influence on employee attitudes and behaviors, including job performance (28), employee commitment and job satisfaction (29), and employee creativity (30), according to several research works on leaders' ethical behaviors (31, 32). These studies examined this relationship in social exchange and learning perspectives. From the social exchange perspective, employees select their actions based on their relationship with their leaders. Ethical leaders caring, fair, and concerned around their employees can gain their trust and devotion. Employees feel obligated to compensate their leaders through proactive, constructive behaviors and suggestions. In the perspective of social learning, leaders having ethical values are models and mentors for their followers (11). Leaders exhibiting ethical behaviors are charitably spurred and likely to require activities against unfairness and untrustworthy

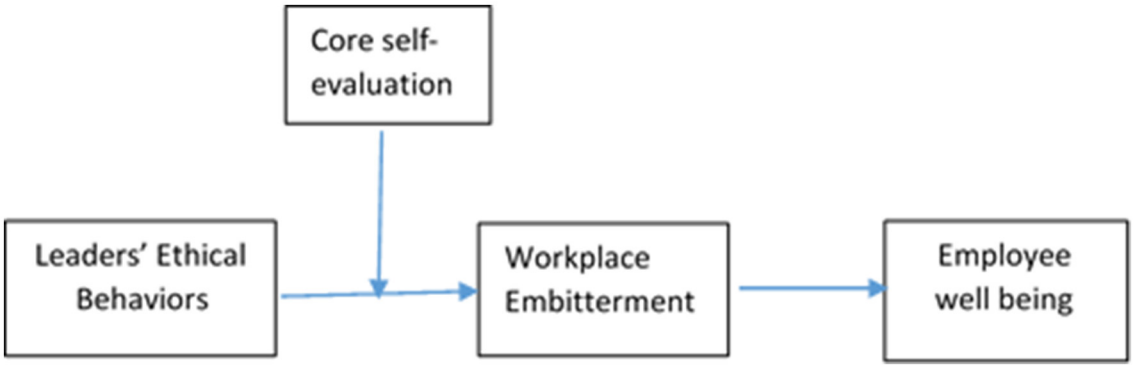

FIGURE 1
Theoretical model.

behavior (11). Therefore, employees consider such leaders as their role models.

Employees' wellbeing is a universal concept and has developed over time, and the clear definition is still ambiguous (33). Today, work is still considered an integral part of one's life, and various events and practices at the workplace exert direct and indirect influence on employee wellbeing. The concept of employee wellbeing is different from individual general wellbeing. "Everyone understands the meaning, but nobody can give a precise definition" is how one person described employee wellbeing.

In the literature, psychological wellbeing, subjective wellbeing, or employee satisfaction are used to explain employee wellbeing (21). Subjective wellbeing is explained as one's experience and the overall evaluation of the quality regarding different life aspects, such as personal achievements and social standings, by defined criteria or standards (34). Psychological wellbeing refers to the great condition of mental capacities and the satisfaction of individual potential. Researchers have explained that psychological wellbeing has six dimensions "self-acceptance, personal growth, purpose in life, positive relations with others, environmental mastery, and autonomy" (35). Undoubtedly, subjective and psychological wellbeing concepts are different, but studies have found and discussed some relatedness (36). Chen et al. proposed an integrative approach for assessing employee wellbeing by combining subjective and psychological wellbeing (21, 36). Later, researchers of wellbeing highlighted a missed but essential component of employee wellbeing, i.e., the works-related effect, which is named workplace wellbeing (37). In contemporary societies, work and family are inseparable aspects of one's life. In view of this holistic consideration (33), suggested and developed a measure comprising three components: life, workplace, and psychological wellbeing to assess employee wellbeing. The relationship between leaders' ethical behaviors and employee wellbeing has been studied in several research works [such as (38)]; however, the studies that looked at the different aspects of employee wellbeing about leaders' ethical behaviors are few.

Prior research has shown that both physical and psychological work conditions have an impact on an employee's wellbeing (39). The ethical conduct of leaders is one of the most important psychological workplace factors that affect employee wellbeing (20). Additionally, Schwepker et al. talked about the critical role that ethical leaders have in fostering and strengthening employee wellness through fair treatment, the elimination of disparities, equitable power-sharing, and the provision of ethical standards to their followers (9). Inceoglu et al. also investigated how leaders' ethical behaviors can significantly enhance employee wellbeing, which could benefit both employees and organizations (40).

In today's competitive work environment, the role of leaders' ethical behaviors has gained prominent attention from researchers due to its unique features, such as fairness, behavioral integrity, power sharing, role clarity, concern for employees, and ethical guidelines. Ethical leaders fairly deal and collaborate with their followers for their best interest (13). Such an ethical work climate and ethical relational interaction of followers with their leaders enhance their experience and perception of improved wellbeing (41).

Ethical behaviors of leader and workplace embitterment

Workplace embitterment is a negative emotion that emerges in response to various organisational destructive events specifically associated with leaders. Linden (24) has explained it as a feeling (emotion) encompassing lasting feelings of being disenchanted, insulted, and vengeful, however, helpless. Those who are embittered perceive that they are treated unjustly, unreasonably, and unfairly; they show a longing for revenge

against the individual responsible for their contrary and negative state, yet they reject help from others (42). It can result from a single, extremely intense incident or a string of related life events, according to Sensky (43) and Carter (4). The hallmark of workplace embitterment is that it may potentially arise from an experience that is personally seen as being unreasonable and unfair (43). According to previous studies, organisational injustice, social injustice, abuse of basic principles, mistreatment, and controlled supervision are the key contributing factors to workplace embitterment (43, 44). The absence of leaders' characteristics of fairness, integrity, concern for people, and power sharing in their behaviors are the stimuli of unjust and humiliating events that employees appraise unfavourably, and embitterment may emerge (45).

Employees consistently experience negative emotions at the workplace for various reasons, such as ineffective leader behaviors, strategic unfair decisions, humiliation, and bullying (4, 5, 19). Persistent negative and stressful feelings at the workplace are predominant and have hostile upshots (5, 19). AET states that employees' emotions are extracted from the appraisal of their workplace events. When employees perceive their leaders as less fair, dishonest, less employee-oriented, etc., they appraise such practices negatively, and consequently, negative emotions emerge. According to Velez and Neves, leaders in organizations are uniquely positioned to stimulate an emotional response in followers (20).

A study by Michailidis and Cropley (19) investigated that leaders' practices such as being unfair, task-oriented, controlled, and less trustworthy result in embitterment. Some researchers have discussed that the employee appraisal of his leader's ethical behavior develops or prevents negative feelings as embitterment [e.g., (5, 45)]. Michailidis and Cropley have studied the contributing factors of workplace embitterment by longitudinal design and found that out of four factors of justice, three factors, distributive, informational, and interactional justice, are leader related and are more significant in the development of embitterment emotion than organisational justice which is structurally related (19). In short, a leader's ethical behaviors can reduce employees' embitterment. So, through the lens of effective event theory, we can hypothesise that ethical behaviors of leaders significantly and negatively influence employees' workplace embitterment.

Hypothesis 1: Perceived leaders' ethical behaviors will lower employee exposure to workplace embitterment.

Workplace embitterment as a mediator

The emotional experience and reaction of employees in leader-member interaction is an extensive area of research (5, 46) over the last decades due to its vital role in the leadership process (47) and its ultimate influence on employees' outcomes and wellbeing (1, 5). Workplace embitterment and employee wellbeing relationship may be described by the Affective Events Theory. AET demonstrates how feelings and emotions influence employees' behavior. Affective event theory demonstrates that followers respond emotionally to events and situations they encounter at the workplace and that their response stimulates their wellbeing and satisfaction (23, 48).

Weiss et al. (23) recommend that work events elicit perceptive appraisal and determine emotional reactions, which influence employee outcomes positively or negatively. The work setting shapes an employee's feelings or moods, for example, if they perceive their leader to be less supportive than a colleague. Emotional responses to employees from the past or recent past influence how they feel today. In conclusion, affective event theory gives two key takeaways. First of all, feelings offer important clues to identifying worker behaviors. However, the AET model demonstrates that work set tings' hassles and uplifts affect employee performance and satisfaction. Second, it's important to remember that even seemingly unimportant occurrences can trigger strong emotions in employees. Accordingly, workplace embitterment, a negative emotion, significantly impacts a worker's psychological wellbeing at work. Thus, workplace embitterment, a negative emotion, impact employee wellbeing (24).

Hypothesis 2: employee feeling of workplace embitterment is negatively associated with employee wellbeing.

Most studies that looked into the mediating mechanism that starts the connexion between a leader's ethical actions and employee results focus on pro-social elements, such as employee engagement, LMX, and perceived organisational support (18, 49). Few studies looked at how ethical leadership behaviors affect employee wellbeing indirectly through emotional responses, particularly negative emotions in the observed relationship (5, 20, 47, 50). However, this study suggests that by assessing followers' emotional responses during the leadership process, it is possible to indirectly investigate the influence of leaders' ethical behaviors on employee wellbeing. The literature examines employee emotional responses as a mitigator and mediator mechanism. According to Velez and Neves (20), ethical leadership behaviors greatly predict employees' emotional responses and mediate the link between leaders' behaviors and employee outcomes (5, 51). According to a study by Valle et al. (50), an employee's emotional experience reduces the association between a leader's ethical behaviors and the wellbeing of their employees. The study examines workplace embitterment mediating between leaders' ethical behaviors and employees' wellbeing. Therefore, the following theory can be established from the viewpoint of AET.

Hypothesis 3: Employee perception of workplace embitterment can mediate the relationship between leaders' ethical behaviors and employees' wellbeing.

TABLE 1 Hypothesis and its acceptance criteria.

Hypothesis	Hypothesis statement	Acceptance criteria	Confidence interval
Hypothesis 1	Perceived leaders' ethical behaviors will lower employee exposure to workplace embitterment.	The hypothesis will be accepted if $p < 0.05$	95%
Hypothesis 2	Employee feeling of embitterment is negatively associated with employees' wellbeing	The hypothesis will be accepted if $p < 0.05$	95%
Hypothesis 3	Employee perception of WPE can mediate the relationship between leaders' ethical behaviors (leadership) and employee wellbeing	The hypothesis will be accepted and fully mediates if VAF> 80% and if VAF value < 20% then no mediation	95%
Hypothesis 4	followers with higher CSE experience less workplace embitterment as a result of leaders' low ethical behaviors.	The hypothesis will be accepted if the interaction term is significant ($p < 0.05$). The model will be moderated mediated if the index of moderated mediated is significant.	95%

Core self-evaluation: A swapping of leaders' ethical behaviors

Numerous studies in the literature have studied individual attributes and organisational characteristics that can swap the effect of behavior of leader (24). Individual attributes studied as a substitute for leadership behaviors are the locus of control (52) and proactive personality (20). Organisational characteristics include perceived organisational support (53), workplace humour (50), etc. These studies have demonstrated that the presence of any substitutes from individual or organisational characteristics, the less the dependency of an individual on his leader and its influence is reduced [as cited in (20)]. So, aligning with these findings and suggestions, this study expands the literature on leadership swapping. The core self-evaluation attribute of an individual is examined in this study as a potential swapping for ethical leadership behaviors.

Core self-evaluation is an individual evaluation of his abilities, competence, self-worth, and self-control over his environment (51). Individuals with high CSE are less dependent on leaders and more motivated to grasp opportunities and challenges (54). Such individuals are less vulnerable to organisational injustice and leaders' behaviors (20, 55). These individuals' leaders can be redundant; they rely less on their leaders' behaviors. In the scenario (employees with high core self-evaluation) where followers are self-sufficient and less dependent on leaders, it can be assumed that followers' positive core self-evaluation can be swapped or substituted for ethical leadership. Core self-evaluation is an intrinsic motivational resource for coping with environmental challenges and negativity. Conversely, individuals who possess low core self-evaluation experience more negative emotions as they are unable to absorb the negativity from either the work setting or leaders' behaviors. Additionally, these employees are more dependent on their leaders and inept at challenging situations (54).

Hypothesis 4: followers with higher CSE experience less workplace embitterment as a result of leaders' low ethical behaviors.

Table 1 summarises all the study hypotheses, their acceptance criteria, and the level of confidence.

Research methods

Participants and procedure

Participants in the study were faculties at public universities in Pakistan who were recognised by the higher education commission (HEC) as having at least 1 year of professional experience and having interacted with leaders (head of the department). According to ongoing discussions in the *International Journal of Educational Management* (55), because of bullying, abuse, and harassment, modern colleges may not have a favourable work environment for the faculties (55).

A simple random sampling method was used to choose the participants in two stages. In the first stage, a list of all public sector universities was taken from the HEC website, numbered from 1 to n. Then, a sample of 20 universities was selected using MS Excel and between functions. A list of faculties of 20 selected universities was prepared from the faculty profile available on the university website. In the second stage, based on the list of faculties, 800 participants in the study were selected.

A structured questionnaire developed in the English language was used to collect data. Along with the formal questionnaire, an additional sheet was attached explaining the study objective and the clear instructions for the study participants and ensuring the confidentiality of the data. Participants' personal information was kept confidential, and only aggregated responses were used in the study. To lower the common method variance (CMV), as recommended by Podsakoff et al., data were gathered in this investigation in two-time waves separated by 6-week intervals (56).

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TABLE 2 Attrition rate of respondents.

Time lag	# of questionnaires delivered	# of questionnaires received	Attrition rate
T1	800	570	71%
T2	570	411	72%

A link to an online survey-1 is sent to 800 participants. The participants are also being approached *via* phone calls and meeting personally (wherever possible). After receiving the first 570 completed surveys (attrition rate 71%). Six weeks after T1, in period 2 (T2), we send a second survey to T1 respondents, including constructs measuring workplace embitterment and employee wellbeing. We received 411 completed questions on T2 (attrition rate 72%). Table 2 contains information regarding the attrition rate of respondents. Thus, out of the 800 respondents contacted, we found 411 completed, with an average response rate of 73%, which is satisfactory for the two-wave data collection. After removing the outliers, we have 398 responses to work with it.

Table 3 contains the detailed characteristics of the study sample. The final sample includes 254 male respondents (64%) and 144 female respondents (36%), corresponding to the gender mix of respondents. Most respondents (55%) have an MS/MPhil degree, while the remaining (45%) have a PhD and Post Doctorate. The average age of the respondents was 44.5 years, and their average experience was 11 years.

TABLE 3 Sample characteristics ($n = 398$).

Category	Characteristics	% age
Gender	Male	64
	Female	36
Age	Below 30 years	17
	30–40 years	41
	40–50 years	33
	50–60 years	9
Qualification	Ms/Mphil	55
	PhD	45
	Post Doc	1
Tenure	Below 1 year	3
	1–10 years	58
	10–20 years	12
	20–30 years	24
	Above 30 years	4
Nature of job	Contractual	17
	On BPS	63
	On TTS	20
Job position	Lecturer	48
	Assistant Professor	30
	Associate Professor	19
	Professor	3
Work experience	Below 5 years	35
	5–10 years	46
	10–20 years	14
	20–30 years	4
	Above 30 years	1
Additional assignment	Paid	24
	Unpaid paid	48
	Both	19
	None	8

Measures

Leaders' ethical behaviors (T1)

The ethical leadership scale ($\alpha = 0.91$) developed by (25) is comprised of different behaviors like fairness, power-sharing, integrity, people orientation, role clarity, and ethical advice, which are used to assess the ethical behavior of leaders. "My HOD discusses what is required of each group member" is an example item. Respondents were asked to rate their responses on a Likert scale with a range of 1–5. Point 1 denotes a strongly disagree, whereas point 5 denotes a strongly agree.

Workplace embitterment (T2)

Using the Post-traumatic Embitterment Disorder self-rating scale ($\alpha = 0.98$) created by Linden et al., workplace embitterment was assessed. The scale (57) has 19 components. The prompt "I have experienced one or more stressful occurrences at work..." appears before each of the 19-item statements. "That I consider being terribly unjust and unfair," for instance. On a 5-point scale, participants' responses ranged from 1 (not at all true) to 5 (very true).

Employee wellbeing (T2)

With nine items and a Likert scale with five possible outcomes, the Zheng et al. (33) scale ($\alpha = 0.97$) was used to assess the wellbeing of the workforce. Point 1 represents a strongly disagree, whereas Point 5 represents a strongly agree. "People think I'm willing to give and share my time with others" is an example item.

Core self-evaluation (T1)

Employees' core self-evaluation is measured by using 12 items scale ($\alpha = 0.80$) developed by Judge, Erez, Bono, and Thoresen (58) on a Likert scale of 5 points ranging from 1 to 5. Strongly disagree is represented by point 1, and strongly agree by point 5. For instance, "When I fail, I sometimes feel worthless."

Control variables

The study controlled for participant gender (coded 1 = male and 2 = female), age (in years), and tenure (in years) with the leader as prior studies, e.g., Schwepker et al. (9) suggested that these characteristics can confound with exposure to workplace embitterment and employee wellbeing.

Analysis

First, the missing data and outliers are checked and removed using SPSS 24.0 as such cases are potential threats to normal data distribution. Second, the measurement model requirements such as confirmatory factor analysis of all constructs are investigated using AMOS 24.0. Then, the reliability and validity detail investigation is done by measuring composite reliability and convergent and divergent validity of the measurement model. Hair et al. (59) suggested that the construct-related standardised weights calculated the average variance scores. Third, common method bias, also a serious concern of the study, is investigated using Harman's single factor score, wherein all items (measuring unobserved variables) stay loaded into one common measure. The overall variance for one (single) factor must be lower than 50%, and if the overall variance is lower than 50%, it is an indication that common method bias would not affect the data and the results (56). Next, descriptive statistics, correlation analysis, and Cronbach alphas of all constructs are estimated using SPSS 24.0. Lastly, hypotheses testing is completed on Hayes Process Macro (2017) using a bias confidence interval.

Results

Table 4 presents the descriptive statistics, including mean and standard deviation and associations between the study constructs. According to correlation coefficients listed in Table 4, ethical leadership behavior is strongly and negatively related to workplace embitterment ($r = -0.454$, $p = 0.01$). Employees who believe their leaders to be morally upright report less embitterment at work. WPE and employee wellbeing are strongly and adversely correlated ($r = -0.759$, $p = 0.01$). Thus, perceived workplace embitterment significantly and negatively influences employees' wellbeing. Moreover, all correlations were significant and associated at a moderate level, indicating no multicollinearity issue (60). This gave the premise for further testing of study hypotheses.

Measurement model

The validity of each study construct is estimated using confirmatory factor analysis. This study's constructs comprise many item scales (e.g., workplace embitterment 19 items). So, the item parcelling approach is adopted to avoid the problem of model under-identification. Due to items parcelling, a small number of parameters fetches stable scales, trivial standard errors, and a better model fit (61). The items allotted to every parcel were averaged. Thus, a minimum of 3 parcels are formed for every construct of the study: the leader's ethical behaviors, workplace embitterment, employee wellbeing and core self-evaluation. The CFA results show that all variables are independent of each other. Chi-square (χ^2) = 280.261, χ^2 / degrees of freedom (df) = 2.860, $p < 0.000$, comparative fit index (CFI) = 0.968, [Tucker – Lewis index (TLI)] = 0.961, The goodness of fit index (GFI) = 0.918, root-mean-square error approximation (RMSEA) = 0.06, and standardised root means residual (SRMR) = 0.043. All values are within acceptable ranges (62).

Moreover, Cronbach's alpha (0.76–0.98) and composite reliability (CR) values (0.803–0.97) are all above the threshold of 0.70; and AVE values (0.51–0.921) are all comfortably above the threshold of 0.50. The measurement model's convergent validity is guaranteed by the alpha, composite reliability, and average variance extracted values (see Table 4). The value of each variable's square root should be over the various inter-construct correlations, according to Fornell and Larcker's (63) criterion, which is used to assess discriminant validity. On the diagonals of Table 4, the square root of the AVE of each observable variable is given. On in-depth examination of those figures, the square root of the AVE of each variable is shown to have the highest connexion with other variables of each given variable. Thus, it confirmed the discriminant validity.

TABLE 4 Descriptive statistics and inter-correlations of study variables.

Variable	CR	AVE	Mean	SD	1	2	3	4
1. Leaders ethical behaviors	0.85	0.51	2.54	0.52	**0.708**			
2. Workplace embitterment	0.96	0.87	3.16	1.12	−0.454	**0.933**		
3. Employee wellbeing	0.97	0.92	2.65	1.08	0.378	−0.759	**0.959**	
4. Core self-evaluation	0.83	0.58	2.89	0.57	−0.249	−0.303	0.157	**0.762**

CR, Composite reliability; AVE, Average variance extracted; p < 0.01. Bold values indicate the square root of every construct AVE to determine discriminant validity.

Due to the limitations of the testing of one Harman feature, Podsakoff et al. (64), the mensuration model is tested with and while not a common latent factor (CLF) to evaluate the extent to that common method bias (CMB) may be a major data issue. A common latent factor may be a hidden feature within the mensuration model that features a direct relationship with the models' all variables (constructs). A different mensuration model is run, containing a common latent factor with direct paths to any or all indicators of all constructs of the mensuration model. CLF variance is restricted to 1 [as cited in (65)]. CLF measurement model fit values (χ^2 =279.729, $p < 0.01$; χ^2 / DF =2.741; RMSEA = 0.061; SRMR 0.0470; NFI is 0.92; GFI is 0.89; TLI is 0.94; CFI is 0.95) reported a good model fit.

Common method bias

The difference of standardised regression weights of the measurement model without CLF and with CLF is calculated to cheque the degree of CMB, and none of the individual differences is >0.2, which reported that CMB threat is not found in the data (65). Moreover, the explained variance by the common factor method is only 4%, far from the threshold value is 25% [as cited in (53)].

Hypotheses testing

The study's hypotheses are tested using Hayes' (66) process macro for SPSS, and the findings are shown in Table 5. These results indicate the existence of a significant relationship between studied variables, and almost all results are aligned with findings in the literature. First, we examined the direct relationships, and then the indirect (mediation) relationships were examined. The outline of the results is shown in Figure 2.

Direct relationships

The estimation of the study relationships is shown in Figure 2. According to hypothesis 1, ethical behavior on the part of leaders is negatively correlated with workplace embitterment, and according to hypothesis 2, WPE and employee wellbeing are negatively correlated. The results also show that ethical behaviors in leaders ($\beta = -1.024$, $p < 0.01$) is significantly negatively related to WPE, in support of H1 and WPE ($\beta = -0.667$, $p < 0.01$) negatively related to employee wellbeing, in support of H2.

Indirect relationships (testing of mediation and moderation)

Mediation (indirect relationship) between predicting and outcome variables exist when with any change in predicting variable, the mediating variable also changes, which subsequently affects the outcome variable (59). Hypothesis 3 proposes that employee perception of WPE can mediate the association between LEBs and employee wellbeing.

Hayes' (66) macro process results measuring the indirect relationship (mediation) between LEBs and employees' wellbeing are given in Table 5. According to the findings, there is a significant indirect impact of LEBs (through WPE) on employee wellbeing [= 0.6924, $p = 0.001$, 95% CI (0.5560, 0.8372)]. Furthermore, the analysis of bias-corrected bootstrap exposes that the 95% confidence interval (CI) mentioned above excludes 0 for the mediating effect of workplace embitterment, supporting H3. Variance accounted for (VAF), which cheques the partial or full mediation effect. VAF is a ratio of indirect effect to total effect (total effect = indirect effect + direct effect). The value of VAF for WPE in the leaders' ethical behaviors and

TABLE 5 Mediation model's path coefficients and indirect effects.

Structural path	β	SE	*P*-value	95% CI	
				Lower limit	Upper limit
LEB-EWB	0.1011	0.0793	0.2031	−0.0548	0.257
LEB-WPE	−1.0224*	0.0956	0.000	−1.2014	−0.8343
WPE-EWB	−0.6673*	0.0367	0.000	−0.7494	−0.6051
LEB-WPE-EWB	0.6924*	0.0696	0.000	0.5597	0.8335
Total effect	0.7935	0.0952	0.000	0.6064	0.9807

Control variables	β	SE	*P*-value
Age	0.058	0.063	0.353
Gender	0.187	0.109	0.09
Tenure with current leader	0.037	0.076	0.627

N = 398, *$p < 0.01$.

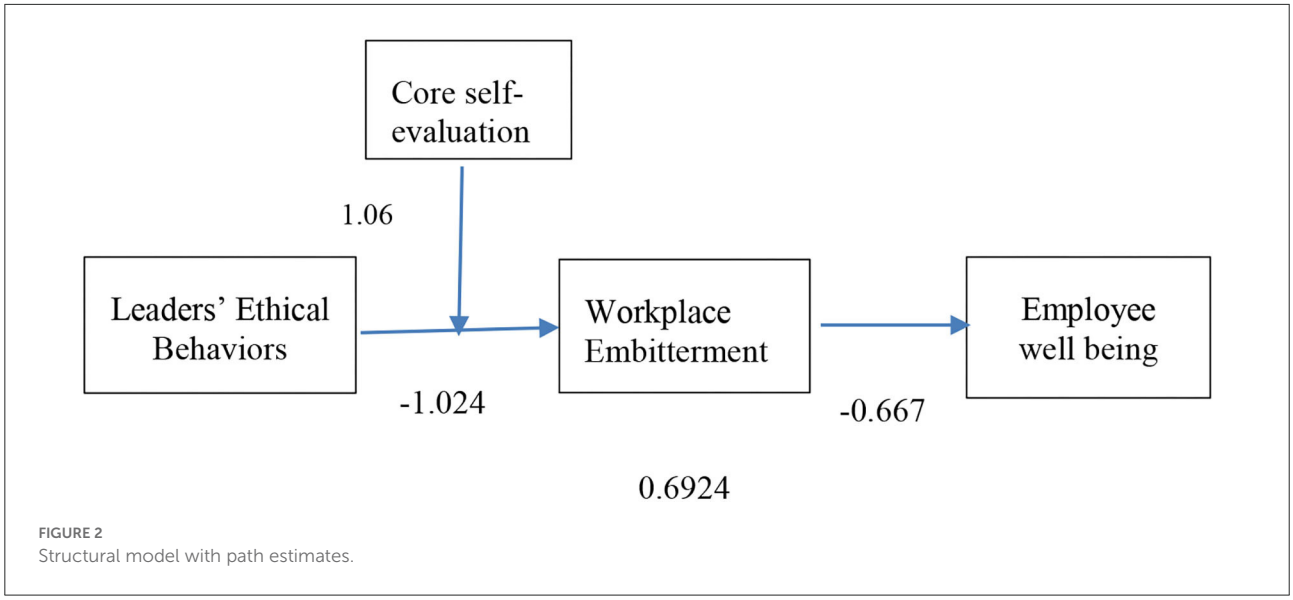

FIGURE 2
Structural model with path estimates.

TABLE 6 Regression results for the conditional indirect effect.

Structural path	β	SE	95% CI	
			Lower limit	Upper limit
LEB-WPE	−4.1665**	0.4017	−4.9563	−3.367
LEB-EWB	0.1011	0.0793	−0.0548	0.2570
CSE-WPE	−3.3274**	0.3629	−4.0408	−2.1639
ELS * CSE-WPE	1.0616**	0.1381	0.7900	1.331
Index of moderated mediation				
CSE as moderator	−0.719*	0.0947	−0.909	−0.5307
Conditions of the moderator	Indirect effect	Standard error	95% CI	
Low (M-1SD)	1.0844	0.0906	0.913	1.2714
Medium (M+0SD)	0.7294	0.07	0.5893	0.8653
High (M+1SD)	0.3654	0.0779	0.2084,	0.5174

*$p < 0.05$; **$p < 0.01$.

employee wellbeing relationship is 0.87 (87%), indicating full mediation (67). Moreover, the model direct effects revealed that ethical leadership ($\beta = 0.1011$, 95% CI (−0.0367, 0.1694)] is not significant and which also indicates that WPE fully mediates the relationship between leader's ethical behaviors, such as being fair, truthful, delegating power, people orientation, clarifying the roles to followers, and guiding them ethically, and employee wellbeing.

Testing of moderated mediation

According to Hypothesis 4, employee core self-evaluation moderates the negative association between leaders' ethical behaviors and workplace embitterment, making it lesser in the presence of high core self-evaluation and stronger if employees gave their CSE a lower rating. The findings of this hypothesis analysis are presented in Table 6, which uses Hayes' (66) process macro moderated mediated model, also known as model 7.

The upper parts of Table 6 contain the coefficient of the moderation effect of CSE on the negative link between LEBs and workplace embitterment, which indicates that the interaction term resulted by multiplying CSE and leaders' ethical behaviors (leadership; $\beta = 1.0616$, $p < 0.01$), is significant.

Next, we perform a basic slope analysis (66). First, we looked at how employee core self-evaluation and leaders' ethical behaviors (leadership) interacted to affect workplace embitterment. The moderated mediation index [index = 0.719, SE = 0.0947, CI (−0.9090, −0.5307)] is significant. Additionally, conditional indirect effects are seen in Table 6's lower sections at various points, with one minus SD and one plus SD. The results show that the mediated model for leaders' ethical behaviors (IV) is significant when employee core self-evaluation is high (i.e., one standard

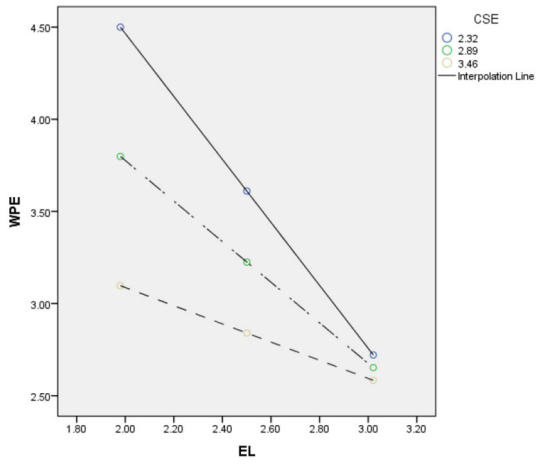

FIGURE 3
Regression results for the conditional indirect effect.

deviation above the mean). The conditional indirect effect is = 0.3654, SE is 0.0779, and the confidence interval is (0.2084, 0.5174).

When employee core self-evaluation is low (i.e., 1 standard deviation below the mean), the mediated model for leaders' ethical behaviors (leadership) is significant. The conditional indirect effect is = 1.0844, SE = 0.0906, CI (0.9130, 1.2714). Overall, the pattern shown in Figure 2 supports H4. That is, leaders' low ethical behaviors are linked to lower employee wellbeing through intensified employee emotion, i.e., workplace embitterment, but only when employee core self-evaluation is low (see Figure 3). Likewise, when employees have a higher perception of their core self-evaluation, low leaders' ethical behaviors are related to improved or stable wellbeing through the decreased effect of negative emotion of employee, i.e., workplace embitterment (i.e., swapping of ethical leadership).

Discussion

This study focused on the research question of how leaders' ethical behaviors mend employees' wellbeing by precluding employees' negative emotions at work. Numerous studies on leaders' ethical behaviors (ethical leadership) demonstrated that LEBs affect employees' behaviors and outcomes (20, 49, 55). Employees perceive their leaders' behaviors as ethical due to the features of being supported by leaders, being treated fairly and justice, and sharing the powers. Therefore, they experience fewer negative events and negative emotions, which foster their wellbeing.

Research results

This study proposed negative workplace emotion (workplace embitterment) as a mediation mechanism in leader's ethical behaviors and employee wellbeing relationships based on affective events theory in the context of Ahmad and Kaleem's study concluded that discuss the positive link between leaders' ethical behaviors and employees' wellbeing (55). Due to the unpleasant affective experiences (embitterment) at work, leaders' unfair and unethical activities were observed to have an adverse effect on employee wellbeing in the study context (a collectivist culture) where individuals feel obligated to favour their close ones (55). The study's findings are based on the data gathered from Pakistan's public universities' faculties. Primarily, it was found that LEBs will help in preventing negative experiences and emotions in the workplace, which will nourish employees' wellbeing. Furthermore, this study investigates WPE as a mediation mechanism in leaders' ethical behaviors and employee wellbeing relationships and found a fully mediating role. Mainly, it catechises the role of leaders' (un)ethical behaviors in cropping followers' emotional reactions to employee wellbeing (5, 20, 55). The study derives leaders' ethical behaviors enhance followers' wellbeing by minimising the chances of emergence of negative emotion in leader-follower daily interactions.

Generally, noting the dearth of an investigation into the influence of leaders' ethical behavior on inducing emotional reactions, this study validates the hypothesis that leaders' ethical behaviors can restrain workplace embitterment. Leaders' ethical behaviors are negatively associated with workplace embitterment, whether in the shape of PTSD, bullying, or stress disorder, in line with the literature [e.g., (19, 20, 44, 45)]. Moreover, the study's results also divulge that employee wellbeing is smashed due to workplace embitterment, consistent with prior studies (2, 7, 19, 47, 48, 68, 69). An interesting finding of this study is demonstrating how a leader's ethical behaviors play an influential role in eluding negative emotions within the work and nourishing employee wellbeing, which is imperative for every organisation.

This study also investigates a catalyst that can swap the effect of low leaders' ethical behaviors in the organisation (16, 55). Followers' CSE is a moderator in the study relationship, which has a dual impact. On one side, it makes followers independent of leaders; on the other, it maintains followers' wellbeing by breaking down the impacts of leaders' low ethical behaviors on WPE (20). Employees with high CSE always do things better due to their abilities and perception of control over the changing situation (54). Research on employees with high CSE has suggested that these employees possess the flexibility and competence to deal with situational challenges (54). Therefore, employees with high CSE have greater social and personal self-efficacy and locus of control in slashing the effects of negative work events.

This study expands the scope of appraisal theories of emotions by elucidating leaders' ethical behaviors as a stimulant of employee wellbeing by controlling WPE. Moreover, this study also implies that workplace embitterment mediates the link between a leader's ethical behaviors and employees' wellbeing, as suggested by numerous researchers (20, 50, 68–70). It is alluring that employees with high core self-evaluation are likelier to be independent of leaders' ethical behaviors and potentially swap the low leader's ethical behaviors.

Theoretical contributions

This study has valued and is worth citing strengths. First and foremost, this study is significant because it adds to the literature on employee wellbeing and employee emotions by organisational (leaders' behaviors) aspect as well as follower traits, such as core self-evaluation. Explicitly, there is a paucity of literature on workplace embitterment, particularly in terms of leader behaviors and followers' emotional experiences during the leadership process. The purpose of this study is to see how leaders' ethical behaviors, as a contextual variable, affect employee wellbeing by restraining negative emotion, i.e., workplace embitterment, from the AET perspective. The study underlines the importance of leaders' ethical behavior in developing countries, as well as a collectivist culture, in encouraging employee wellbeing by preventing workplace embitterment. It aids in seeing the logical link between a leader's ethical behaviors and unfavourable employee emotions, such as workplace embitterment. Therefore, from the perspective of AET, this study confirms that workplace embitterment which is a negative emotion serves as a mediating mechanism by which leaders' ethical behaviors affect employees' wellbeing. It also affirms the significance of leaders' ethical behaviors in managing negative emotions and promoting employee wellbeing.

The second strength of the study is the exhaustive examination of leaders' ethical behaviors to embitterment and employee wellbeing relationships from a different theoretical perspective. Unlike other studies in the literature based on social exchange, ethical leadership, and social learning theories, this study is based on appraisal theories of emotions.

Finally, concerning the limited literature on the handling of workplace negative emotions, i.e., embitterment, this study adds to the knowledge by suggesting follower traits, such as CSE, as an alternative to prevent or reduce workplace embitterment and improve employee wellbeing. This study also contributes to a growing area of research concerned with emotional management in the workplace where low leader's ethical behavior (ineffective leadership) is dominating and effective leadership is ignored by examining the role of employee's characteristics, such as core self-evaluation, which may mitigate the effect of ineffective leadership. Thus, the findings of this study emphasise the effectiveness of followers' core self-evaluation trait in managing their emotions when leaders practice low ethical behaviors, and such practices are prevalent. Thus, its findings suggest that followers CSE swap leaders' ethical behaviors as an alternative mechanism to foster employee wellbeing.

Practical implications

First and foremost, several studies in the literature demonstrated that leaders' ethical behaviors and ethical leadership are one of the significant factors affecting employees' imperative behaviors and wellbeing positively (28–30, 69, 70). This study considered the affective perspective, which potentially affects the relationship between leaders' ethical behaviors and employees' wellbeing. Our study findings confirmed that leaders' ethical behaviors nourish employees' wellbeing by avoiding the emergence of negative emotion, i.e., workplace embitterment. So, this study provides an opportunity for the management to understand the vitality of leaders' ethical behaviors in averting employees from being embittered and taming wellbeing. Hence, it provides a baseline for longitudinal tracking of changes in leaders' behaviors, such as developing transparent or ethical work culture and training programs for leaders to be ethical, constituting clear ethical guidelines, and practicing by leaders who impel followers' emotions and behaviors.

Second, our study findings confirmed the eminence of leaders' ethical behaviors to develop positive behaviors and prevent negative emotions. Mostly, organizations in the contemporary business world prefer competence and performance while selecting leaders owing to high competition and uncertainties in the market. However, less consideration is given to morality and ethical attributes to leaders in a unique position to influence their followers. Therefore, this study guides organizations to ensure that the right person is hired or promoted as a leader or manager that can behave ethically and maintain an ethical work environment.

Finally, though it's hard to ensure that our leaders behave ethically, this accentuates some alternatives that can substitute leaders' ethical behaviors or reduce dependency on leaders. Literature on leaders' ethical behaviors explains attributes that make leaders either unnecessary or less dependent on leaders [e.g., (20)]. Our study findings supported that followers' attributes, such as CSE, can moderate the link between leaders' ethical behaviors and followers' negative emotions, i.e., workplace embitterment, and can swap leaders' ethical behaviors. Therefore, leaders' organizations should pay attention to the personality attributes of employees during the selection process. They should prefer employees who rate higher on core self-evaluation attributes. Simultaneously, organizations should continually make efforts to raise their core self-evaluation

attribute through training programs, feedback, reward system, etc.

Limitations and novel future directions

The first limitation is common method variance (CMV) occurrence since employees provided ratings of leaders' ethical behaviors, workplace embitterment, employee wellbeing, and core self-evaluation. However, to abolish CMV and to obtain more worthwhile results, data should be collected in dyadic (56). Data collected in dyadic provides information closer to reality as dyadic data collection is free of personal over or under estimations. Second, this research work adopts a study design based on time interval, which is better than the cross-sectional study design. However, it's less accessible than experimental and longitudinal research designs. Future research can use such designs to formalise the cause as these study designs are viable and provide the opportunity to highlight some potential exceptional.

Third, this study has found that followers' CSE is a moderator between leaders' ethical behaviors and WPE. Other personality traits such as emotional stability and general self-efficacy may be examined as a swap of leaders' ethical behaviors (71, 72). Finally, the study is context specific and conducted in one country, Pakistan; study results may vary in different countries as LEB practice may be more prominent in the individualistic culture where people behave rationally than emotionally, and the chance of being unfair, dealing with inhumation is low (55). Yet without formal cultural testing features, this estimate is very speculative, so we recommend further research explicitly examining culture's role in the observed relationship.

Conclusion

The relationship between leaders' ethical behaviors and employees' wellbeing has been examined widely, but most studies examine positive and relational aspects. Stunningly, limited studies have examined the affective perspective. Based on appraisal theories of emotions, the study results suggest that followers' workplace embitterment completely mediates the relationship between leaders' ethical behaviors and employees' wellbeing. Moreover, followers' perceptions of high core self-evaluation can moderate the observed relationship and may swap leaders' ethical behaviors. However, this study validates (i) Further, this study identifies the ethical areas which need attention from the leaders to sway employee behavior; (ii) the significant role of a leader's ethical behaviors in nourishing employee wellbeing by preventing negative emotions; (iii) management have to take proactive actions such as devising clear code of conduct and communicating to leaders, ensure hiring of leaders with strong ethical values, reward ethical behaviors of leaders to encourage LEB in the organisation, etc.; and (iv) it also establishes the role of core self-evaluation in swapping leader's ethical behaviors. Although there is still more work to be done, we hope that our study will inspire other researchers to advance our understanding of leaders' ethical behaviors and employee wellbeing.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

AS and MB developed the research idea, design, and methodology. AS and MA conducted data collection and revised the manuscript. AS conducted the data analysis, prepared the original draft, and interacted with reviewers and editor. AS, MA, and MB approved and reviewed the article's submission. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Role of employee loneliness, job uncertainty and psychological distress in employee-based brand equity: Mediating role of employee exhaustion

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Employee-based brand equity plays a crucial role in building organizations' brand equity, and organizations strive to maintain it because of its stimulating effect on competitive achievement. Based on psychological contract and stress theory, this study developed a model that points out the antecedents which can play an adverse role in the EBBE building process. This study explores the role of employee loneliness, job uncertainty, and psychological distress on employee-based brand equity. This study also explores the mediating role of emotional exhaustion in these relationships. For the empirical analyses of the model, this study gathered data based on a 459 sample size under a time-lag approach from the employees of clothing brands in China. This study analyzed the data through partial least square structural equation modeling (PLS-SEM). For this purpose, SmartPLS software was used. The outcomes revealed that employee loneliness has no direct relationship with employee-based brand equity; however, job uncertainty and psychological distress negatively influence employee-based brand equity, such as job uncertainty and psychological distress reduce employee-brand-based equity. Moreover, emotional exhaustion mediates the relationship between employee loneliness and employee-based brand equity and job uncertainty and employee-based brand equity; however, emotional exhaustion does not mediate the relationship between psychological distress and employee-based brand equity. Finally, practical implications, limitations, and future directions are discussed in this study.

KEYWORDS

job uncertainty, psychological distress, emotional exhaustion, employee health, brand equity

Introduction

In this turbulent environment, organizations seek ways to deal with the market dynamics to maintain their sustainability (1). Organizations put their efforts into strengthening tangible and intangible assets to differentiate themselves in the market. However, Piehler et al. (2) revealed that firms are now giving more importance to intangible assets (human capital specifically) for gaining a competitive edge. Human capital could play a considerable role and assist firms in dealing with the challenges of the turbulent environment of markets. Scholars also draw firms' attention to consider the constructive role of human capital in the creation of brand equity and in enhancing the firm's overall performance (3–5).

Hanaysha and Al-Shaikh (6) stated that brand equity indicates the value of a firm's product or services due to its unique brand name or attributes. Further, they acknowledged that firms gain fruitful paybacks of brand equity through higher profits and long-term market survival. King and Grace (7) revealed that there is plenty of knowledge in literature about brand equity from financial and customer perspectives. However, Erkmen (8) noticed that the building of brand equity is ignored in literature from employees' perspectives. Employees are a valuable part of organizations, and they can play a significant role in making or breaking the brand. Poulis and Wisker (9) quantified the employees as the firm's asset and commented that organizations can use intellectual abilities of employees as strategic weapon to build brand equity. Boukis and Christodoulides (4) acknowledged that employee-based brand equity (EBBE) is a valuable asset for an organization. Further, they commented that creating and maintaining EBBE is a crucial task for organizations. Yang et al. (10) revealed that the COVID-19 pandemic effects deeply affect the emotional and psychological health of employees. Moreover, employees' overall brand performance is also influenced by psychological and emotional discomfort at the workplace.

Poulis and Wisker (9) stated that the EBBE building process positively influences when they feel a psychological attachment with their organizations. However, according to Jindo et al. (11) point of view, organizations have to keep a deep eye on the psychological health of employees and cure them from being a victim of psychological distress in the workplace. Moreover, they acknowledged that employee psychological distress negatively affected their brand performance. Takao et al. (12) also informed about the negative consequences of employee psychological distress and said that it is an alarming situation for organizations when their employees experience psychological distress in the workplace. Moreover, employees' job outcomes also decrease when they feel stress, anxiety, and uncertainty in the workplace.

Chen and Eyoun (13) point out that with unexpected experience of COVID-19 lockdown, employees feel insecure about their employment. Employees are feeling restless about their future and have a fear of job loss. Moreover, this stress and uncertainty about job unfavorably impact their workplace performance and productivity. Scholars identified job uncertainty as a determinant of decreasing job satisfaction and commitment and a damaging tool for the psychological health of employees (14, 15). Bazzoli and Probst (16) said that employee job uncertainty could also negatively influence the cognitive and critical abilities of employees. Further, Chen and Eyoun (13) revealed that employee job uncertainty has a crucial role in enhancing their emotional exhaustion.

According to Wong et al. (17) point of view, employee emotional exhaustion is a crucial factor for firms. Further, they argue that employee emotional exhaustion can create undesirable circumstances for a firm's brand equity and sustainability. Consequently, EBBE also influences negatively when employees experience emotional exhaustion at the workplace. Employee emotional exhaustion paves the way for negative consequences for organizations in decreasing employees' job performance, lowering their work effectiveness, and increasing turnover intentions (18). Further, they informed that organizations should have to focus on building effective strategies and preventive measures to cope with employees' emotional exhaustion state. Seppala and King (19) revealed that emotional exhaustion and burnout of employees not only effects on work performance of employees but also take them into a lonely state.

Peng et al. (20) define loneliness as an employee's state of mind when they feel emotionally exhausted and isolate themselves from other human beings. Further, they stated that workplace loneliness is a damaging association with employee wellbeing and job performance. Moreover, it also damages the ability of employees' creativity and critical thinking capacity. Yang and Wen (21) noticed that employee socialization with the leadership and other team members could play a crucial role in mitigating the negative impact of workplace loneliness on employees' behavior. Further, they acknowledged that employee loneliness also negatively influences their brand-related performance.

The current study serves the literature in different ways. First, the present study extends the literature by providing insight into employee-based brand equity. Based on the psychological contract theory (22) and stress theory (23), the present study tries to attempt the role of negative employee attributes (employee loneliness, emotional exhaustion, psychological distress) on EBBE. According to the author's knowledge, this is the only study that provides insights to firms on EBBE. Second, this study also points out three negative attributes of the workplace that can cause the reduction of EBBE. Third, the present paper attempts to find the association between employee loneliness and EBBE. Fourth, finding out the relationship between emotional exhaustion and EBBE is also an objective of the present paper. Fifth, this study also tries to check the relationship between psychological distress and EBBE. Lastly, this study attempts to

determine the mediating role of employee emotional exhaustion between independent variables employee loneliness, emotional exhaustion, psychological distress, and dependent variable EBBE, respectively.

Literature review

Employee-based brand equity

Prados-Pena and Del Barrio-García (24) defines brand equity as value addition activities of firms to strengthen the company's position through differentiating their offering products or services. King and Grace (25) highlighted that financial, customer and employee are three approaches for measuring the firm's brand equity. Further, they explained these approaches and said that the financial-based brand equity approach could be defined as the additional economic worth in the form of cash flows. Consumer-based brand equity is a measure that indicates the perceptions, feelings, and affiliations of consumers toward the brand. Lee et al. (26) define employee-based brand equity as the employees' constructive brand behaviors and efforts in building a firm's brand equity.

Poulis and Wisker (9) identified that "brand endorsement, brand-consistent behaviors, and brand allegiance" are three essential dimensions of employee-based brand equity. Further, they elaborate brand endorsement as the degree to which employees willingly endorse the brand to their internal and external stakeholders with positive word of mouth. Brand-consistent behaviors could be termed employees' workplace behaviors that represent the firm's values and norms (3). The third key dimension is the brand alliance, which demonstrates the employees' attention and planning to be a part of that firm for a long time. Additionally, King and So (27) stated that these three dimensions of employee-based brand equity are a valuable indicator of organizational equity and its long-term sustainability.

Anasori et al. (28) noticed that employees' psychological engagement has an essential role in the brand-building process of firms. In addition, employees' job performance and productivity are also influenced positively when they have an emotional and psychological bond with organizations. However, Bentley et al. (29) noticed that psychological stress or anxiety at the workplace could cause a reduction in commitment and trust of employees that, in turn, decrease their overall performance. Weak employment relationships between employees and organizations could be a hazardous situation for firms' sustainability. Employees also feel uncertain about their jobs and future when their psychological and emotional needs don't fulfill at the workplace (30). Said and Tanova (31) notify that these negative attributes may cause employees' emotional exhaustion. In addition, emotionally exhausted employees may come into a dangerous psychological state known as loneliness. Due to loneliness, the employee-based brand equity process could influence negatively because employees don't have an interest in the internal value creation activities of the firm.

Employee loneliness

Workplace loneliness is an apathetic psychological state that refers to the individuals' set of feelings when they perceive that their social needs are not sufficiently met by their peers and organization (32). Ayazlar and Güzel (33) point out two important distinctions in the literature regarding loneliness definition. First, social loneliness indicates the dearth of social relationships or acceptable friendship relations. The second one is emotional loneliness which refers to the absence of affective commitment or romantic relationships. Further, they commented that loneliness has painful cognitive attitudinal, behavioral, and emotional outcomes for employees, which influences severely on their workplace performance. Peng et al. (20) also noticed that workplace loneliness negatively affects employees' wellbeing and job performance. Further, they point out that workplace loneliness makes emotional and psychological changes in employees that negatively affect employees' creativity ability.

Konno et al. (34) revealed that during the COVID-19 pandemic, workplace loneliness severely influenced employees' mental health. Indeed, the workforce who experience loneliness during the epidemic may feel psychologically disengaged and incompetent for performing work activities. Moreover, employees' self-efficacy and work performance also decrease, which is a turbulent situation for firms' sustainability. Additionally, Kloutsiniotis et al. (35) quantified workplace loneliness as a "modern epidemic" that needs to be cured. Further, they informed that the firms should take proactive measures to prevent their workforce from victimizing loneliness. Ayazlar and Güzel (33) points out "emotional deprivation and social companionship" as two important dimensions of workplace loneliness. Emotional deprivation could be defined as the extent to which employees have an interpersonal relationship within the workplace. Social companionship is the extent to which employees have an adequate social circle in the workplace. Employees share their knowledge and problems with their peers when they have a strong social network.

Konno et al. (34) point out that workplace loneliness paves the way for employees' psychological disorders, such as anxiety, depression, and psychological distress. Burris et al. (36) also stated that psychologically disengaged employees might not have a strong bond with the values and objectives of the firm. Consequently, employees' brand-related performance may also influence negatively, which is an alarming situation for organizations. Based on the stress theory, the present study assumes that employee-based brand equity influences negatively

when they experience loneliness in the workplace. For empirical investigation, present study hypothesize that

H1: *Employee loneliness has a negative association with employee-based brand equity.*

Job uncertainty

Bordia et al. (37) defines uncertainty as the extent to which individuals are unable to predict something accurately. In other words, uncertainty could be termed as a sense of doubt and insecurity about upcoming events. Further, they commented on uncertainty and said this type of situation might occur due to disinformation and ambiguous or contradictory information. Chen and Eyoun (13) acknowledged that job uncertainty includes employees' ambiguity or doubts about their long-term employment relationship with the organization. Additionally, Bordia et al. (37) highlighted four types of taxonomies of uncertainty. First, external uncertainty could be termed as the environmental uncertainty that occurs due to technological and market changes. Second, organizational uncertainty could occur due to changes in the external business environment. Third, group uncertainty arises due to changes in internal strategies and structure within the firm. Fourth, individual uncertainty occurs when employees feel insecure regarding their job role and status in organizations.

Vu et al. (15) noticed that quantitative job insecurity and qualitative job insecurity are two important types of job securities. Quantitative type refers to employees; perceived threat of job loss in future, and qualitative insecurity indicates the perceived threat of impairing the quality of employment relationship such as lack of trust lessening development opportunities. According to Ravn and Sterk (14) point of view, job uncertainty has several adverse outcomes for employees' wellbeing in the form of stress, mental disorders and emotional exhaustion. Further, they identified that employees' job satisfaction, commitment and trust in the organization are negatively influenced, lowering their productivity.

Han et al. (38) noticed that employees' job uncertainty increased after the COVID-19 pandemic. Further, they stated that job uncertainty severely threatens employees' mental and emotional health, lowering their job performance. Chen and Eyoun (13) identified that job uncertainty of employees adversely influences the psychological health of employees. Further, they argue that job-related uncertainties trigger employees' emotional health, and they feel emotionally exhausted at the workplace. Bazzoli and Probst (16) also point out negative consequences of job uncertainty and said that it might trigger employees' cognitive processes which in turn is an alarming situation for firms. Further, they argue that employees' job insecurity at the workplace also influences their brand-related performance. Vu et al. (15) also identified that employees' job insecurity is a threatening situation for a firm's effectiveness.

Based on the above-discussed literature, the present study attempts to reveal how job uncertainty influences the brand-related performance of the employees. With the support of psychological contract theory (22), the present study assumes that when employees perceive that their jobs are not secured, and they feel uncertainty about losing a job at the workplace, their brand-related performance is also influenced negatively. For empirical investigation, the present study hypothesizes that:

H2: *Job uncertainty has a negative relationship with employee-based brand equity.*

Psychological distress

Bentley et al. (29) acknowledged that psychological distress at the workplace has negative consequences on employees' mental wellbeing. Further, they defined psychological distress and said that it is an emotional suffering state of an individual which is associated with stress and tensions. Moreover, they stated that it is very difficult for employees to cope with these stressors in routine life. Anasori et al. (28) identified that psychological distress adversely affects on attitudes and behaviors of employees. Dunleavy et al. (30) revealed that psychological distress at the workplace might cause severe types of mental health disorders in employees. Further, they point out that employees' mental health matters a lot for their efficient performance in the workplace. Moreover, organizations may bear high costs of employees' psychological distress in decreasing working outcomes (29). Therefore, organizations must realize the importance of employees' mental health to enhance their overall performance. Dunleavy et al. (30) shed further light and said the workforce's mental health is an upcoming challenge for firms. Additionally, firms have to focus on coping strategies and policies that can address mental health issues appropriately.

Scholars reported that, during the pandemic of COVID-19, employees feel isolated due to preventative measures of COVID-19 (34, 39). These isolated lives adversely impact employees' mental health, and consequently, their psychological distress levels increases. Additionally, employees' work outcomes are negatively influenced by psychological distress, and they feel emotionally exhausted at the workplace (29). However, Anasori et al. (28) acknowledged that the psychological distress of employees not only impacts emotionally but also damages their critical abilities. Moreover, they revealed that psychological distress also paves the way to heighten employee turnover intentions. According to Bashir et al. (40), when employees feel psychological disengaged and dissatisfied at the workplace, the chances of their psychological contract breach are greater than before. Poulis and Wisker (9) also commented that the

psychological disengagement of employees could pave the way for damaging the brand equity performance of employees.

Based on stress theory, the present study assumes that when employees feel psychological distress at the workplace, their work outcomes are adversely influenced by this emotional suffering. Additionally, employees' brand-building efforts are also influenced unfavorably when they show negative behaviors in the workplace. Based on the above-discussed literature, the present study hypothesizes that:

H3: *Psychological distress has a negative relationship with employee-based brand equity.*

Emotional exhaustion

Said and Tanova (31) define emotional exhaustion as the extent to which individuals feel emotionally worn out due to accumulated stress from the workplace and personal lives. Further, they acknowledged that emotional exhaustion is a mental depletion state, which often causes poor workforce performance and depletes organizational e?ectiveness. Chen et al. (41) identified that the literature on emotional exhaustion divided it into physical and psychological stresses. Further, they stated that both these types severely affect the productivity of employees and organizations. According to Said and Tanova (31), disproportionate job demands or stress may be the crucial cause of employee emotional exhaustion. Loh and Saleh (42) noticed that employees' emotional exhaustion increased their withdrawal behaviors.

Employees' burnout at the workplace is an important factor in their emotional exhaustion (19). Moreover, employees' mental and emotional health is adversely influenced by their emotional exhaustion, which lowers their work productivity. Chen and Eyoun (13) noticed that the COVID-19 pandemic also has some adverse consequences on the psychological, behavioral, and emotional health of employees. Further, they stated that employees' emotional exhaustion is highly reported during the peak days of the epidemic. Further, Said and Tanova (31) commented on the consequences of emotional exhaustion and said that it has severe outcomes in the form of employee performance reduction and decreasing the firm's productivity. More broadly, employees' emotional exhaustion negatively influences service delivery capability and brand-related performance. Wong et al. (17) also stated that employees' emotional exhaustion harm employees' brand-building efforts.

Wong et al. (17) point out that employees feel emotionally exhausted when they experience loneliness at the workplace. In addition, employees' emotional and psychological health is influenced adversely, and they become the victim of mental disorders. Konno et al. (34) added the vein and said that psychological distress is one of the crucial psychological states that cause a decrease in employees' workplace performance. With the support of literature present study assumes the following hypotheses, and Figure 1 represents this study model.

H4: *Employee emotional exhaustion mediates the relationship between employee loneliness and employee-based brand equity.*

H5: *Employee emotional exhaustion mediates the relationship between job uncertainty and employee-based brand equity.*

H6: *Employee emotional exhaustion mediates the relationship between psychological distress and employee-based brand equity.*

Research methods

Study design

A convenient sampling method was followed to collect the data for this study from the various employees of clothing brands operating in China. To finalize the targeted clothing brands, the author interviewed different groups of students to know the perception of the people or community about the famous clothing brands. The author asked the students about clothing brands and based on their opinions; the author finalized the most repeated brands that were famous among them. The author also consulted with senior researchers, and after their opinions, the author finalized targeted brands. The author contacted managers of targeted clothing brands and convinced them to a meeting, and upon their consent, the author fixed a meeting with them. The author personally visited and did a brief meeting with them about the objective of this study research, and after their satisfaction, as the online data collection would be more convenient, the author asked the managers to add their employees to a WeChat group for data collection. The author also assured them that the managerial implication would be shared with them at their request after completing the research. Finally, managers showed their consent. First, the author shared a cover letter that briefed the employees about their data confidentiality and trusted them that the data would be used for academic objectives and aggregated outcomes would be revealed as individual-level responses would be destroyed. In this way, employees agreed to participate in this research activity. After that, the author shared the link of the WeChat group with managers, and managers shared links with their employees, and those employees that had consent added themselves to that group. In this way, the responses were gathered without any pressure but with employees' consent.

Moreover, the cover letter also assured the employees that no answer is right or wrong; their true answer would be considered right for this study's natural outcomes; hence avoid consultation with your colleague during answering. This step surely boosted their confidence, and they filled the questionnaire with their natural responses. The author

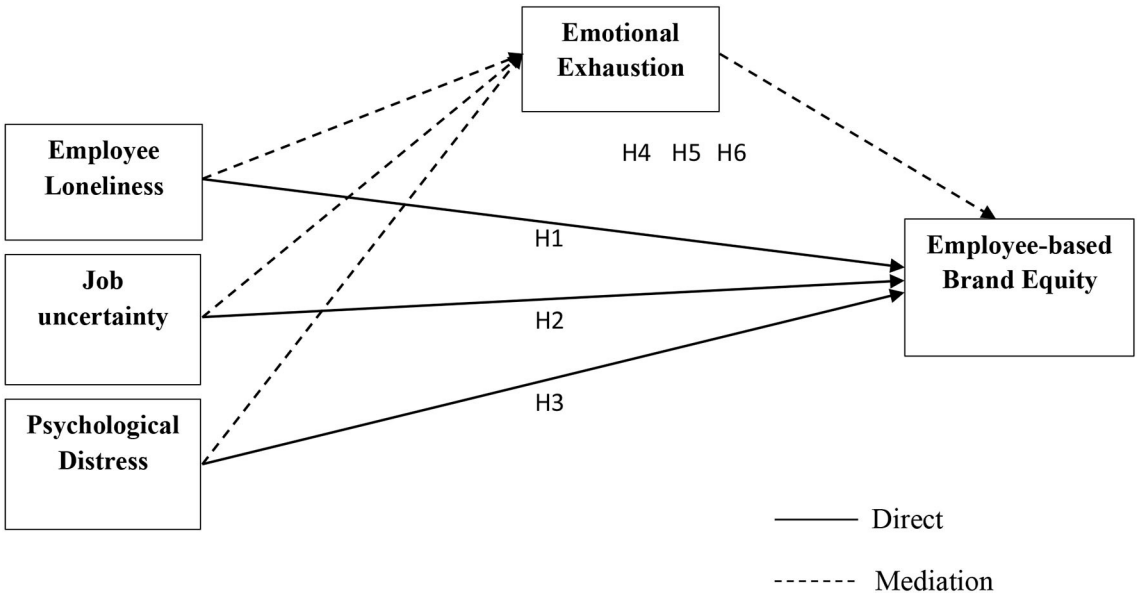

FIGURE 1
Conceptual framework.

developed the electronic questionnaire in the google form and translated it into Chinese for employees' better understanding. The senior researchers also verified the translated questionnaires and sample-based data also gathered on these questionnaires for language improvement. This study also adopted the time lag approach for data gathering and collected data in different turns to reduce common method bias. However, the author included a hidden code in the questionnaire to recognize the same respondents in all turns. The author gathered data on demographic information and independent variables (employee loneliness, job uncertainty, and psychological distress) in the first turn and on the dependent variable (employee-based brand equity) in the second turn. The author collected data on the mediator variable (emotional exhaustion) in the third turn. In the first turn, the author collected 755 responses. In the second turn, the author collected 513 questionnaires, and in the third turn, the author collected 459 responses. Finally, the outcomes of this study were developed based on the 459 sample size. The respondents' demographic information is shown in Appendix 2 in Supplementary material.

Measures

This study examined the participants' responses on five points Likert scale. This scale consists of 1 to 5 numbers, 1 represents "strongly disagree," 2 represents "disagree," 3 represents "neutral," 4 represents "agree," and 5 represents "strongly agree." This study measured variables based on previously validated items. The construct of employee loneliness was measured with ten items scale developed by Russel (43) and used by Garg and Anand (44). The sample item included "do you feel a lack of companionship?" The construct of job uncertainty was measured with five items scale developed by Bordia et al. (45) and used by Paulsen et al. (46). The sample item included, "Very soon existing policies and procedures will change." The construct of psychological distress was measured with three items scale developed by Barnett and Brennan (47) and used by Lapalme et al. (48). The sample item included, "I feel worried and anxious." The construct of emotional exhaustion was measured with seven items scale developed by Paulsen et al. (46). The sample item included, "I feel fatigued when I get up in the morning and have to face another day on the job." The employee-based brand equity construct was measured with five items scale developed by Boukis and Christodoulides (4). The sample item includes "I don't consider the impact on the company's brand when I make decisions."

Results

Assessment of measurement and structural model

The results of this study were assessed by using the partial least square structural equation modeling (PLS-SEM) technique. The PLS-SEM is a variance-based technique unrelated to the covariance-based technique (49). The PLS-SEM is selected because it is equally suitable for confirmatory and exploratory

studies (50). Structural equation modeling (SEM) is based on two techniques such as covariance-based structural equation modeling (CB-SEM) and partial least square structural equation modeling (PLS-SEM). The PLS-SEM is useful for advancing and extending the theory, whereas CB-SEM is useful for accepting and rejecting the theory (50). PLS-SEM is also effective for small data size analysis as it efficiently handles it. Therefore, this study assessed model outcomes by applying the PLS-SEM technique through Smart PLS software. The PLS-SEM examines data in two steps. In the first step, it examines the measurement of the model, and in the second step, it assesses the structural path.

The measurement outcomes of this study are based on two different parts: first, it measures model reliability, and second, it examines model validity. Cronbach alpha, roh-A, composite reliability, and average variance extract (AVE) were considered for the reliability assessment of this study model (50, 51). Table 1 depicts this study's model reliability. First, according to the threshold, the Cronbach alpha and composite reliability values should be >0.7 (49). Out study model variables have Cronbach alpha and composite reliability values >0.7; for instance, this study's independent variables Employee loneliness, job uncertainty, and psychological distress and mediator variable emotional exhaustion and dependent variable employee-based brand equity Cronbach alpha values are 0.917, 0.855, 0.833, 0.914 and 0.868 and composite reliabilities are 0.930, 0.896, 0.900, 0.932 and 0.901 respectively are >0.7 hence Cronbach values and composite reliability values are accepted. Similarly, the roh-A values are also according to the given threshold. Moreover, according to the criteria, the AVE values of variables should be >0.5. In this study model, all variable values are >0.5. Hence AVE values of all variables are also accepted (52). The present study data model constructs graphical representation of Cronbach alpha, composite reliability, roh-A, AVE and R^2 are shown in Appendix 1 in Supplementary material.

Table 1 also explains the factor items' outer loading. According to the threshold, a value >0.7 is considered appropriate for the model (50). In our model, all variables (employee loneliness, job uncertainty, psychological distress, emotional exhaustion, and EBBE) items values are >0.7 (Figure 2). Hence all values are accepted. Moreover, Table 1 also represents variance inflation factor (VIF) values of all present study model construct items. VIF is examined to identify the collinearity issue in the model. According to the criteria, a value below 0.5 is considered appropriate because it is considered without collinearity (49). The present study model constructs item EBBE3 shows the highest VIF value (3.297) compared to other items. Hence, the outcomes revealed that the model of the present study is free from collinearity issues.

The R^2 values of the latent construct explain the model strength, such as a value up to 0.5 shows moderate strength and >0.5 shows substantial strength (49). Our model latent constructs emotional exhaustion and EBBE R^2 values are 0.538 and 0.470, respectively, showing the substantial and moderate strength of the model. Hence, the model R^2 values showed 53.8% variance in emotional exhaustion and 47.0% variance in EBBE. The latent constructs values Q^2 greater than zero are considered appropriate for the model. Our study model latent variables have greater than zero Q^2 values. Hence, it shows that model of this study is significant.

The discriminant validity of our model was measured through two well-known approaches, such as Fornell-Larcker and heterotrait-monotrait (HTMT) criteria (50). The Fornell-Larcker criterion is measured by taking the square roots of AVE values of all constructs' (51, 53). Table 2 represents that this study constructs Forenell-Larcker values. According to the threshold, all columns in the table should have an above value greater than their below values. The outcomes of this study are according to the Fornell-Larkcer given threshold as the above values are shown in bold in Table 2 are greater than their below values. Thus, discriminant validity is confirmed in the present study model. Moreover, according to the criteria, the HTMT values of all constructs should be <0.85 but must be 0.9 (49, 52). According to the outcomes shown in Table 3, our model constructs values are <0.85. Hence, this study model HTMT discriminant validity is also achieved.

Hypotheses testing

This study statistics outcome for hypotheses empirical analysis was conducted through 5,000 samples of bootstrapping approach. Table 4 depicts the present study's direct, indirect and total path results (50, 51). This study considered the t and p values of statistics outcomes to accept and reject the hypotheses (51). The hypotheses outcomes of the present study are presented in Table 5. H1 of this study proposed that employee loneliness negatively impacts EBBE. The statistics results ($t = 0.613$, $p = 0.540$) revealed that employee loneliness does not directly influence the EBBE. Hence, H1 of the present study is rejected. H2 of the present study proposed that job uncertainty negatively influences EBBE. The statistics outcome ($t = 6.912$, $p = 0.000$) has confirmed that job uncertainty influences the EBBE. According to the beta value, it is also confirmed that job uncertainty negatively influences the EBBE; for instance, one unit change in job uncertainty brings a −0.453 negative change in EBBE, such as job uncertainty reduces the EBBE. Hence, H2 is accepted. H3 of this study proposed that psychological distress negatively influences the EBBE. The statistics outcomes of this study ($t = 2.594$, $p = 0.010$) have confirmed that psychological distress influences the EBBE, and the beta value confirmed that psychological distress negatively influences the EBBE. For example, one unit change in psychological distress leads to −0.153 negative change in EBBE. Hence, H3 is accepted.

This study also seeks the mediation effect of emotional exhaustion in the relationship between employee loneliness and EBBE, job uncertainty and EBBE, and psychological distress

TABLE 1 Reliability and convergent validity of the study constructs.

Construct	Item	Outer loadings	VIF	Alpha	roh-A	Composite reliability	AVE
EBBE	EBBE1	0.817	2.577	0.868	0.889	0.901	0.647
	EBBE2	0.784	3.234				
	EBBE3	0.790	3.297				
	EBBE4	0.804	2.130				
	EBBE5	0.825	2.227				
EEX	EEX1	0.710	1.604	0.914	0.914	0.932	0.662
	EEX2	0.816	2.432				
	EEX3	0.848	2.915				
	EEX4	0.866	3.079				
	EEX5	0.835	2.581				
	EEX6	0.849	2.788				
	EEX7	0.759	2.005				
EL	EL1	0.751	2.117	0.917	0.924	0.930	0.571
	EL2	0.706	2.357				
	EL3	0.768	1.878				
	EL4	0.822	2.280				
	EL5	0.800	3.076				
	EL6	0.776	2.721				
	EL7	0.712	2.247				
	EL8	0.728	2.177				
	EL9	0.713	2.502				
	EL10	0.772	2.104				
JU	JU1	0.851	2.257	0.855	0.860	0.896	0.634
	JU2	0.737	1.719				
	JU3	0.795	1.853				
	JU4	0.789	1.842				
	JU5	0.804	1.838				
PD	PD1	0.825	1.736	0.833	0.846	0.900	0.750
	PD2	0.876	2.067				
	PD3	0.895	2.107				

EBBE, employee based brand equity; EEX, emotional exhaustion; EL, employee loneliness; JU, job uncertainty; PD, psychological distress.

and EBBE, respectively. The H4 of the present study proposed that the relationship between employee loneliness and EBBE is mediated by employee exhaustion. The statistics outcome of H4 ($t = 2.025$, $p = 0.043$) revealed that employee loneliness mediates the negative relationship between employee loneliness and EBBE, such as EBBE is reduced through employee loneliness mediation. Hence, H4 is accepted. H5 of this study proposed that the relationship between job uncertainty and EBBE is mediated by emotional exhaustion. According to the statistics outcomes ($t = 2.157$, $p = 0.031$), it has been confirmed that emotional exhaustion mediates the negative relationship between job uncertainty and EBBE, such as the mediation effect of emotional exhaustion reduced the EBBE. Hence, H5 is accepted. H6 of this study proposed that the association between psychological distress and EBBE mediates by EBBE. The statistics outcomes ($t = 1.927$, $p = 0.054$) have confirmed that emotional exhaustion does not mediate the relationship between psychological distress and EBBE. Hence, H6 is rejected.

Discussion

Due to environmental turbulence, organizations' worries have increased to overcome market dynamics about maintaining sustainability (1). EBBE paves the way to developing a competitive edge for organizations. Hence, previous studies have emphasized the ways of building EBBE (4, 26, 54) but ignored exploring the factors that decrease employees-brand building behavior. Hence, this study developed a model by exploring the various employees' organizational-based factors

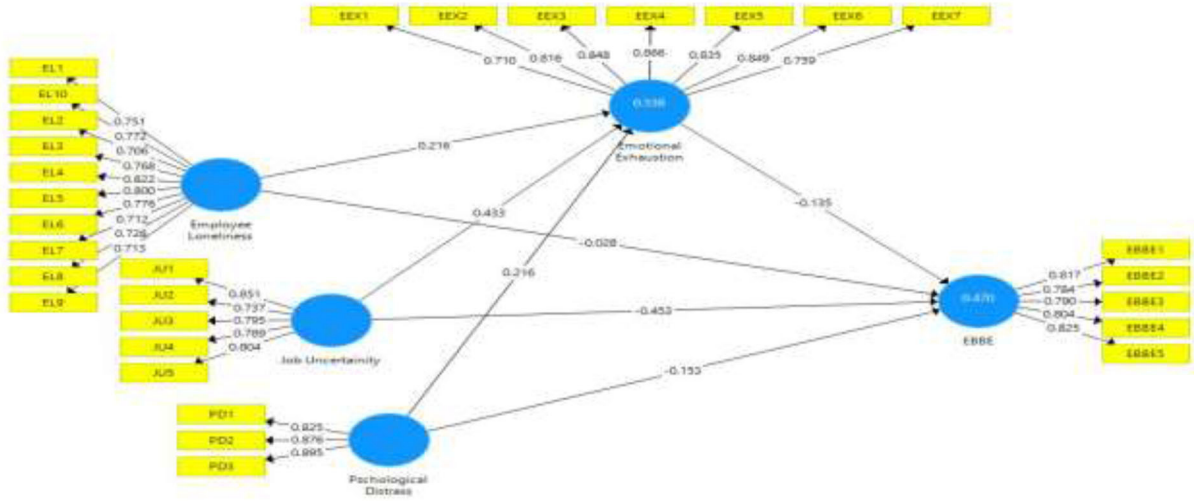

FIGURE 2
Path estimates.

that intentionally reduce employee-brand building behavior. This study explored how emotional loneliness, job uncertainty, and psychological distress influence the EBBE under the psychological contract and stress theory (23, 55). This study found that employee loneliness did not influence EBBE directly (Table 5). According to Yang and Wen (21), socialization between leader and employee or between the leader and other team members can reduce the employee's negative effect on their organizational behavior. For instance, employees socially feel a high bond and connection that would positively reduce their stress and negative emotion. Hence, this hypothesis outcomes are not found and thus rejected. This study found that job uncertainty has a negative effect on EBBE. Such as job uncertainty directly reduces the employee-based brand equity. The study by Chen and Eyoun (13) revealed that COVID-19 lockdown is an incredible experience, and employees feel uncertain outcomes regarding their job. Hence, employees negatively speak out about their organization under such circumstances, which is against their brand-building behavior. The outcomes regarding the relationship between psychological distress and EBBE revealed that psychological distress negatively impacts EBBE, such as psychological distress decreasing the EBBE. The outcomes of this study are consistent with the findings of prior studies (12, 34). These studies point out that the work productivity of employees decreases when they feel psychological and emotional distress at workplace.

Moreover, this study also assumes emotional exhaustion as the mediator in the relationship between employee loneliness and EBBE, psychological distress and EBBE and job uncertainty and EBBE, respectively. According to the outcomes, emotional exhaustion mediates the negative relationship between employee loneliness and EBBE and job uncertainty and EBBE, respectively.

TABLE 2 Discriminant validity (Fornell-Larker-1981 criteria).

Construct	EBBE	EEX	EL	JU	PD
EBBE	**0.804**				
EEX	−0.551	**0.814**			
EL	−0.370	0.511	**0.756**		
JU	−0.662	0.678	0.442	**0.796**	
PD	−0.561	0.618	0.479	0.688	**0.866**

EBBE, employee based brand equity; EEX, emotional exhaustion; EL, employee loneliness; JU, job uncertainty; PD, psychological distress.

TABLE 3 Discriminant validity (HTMT).

Construct	EBBE	EEX	EL	JU	PD
EBBE	–	–	–	–	–
EEX	0.601	–	–	–	–
EL	0.399	0.537	–	–	–
JU	0.726	0.760	0.492	–	–
PD	0.620	0.702	0.552	0.810	–

EBBE, employee based brand equity; EEX, emotional exhaustion; EL, employee loneliness; JU, job uncertainty; PD, psychological distress.

These findings have consistency with prior studies (17, 34, 56). According to these studies, the employees feel emotionally exhsuated when they experience loneliness and distress at workplace, and in turn their brand-building effoerts also reduces. According to outcomes, the relationship between psychological distress and EBBE does not mediate by emotional exhaustion. However, these results are not consistent with prior studies (17, 34). According to these studies, employees

TABLE 4 Direct, indirect and total path estimates.

Direct path	Beta	SD	t	Confidence interval (95%)	f^2 Effect size	*p*
EEX → EBBE	−0.135	0.060	2.238	(0.019 to 0.259)	0.016	**0.025**
EL → EBBE	−0.028	0.045	0.613	(−0.062 to 0.117)	0.001	**0.540**
EL → EEX	0.216	0.045	4.837	(0.135 to 0.310)	0.075	**0.000**
JU → EBBE	−0.453	0.065	6.912	(0.319 to 0.578)	0.163	**0.000**
JU → EEX	0.433	0.045	9.620	(0.344 to 0.520)	0.207	**0.000**
PD → EBBE	−0.153	0.059	2.594	(0.035 to 0.274)	0.021	**0.010**
PD → EEX	0.216	0.049	4.452	(0.120 to 0.311)	0.049	**0.000**
Indirect path						
EL → EEX → EBBE	−0.029	0.014	2.025	(0.004 to 0.061)	**0.043**	
JU → EEX → EBBE	−0.059	0.027	2.157	(0.008 to 0.117)	**0.031**	
PD → EEX → EBBE	−0.029	0.015	1.927	(0.004 to 0.063)	**0.054**	
Total Path						
EEX → EBBE	−0.135	0.060	2.238	(0.019 to 0.259)	**0.025**	
EL → EBBE	−0.057	0.044	1.300	(−0.029 to 0.143)	**0.193**	
EL → EEX	0.216	0.045	4.837	(0.135 to 0.310)	**0.000**	
JU → EBBE	−0.511	0.060	8.541	(0.389 to 0.624)	**0.000**	
JU → EEX	0.433	0.045	9.620	(0.344 to 0.520)	**0.000**	
PD → EBBE	−0.182	0.059	3.089	(0.070 to 0.302)	**0.002**	
PD → EEX	0.216	0.049	4.452	(0.120 to 0.311)	**0.000**	

EBBE, employee based brand equity; EEX, emotional exhaustion; EL, employee loneliness; JU, job uncertainty; PD, psychological distress.

TABLE 5 Hypotheses testing.

	Hypotheses	Coefficient (Beta)	S.D	*t*	Confidence interval (95%)	f^2 Effect size	*p*	Status
H1	EL → EBBE	−0.028	0.045	0.613	(−0.062 to 0.117)	0.001	0.540	Not supported
H2	JU → EBBE	−0.453	0.065	6.912	(0.319 to 0.578)	0.163	0.000	Supported
H3	PD → EBBE	−0.153	0.059	2.594	(0.035 to 0.274)	0.021	0.010	Supported
Mediation hypotheses								
H4	EL → EEX → EBBE	−0.029	0.014	2.025	(0.004 to 0.061)	0.043	Supported	
H5	JU → EEX → EBBE	−0.059	0.027	2.157	(0.008 to 0.117)	0.031	Supported	
H6	PD → EEX → EBBE	−0.029	0.015	1.927	(0.004 to 0.063)	0.054	Not supported	

EBBE, employee based brand equity; EEX, emotional exhaustion; EL, employee loneliness; JU, job uncertainty; PD, psychological distress.

suffer from mental diseases as a result of the unfavorable effects on their emotional and psychological health. Konno et al. (34) stated that psychological distress is one of the key psychological conditions that contribute to a decline in employees' performance at work.

Theoretical and practical implications

This study contributed to the literature in several ways. First, this study extends the literature on EBBE by exploring factors (employee loneliness, job uncertainty, and psychological distress) that negatively affect the building process of EBBE. This study points out the three possible antecedents that lead the EBBE building process in negative directions. This study also provides guidelines to managers and firms on how they can improve the EBBE building process by dealing with these three negative attributes of employees (employee loneliness, job uncertainty, and psychological distress). Moreover, this study strengthens the key role of such negative factors on EBBE under the support of psychological contract theory and stress theory. Based on stress theory, the present study serves the literature by shedding light on employee loneliness as an antecedent

to reducing the EBBE building process. In addition, with the support of psychological contract theory, this study assumes that employees' uncertainty adversely affects their trust level, and they feel like their expectations are not met by their organizations. EBBE building process adversely affects over time when the trust level of employees decreases and they feel insecure about their jobs. This study also serves the literature by adding the evidence on stress theory from the perspective of psychological distress and EBBE. The present study assumes that when employees feel psychological distress at the workplace, their work outcomes are adversely influenced by this emotional suffering. In return, the brand-building efforts of employees are also influenced unfavorably. In addition, this study extends the literature on emotional exhaustion as the mediator in the relationship between employee loneliness and EBBE and job uncertainty and EBBE.

Practically this study provides guidelines to firms that the negative attributes of employees (employee loneliness, psychological distress, and job uncertainty) could be possible antecedents that can play an adverse role in organizational sustainability and brand-building activities. Therefore, the organization should build a supportive culture in the shape of top management support and leadership support for employees. This support may not eliminate but surely reduce the feeling of employee loneliness, psychological distress, and job uncertainty.

Limitations and future research directions

Like other social studies, this study also has limitations. These limitations can be proposed to extend this study. First, this study gathered data through a questionnaire survey method. The sample is also small. So future research can consider other data collection methods and enlarge the sample size to validate the present study outcomes. Second, this study only considered clothing brand employees for data collection; hence future research should collect data from other brands and compare the outcomes with our study. Third, this study considered emotional exhaustion as a mediator; however, the results revealed that it did not mediate the relationship between psychological distress and EBBE, so future research has the opportunity to add other mediators like demotivation and employee cynicism to investigate the findings of the model further. Fourth, this study did not check the moderating effect in this model, so future research may consider some moderators like emotional intelligence and self-efficacy to extend the results of the present study. Finally, this study is conducted in China, and the results are generalizable for the Chinese context only; future studies may expand the scope to other regions to enhance the reliability and generalizability of the results.

Conclusion

In this competitive era, EBBE facilitates organizations to achieve a competitive advantage. However, the organizations are striving to maintain EBBE. Under the support of psychological contract and stress theory, this study develops a model to recognize those factors that decrease the EBBE. This study found that job uncertainty and psychological distress negatively influence EBBE. The direct impact of employee loneliness on EBBE was not found in this study. Moreover, this study found that the relationship between employee loneliness and EBBE and psychological distress and EBBE was mediated by emotional exhaustion; EBBE did not mediate the relationship between psychological distress and EBBE. This study guides that organizations must develop a supportive culture that can play a vital role in reducing employees' loneliness, job uncertainty and psychological distress because these negative factors decrease employee-based brand equity. Under these factors, employee exhaustion also increased, which mediated these relationships to reduce EBBE.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

Ethics statement

The studies involving human participants were reviewed and approved by Lanzhou City University, China. The patients/participants provided their written informed consent to participate in this study. The study was conducted in accordance with the Declaration of Helsinki.

Author contributions

JiL conceived. HC designed the concept. JuL collected the data and wrote the paper. JB read and agreed to the published version of the manuscript. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships

that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpubh.2022.941106/full#supplementary-material

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Impact of fear of COVID-19 on students' performance, moderating role of mindfulness: HSK students' perception-based view

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COVID-19 created difficulties and problems in almost everyone's daily life routine. Educational institutions too had to reschedule their academic activities. This shift caused attitudinal and behavioral changes in students' learning patterns. Using stress theory, the present study tries to determine the association of fear of COVID-19 with students' performance. In addition, the present study also attempts to check the impact of fear of COVID-19 on anxiety. Further, this study tries to find the association of anxiety with students' performance. This study also attempts to determine the mediating role of anxiety and the moderating role of mindfulness. For empirical investigation, the current study collected data from 320 HSK students from different colleges and universities in China. The present study applied partial least square structural equation modeling for the empirical investigation of hypotheses by using Smart-PLS software. The present study's findings confirmed that fear of COVID-19 negatively affects students' performance, and it positively correlates with anxiety. The study's outcomes revealed that anxiety negatively affects students' performance. The outcomes also confirmed that anxiety negatively mediates the relationship between fear of COVID-19 and students' performance. The present study's findings acknowledged that mindfulness does not moderate the relationship between fear of COVID-19 and student performance and has a positive moderation between anxiety and student performance. The present study offers important practical, theoretical, and managerial implications.

KEYWORDS

fear of COVID-19, students' performance, anxiety, mindfulness, stress theory

Introduction

There is hardly any aspect of daily life that has not changed in the wake of COVID-19. The impact of the pandemic has been paramount. Students, like all other social groups, have had to cope with the challenges that the pandemic brought about (1). One of the biggest challenges for students and academic institutions was to continue the process of education while maintaining social distancing as required by governments (2).

The use of online learning modules became a new normal with educational institutions switching from face-to-face learning to online learning methods, which ensured both synchronous and asynchronous communication between teachers and students (3). A variety of different technologies have been used by educational institutions to move from face-to-face learning to online learning. Video conferencing, instant messaging applications, and other educational online tools are a few of the examples that have been used to continue the process of education. Imparting education has somehow been managed by educational institutes with the help of technology; however, there has been a surge in interest in studies concerning how COVID-19 has been affecting the mental health of students. Far-reaching implications of online learning have been discussed widely and there has been concern regarding how this rapid and drastic change has affected the mental health of students (4). This particular study attempts to examine the extent and nature of this effect on the mental health of students.

Studies have tried to examine the extent of fear of a pandemic, quarantines, and economic hardships that have generally been considered problematic, particularly among students (5). Some studies found that students faced tremendous anxiety and stress as they lacked access to either internet or the required technology. It was also found that some educational institutes were not able to adapt to the modalities which caused students to fear the loss of the school year (6). The fear of contracting the virus constrained the students in their homes as social distancing had to be ensured. On the other hand, the distress of inefficient learning on account of multiple factors compounded the intensity of fear for students. The students who were not in a position to afford these modalities were more prone to experience stress and anxiety (7). Furthermore, it was also perceived by the students that they have to put in extra effort to learn using these modalities, and teachers were not totally at ease using these modalities to impart knowledge properly while they gave lessons (8). Knowledge, expertise, and aptitude indicate the academic performance of a particular student in a certain academic field. These indicators are evaluated through grades that the students secure for different subjects that are part of a study plan. Nevertheless, the examination of a student's knowledge and aptitude is not a matter of straightforward scrutiny merely based on a student's grades (9). Many different factors can negatively affect the performance of a student. For instance, high levels of anxiety, depression, students' negative attitude toward academic endeavors (10), prolonged use of the internet, lack of quality sleep (11), poor learning plans (12), and consumption of alcohol or other drugs (13, 14) can have an adverse impact on academic performance.

Fear of COVID-19, losing academic prospects, and inability to cope with an array of surging pressures negatively impacted the mental health of students. This study aims to explore the extent of the negative impact of COVID-19, and how it has impacted the mental health of the students. There has been overwhelming evidence that COVID-19 has impacted many students in a very negative way as many started to show symptoms of poor mental health and those who already had a history of mental illness saw their situation exacerbate even further (15–17). Fear, depression, anxiety, and irregular sleep patterns were the main problems found particularly in those who had contracted COVID-19 (18–20). Among the people in Wuhan, a Chinese city from where the coronavirus spread, those who already had mental health issues were highly vulnerable to the risk of further deterioration of their mental wellbeing (21). The number of positive coronavirus patients in China who already had psychiatric disorders saw a significant surge in anxiety and fear (22). Quarantine was the most commonly used preventive measure during the pandemic; however, the impact of isolation on mental wellbeing has not been very encouraging. Anxiety and depression caused by quarantine were obvious in most studies (23).

Many studies indicated that the students were not particularly enthusiastic about online learning as they preferred face-to-face learning (24). The idea of virtual education met with less enthusiasm from the students who reported a lack of motivation while studying online (25, 26). Such negative perceptions regarding online learning, theoretically, can hamper the academic performance of students (7, 27, 28). Contrarily, some of the students have shown improvement in their academic performance and seem to have felt comfortable with the new and advanced methods of learning (29).

The *Hanyu Shuiping Kaoshi* (HSK, Chinese Proficiency Test) students have not been an exception during this pandemic as they too faced multiple issues regarding learning. Therefore, it is imperative to examine the factors that are more influential in impacting the academic performance of HSK students during the pandemic. Moreover, it is also important to study if these factors are responsible for improving or decreasing the academic performance of these students. During the pandemic, many studies have been carried out on various types of students using various research models, but no study has focused on HSK students as a subject of research. This has created a study gap that needs to be filled. The objective of the current study is to fill this gap by studying the impact of fear of COVID-19 on the academic performance of HSK students and exploring the moderating role of mindfulness to overcome this fear. The current study aims to examine the following four parameters using the lens of stress theory. Firstly, it examines the relationship between fear of COVID-19 and anxiety. Secondly, the relationship between fear of COVID-19 and students' performance is assessed. Thirdly, it studies the relationship between anxiety and students' performance. Fourthly, the study examines the facilitating role of mindfulness in fear of COVID-19 and students' performance.

The novelty of this research study lies in the selection of study parameters and research subjects. It serves the literature in the following ways. First, it explores and presents the available scientific literature on stress theory, modes of education during

the pandemic, the mental health of students, and the mediating role of mindfulness to improve mental health. Furthermore, it provides novel scientific data on the perception-based study of variables such as fear, anxiety, and mindfulness.

Literature review

COVID-19 has become the most feared virus since it first emerged in Wuhan, China in December 2019. Depression, anxiety, and fear are the most common psychological symptoms that COVID-19 has caused worldwide (30). The US and other European countries such as the United Kingdom, Spain, Italy, and Portugal had to fight the serious repercussions of COVID-19 throughout the year 2020 (31). However, 2021 was the most difficult year for many Asian countries such as India, Philippines, Indonesia, Vietnam, and Thailand that were caught in the wave of surging death toll and virus infections. Symptoms of anxiety and depression rose significantly because of COVID-19 as people had to bear strict lockdowns and social distancing norms enforced by different governments throughout the world to contain the virus (30). One of the core mental health problems associated with the COVID-19 virus was the rise of fear in many people.

Theoretical support

Anything posing a threat to our wellbeing is stressful. Stress probably is a good thing for the human race to inch forward in its bid to develop as without stress life may become boring and pointless. However, stress causing harm to our psychological and physical wellbeing is harmful stress. There are various forms of stress that students endure ranging from the stress to excel academically and the stress of graduating, and from the stress of an uncertain future to the stress of finding a foothold in the job market. The learning ability of a student also heavily depends on many factors such as social, emotional, and physical factors (32). Stress can lead to serious mental as well as physical health issues, decrease self-esteem, and ultimately affect the academic performance of the students (33). The impact of stress on students' learning capacity has received immense attention recently within the education system. Stakeholders such as teachers and parents tend to undermine the role of stress in an academic setup by comparing current experiences with their own experiences at school or college learning was probably not that stressful (34).

However, the experience of today's students attending college is often stressful and unsatisfying. Stress is caused by many factors such as the pressure to secure good grades, the urge to perform well, career aspirations, and the campus environment. Before being highly critical of the stress from the start, there is a need to acknowledge that stress is bad only when it is in excess. Mostly, stress stimulates our urge to perform better and improve our abilities. Challenging life events entail stress; however, the issue becomes serious when stress becomes overwhelming. Although, sometimes stress results from deeper and more serious emotional issues, however, mostly it is not significantly serious and normal counseling or incorporation of stress-management techniques work well to mitigate the stress.

Research suggests that individuals can appraise stressful events as threatening or challenging (35). In the wake of academic stress, students work more efficiently and feel a sense of achievement as their ability to learn increases as a result of the impetus provided by the stress. However, feelings of helplessness and a sense of loss become apparent when there is educational pressure. An important issue regarding stress among students is how it affects their learning. One study hypothesized that both low and high stress leads to learning deficiency, whereas moderate stress helps boost the learning process (36). Field studies and laboratory tests support this notion that high stress affects a student's performance negatively. Meeting deadlines and intending to perform well in exams are the core reasons for students to be stressed. Fear of failing, overwhelming workload, or peer competition are a few other reasons that cause stress among students (22). The period just before the start of exams is considered to be a period of high stress. Studies support performance deteriorates under stress (37), and it has been established that there is a correlation between stress and poor academic performance. It is argued that it is primarily undergraduate students who face the negative effects of stress as they are under pressure to do well academically because it is linked to their future job prospects.

Relationship of fear of COVID-19 with anxiety and academic performance of students

An unpleasant emotional state provoked by a perceived threat is called fear (38). With the pandemic and lack of an effective treatment or cure, people feared developing symptoms of the disease or associated death caused by COVID-19 (5). It is referred to as fear of COVID-19 (39), and studies have been carried out globally to study the impact of this fear on individuals (40). Various research shows that the fear of COVID-19 has the potential to evolve into many different mental health issues (41). Some of the issues that were reported to have developed due to fear of COVID-19 include psychological distress (42), insomnia, post-traumatic stress symptoms, and particularly moderate to severe depressive symptoms and anxiety (43). Individuals who faced life-threatening scenarios were more prone to develop depression and anxiety. Additionally, anxiety and stress are also outcomes of mental fatigue caused by lockdowns, quarantines, strict

adherence to social distancing, and the fear of contracting the virus itself (44).

While the fear of COVID-19 has a strong association with anxiety and stress, and this in turn leads to low or poor academic performance, it impacts academic performance in particular ways. There are four categories of fear that results from COVID-19 anxiety that have a profound impact on the academic performance of the students. First is the fear of wasting precious money on acquiring online education which to some is not as effective as face-to-face academic sessions (45). Second, loneliness and inactivity turned into a kind of fear among students who lived under strict lockdowns with confined movements and social interactions (46). Third, is fear of distraction during the process of online learning (47). Fourth, is the fear of lack of access to facilities such as computers and internet connections to attend online sessions effectively (48). There is concrete evidence that fear of COVID-19 has been a huge hindrance in the learning process of students, with anxieties and stresses of multiple kinds compounding the negativity around online learning. It is similar to a condition in which there are limited resources for learning, thereby hampering the learning process (49). Thus, based on the above literature, this study hypothesized:

H1: *Fear of COVID-19 has a negative association with students' performance.*
H2: *Fear of COVID-19 has a positive association with anxiety.*

Relationship of anxiety academic performance of students

Impairment of function and substantial distress can lead to anxiety which is a physiological disorder. Anxiety is experienced when thoughts and feelings create an impression of an inability to handle or predict future events. Additionally, vague fear and impulses that are not known are defined as anxiety. Raised heartbeat, sweating of the palms, or insomnia are the few symptoms of anxiety. Anxiety has been identified as having two different characteristics such as state anxiety and trait anxiety (50). In trait anxiety, the perception of fear remains absent in the presence of a threat. Whereas, on the contrary, state anxiety is identified when an individual believes that a threat would harm him/her negatively. Simply put, state anxiety occurs when the threat of harm is felt by the individual. Generally, state anxiety is subjective, and is characterized by a constant presence of doubt created by the nervous system. It continues to change with time as the person perceives the idea of threat in the wake of stimuli or the imagination of the presence of a particular stimulus. Being subjective, the reaction to a stimulus differs based on the particular individual's level of threat perception.

Previous research has established that anxiety and academic achievements are closely related. Students who suffer from an anxiety disorder or any other kind of fear do not perform as efficiently as they would have liked, both in their personal and academic life. For instance, one study that examined the relationship between anxiety and academic performance (51), found that observation, problem-solving capability, learning capacity, and retaining information were badly affected by anxiety. The research concluded that anxiety lowered the level of academic performance of students. In general, anxiety triggers confusion and a high level of difficulty in comprehension, and the higher the anxiety, the lower the academic performance. Many other studies equally support the hypothesis that academic performance does get negatively impacted because of anxiety. For instance, a significant negative correlation was found between academic performance and anxiety (52). Another study found that as anxiety increased, academic achievement decreased, particularly because of the undermining of students' cognitive functions due to anxiety (52).

One of the factors that has an impact on a student's performance is the perception and experience related to an academic event or a particular subject that induces anxiety. For instance, according to a study (53), if a student has a negative experience with taking a mathematics test (e.g., failing the test or securing poor grades), the student tends to develop higher levels of anxiety whenever the mathematics test is to be taken and, in turn, this bad experience triggers a high level of anxiety leading to poor performance. Moreover, perception and experience related to a particular academic event can also induce anxiety. Such as, if a student experiences some sort of negativity vis-à-vis a mathematics test, the student will most likely develop an intense level of anxiety whenever a mathematics test has to be taken again, and the previous bad experience is likely to further increase anxiety in the student ultimately lowering the student's academic performance (54). Conversely, if a positive experience has already been experienced by an individual, then going back to repeat the same activity does not trigger anxiety which translates into better performance. Therefore, when analyzing anxiety's relationship with the performance it is important to take cognitive assessments, motives, and tendencies as well as previous experiences into consideration (55). Ultimately, anxiety's effect is equivocal. If anxiety level is significantly high, it is likely to influence academic performance negatively. However, low anxiety is likely to work as a motivating force to perform well.

Fear of COVID-19 is related to anxiety and stress, and it is also associated with depression but to a lesser extent. Even though there has been a lower association between depression and fear, cases of suicides have been reported due to COVID-19-related fear and stress (56). Furthermore, information overload regarding the increase in the number of COVID-19 cases and the presence of COVID-19-related news in media acted as stimuli to cause mood disorders in students (57). That is perhaps why researchers have found a higher level of anxiety and stress among the Chinese student population.

Gender and age-related differences in experiencing anxiety have come to the fore in research in the wake of the COVID-19 crisis. Women and younger people are more prone to be affected negatively by COVID-19 in terms of anxiety, stress, and depression (58). Nevertheless, most of these studies were carried out with a sample population related to healthcare setups. Moreover, the impact of the pandemic is understudied in younger people. It was found that undergraduates are more prone to get fearful of COVID-19 as compared to graduates in some studies. Strict lockdowns and social distancing regimes put in place by the respective governments were found to be the core cause of symptoms of anxiety and depression among young students (59). Thus, based on the above literature, this study hypothesized:

H3: *Anxiety has a negative association with students' performance.*

H4: *Anxiety negatively mediates the relationship between fear of COVID-19 and students' performance.*

Mindfulness and its moderating role

Mindfulness is defined as "the awareness that arises when paying attention on purpose, in the present moment, and non-judgmentally" (60). There are three characterizing elements in this definition. Firstly, the ability to pay attention to a particular experience while being completely aware of it. Secondly, the process of bringing attention to the experience of the present moment, particularly without judging the experiences as good or bad. Thirdly, awareness of the results that arise from the process of paying attention. Awareness in the context of Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) is called mindful awareness (61). The practice of mindfulness and its benefits are quite elaborate. In this study, the most relevant benefits of mindfulness are mentioned within the context of the paramount challenges of anxiety and stress posed by the COVID-19 pandemic. There are five mindfulness skills such as observing, non-judging, non-reacting, acting with awareness, and describing.

Observing is about paying deliberate and close attention to the day-to-day experiences such as sitting, standing, walking, showering, or sensory stimuli related to sound, sight, and smell. Non-judging is the tendency to properly analyze one's experience, feelings, thoughts, and emotions to know if they are irrational, bad, or inappropriate. Moreover, it is also the ability to analytically observe and assess oneself. Non-reactivity is the ability to know distressing feelings and thoughts without being influenced by them. Such thoughts and feelings are assessed in a more decentralized way. Unwanted feelings and thoughts resulting from unwanted experiences are left to pass. Acting with awareness gauges the inclination of getting distracted from the present-moment experience by letting the mind wander, going on an auto-pilot mode, or quickly performing the activities without paying deep attention to them. Describing is the ability to explain one's feelings, thoughts, beliefs, sensations, and opinions in words. However, it is still being debated whether the ability to act with awareness could be captured by its opposite, which is the lapse of attention. Similarly, whether the ability to describe is a core mindfulness skill or not continues to be debated (62). Nevertheless, it has been demonstrated that skills that are learned through mindfulness practices are far more efficacious in controlling issues such as depression, fear, post-traumatic stress, anxiety, and eating disorders by putting them onto cognitive and effective concepts of the Research Domain Criteria Matrix that are adopted by the NIH (National Institute of Health) (63).

Positive psychological strengths are critical to countering the negative effects of fear during adverse situations as they lessen the psychological burden of prolonged distress (64). In this regard, one of the important concepts that might help to cope with such fear is mindfulness. It refers to the awareness of the present moment and acceptance of thoughts and feelings without judgment (65). The literature suggests that mindfulness is associated with an attitude of acceptance of difficult circumstances and emotions, which in turn facilitates effective responses to stressful stimuli (66). Thus, numerous clinical and experimental studies have supported the idea that mindfulness enhances positive psychological strengths such as resilience to stress, life satisfaction, bravery, self-regulation, and self-compassion (67). Moreover, individuals with high levels of mindfulness are likely to possess psychological strength that is important in countering the adverse effects of fear (64). In this regard, one of the probable remedies that might help to handle such fear is mindfulness. It refers to the cognizance of the existing moment and acceptance of feelings and moods without judgmental instincts (63). The literature proposes that mindfulness is related to an attitude of reception of tough situations and sentiments, which in turn eases effective responses to taxing provocations (66). Thus, several studies have maintained the idea that mindfulness increases positive mental strengths such as resilience, life gratification, courage, self-regulation, and self-compassion in the wake of anxiety (67). Moreover, distressing feelings caused by depression or anxiety are less likely to be affecting those people who are mindful in their approach. Studies have shown that mindfulness does decrease the individual's level of depression and mitigates anxiety symptoms (68).

Mindfulness, therefore, becomes very important, particularly during the times of extended distress of an ongoing pandemic that has changed the patterns of normal life as people have experienced prolonged periods of uncertainty, stress, and anxiety. As depression and anxiety can be mitigated using techniques of mindfulness, it is also likely that fear of COVID-19 can also be addressed through mindfulness (69). As mindfulness helps to maintain focus on the present moment

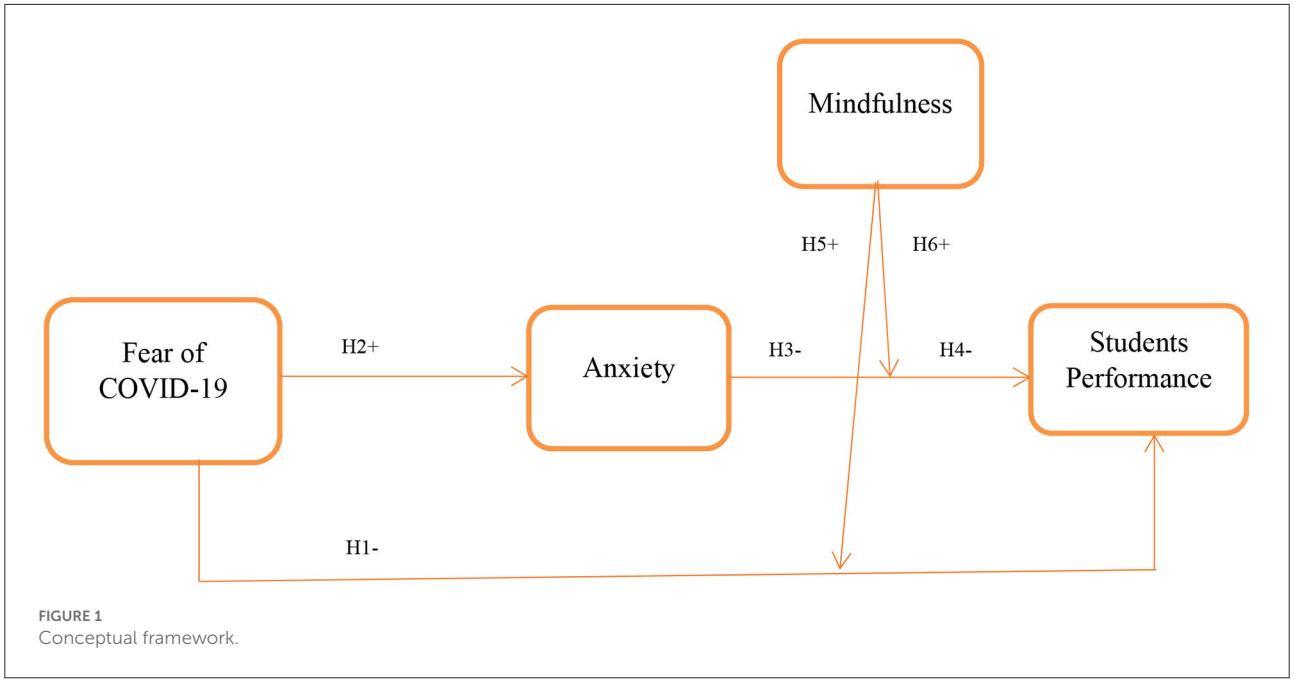

FIGURE 1
Conceptual framework.

and the fear of COVID-19 is mostly about the uncertainty surrounding the future and about events that have not even taken place, focusing on the present moment is the key to warding off the fear of COVID-19. Mindfulness can surely help one maintain one's mental health. There is, however, a pressing academic need to understand the impact of fear of COVID-19 that leads to stress and anxiety that ultimately translates into poor academic performance (44). Thus, based on the above literature, this study hypothesized hypotheses 5 and 6.

H5: *Mindfulness positively moderates the relationship between fear of COVID-19 and student performance.*
H6: *Mindfulness positively moderates the relationship between anxiety and student performance.*

The conceptual framework of this study is presented in Figure 1.

Research methods

Study design

The present study collected data from HSK students for the empirical investigation of the hypotheses. The convenience sampling technique was used for data collection from students (70). Prior studies of similar nature had collected data from students by adopting the online survey method during the peak of COVID-19 (71–73). Therefore, the present study preferred physical data collection and also because students were allowed to attend physical classes. For this purpose, the authors visited different colleges and universities regardless of social influence and met with the Heads of the HSK departments. The authors explained the whole study objective and requested their support for data collection. Additionally, the author ensured data confidentiality and assured them that it would be used only for research purposes. Further, the author promised to share the practical implications of this study at their request. Hence, the Heads of the departments permitted data collection. The target of the present study was to collect data from HSK students, so the authors developed a questionnaire in English and translated it into Chinese. For the language correction, senior researchers were consulted, and according to their guidance questionnaire was translated. Sample-based data was collected from the students as per the advice of the senior researchers, all errors were corrected, and the senior researchers approved the final version of the questionnaire. A cover note was attached with the questionnaire that explained the objectives of the present study, ensured the students of data privacy, and informed them that their individual-level responses would be destroyed while aggregated outcomes would be shared. In addition, this letter also assured the students that there were no right or wrong answers, and their unconstrained responses would be a great contribution to the successful accomplishment of this study instead of answers filled in consultation with others. This process was important to help enhance the confidence of the students and data reliability. In this way, students filled out questionnaires of their own will. The authors decided to collect data at different times as this step reduces the common method bias (74). Therefore, the time lag data method was adopted to fill out the questionnaires in four rounds. The questionnaires included a hidden code to recognize the responses of the same student. In the first round, 600 questionnaires regarding fear of COVID-19 among students were distributed, of which 509

valid and complete questionnaires were received. After a week's gap, in the second round, 509 questionnaires on anxiety were distributed and 428 complete and valid questionnaires were received. In the third round, after a further one-week gap, 428 questionnaires on students' performance was distributed and 389 valid and complete questionnaires were received. The fourth round with questionnaires on mindfulness was distributed after another one-week gap to 389 respondents of which 320 valid and complete questionnaires were received from the students. Hence, this study is based on a sample size of 320.

Measures

This study used the five points Likert scale to measure the participants' responses, where 1 denoted "strongly disagree," 2, "disagree," 3, "neutral," 4, "agree," and 5 indicated "strongly agree." This study assessed data from previously validated items.

Fear of COVID-19

The construct, "fear of COVID-19" was measured using a seven-item scale adapted from Ahorsu et al. (75). The items included statements such as, "When watching news and stories about coronavirus-19 on social media, I become nervous or anxious."

Anxiety

The construct, "anxiety" was measured using a five-item scale adapted from Chen et al. (76) and included items such as, "I felt dizzy, lightheaded, or faint when I read or listened to news about the coronavirus."

Mindfulness

The construct, "mindfulness" was measured using a five-item scale adapted from Chen et al. (77). It included items such as, "It seems I am running on automatic, without much awareness of what I'm doing."

Student performance

"Student performance" was measured with a four-item scale adapted from Yousef et al. (78). This scale measured the comparative productivity of the students in their class, and included items such as, "To what extent do you agree that you perform better than your other class fellows."

Results

Assessment of measurement and structural model (mediation)

The present study chose the variance-based partial least squares structural equation modeling (PLS-SEM) technique for analysis instead of other co-variance-based techniques such as AMOS (79). The main purpose behind this selection is the effectiveness of PLS-SEM for both confirmatory and exploratory types of studies (80). Structural equation modeling (SEM) comprises two different types, which include covariance-based (CB-SEM) and PLS-SEM (81). The key difference in both these

TABLE 1 Reliability and convergent validity of the study constructs (mediation).

Construct	Item	Outer loadings	VIF	Alpha	roh-A	Composite reliability	AVE
ANX	ANX1	0.851	2.362	0.870	0.872	0.906	0.658
	ANX2	0.775	1.891				
	ANX3	0.811	1.981				
	ANX4	0.795	1.955				
	ANX5	0.821	1.969				
FOC	FOC1	0.802	1.257	0.898	0.901	0.920	0.623
	FOC2	0.756	1.923				
	FOC3	0.808	2.379				
	FOC4	0.849	2.965				
	FOC5	0.809	2.492				
	FOC6	0.788	2.083				
	FOC7	0.704	1.630				
SP	SP1	0.847	2.383	0.849	0.870	0.895	0.682
	SP2	0.839	3.325				
	SP3	0.856	3.508				
	SP4	0.757	1.292				

ANX, anxiety; FOC, fear of COVID-19; SP, student performance.

methods is that while CB-SEM accepts or rejects theories, PLS-SEM aids in advancing and developing theories (82). PLS-SEM is a very suitable approach for complex and multi-order-based models. Furthermore, PLS-SEM is very useful for evaluating small data sets (82). Hence, the current study considered the PLS-SEM method for empirical data analyses using Smart PLS 3.3.3 software. The outcomes of PLS-SEM-based analysis were evaluated in two stages, including model measurement and structural model evaluation.

The model consisted of 16 reflective items of three variables (Table 1) and the results of the model measurement had two parts: model reliability and validity. The present study considered the values of "Cronbach's alpha, roh_A, composite reliability, and average variance extract (AVE)" to check the model's reliability (81), and all values are shown in Table 1. The values of Cronbach's alpha are accepted if they are greater than 0.7 (82). Similarly, the composite reliability values are considered good if >0.7. The Cronbach's alpha values of the models' constructs (anxiety, fear of COVID-19, and students' performance) were 0.870, 0.898, and 0.849, and the composite reliability values of models' constructs were 0.906, 0.920, and 0.895, respectively. All values of Cronbach's alpha and composite reliability were within acceptable standards, which confirm the model's reliability in the present study. The roh_A reliability values (0.872, 0.901, and 0.870) were also according to acceptable criteria (83). The average variance extract (AVE) values exceeding 0.5 are considered appropriate for the model's convergent validity (82). Table 1 illustrates that the AVE values (0.658, 0.623, and 0.682) were according to acceptable criteria.

All items' outer loading values of models' constructs are shown in Table 1. According to experts, the outer loading values ≥0.7 are considered reliable for the model's validity (82). Figure 2 describes that the outer loading values of all constructs' items are according to the required criteria. The variance inflation factor (VIF) values are also presented in Table 1. The VIF values are measured to validate the collinearity issues in the model. The model is considered free from collinearity issues if the VIF values are <0.5 (79). According to the outcomes presented in Table 1, all VIF values were <0.5, such as the variable "students' performance" item SP-3 has the highest VIF value (3.508). Hence, it is proven that there are no collinearity issues in the present study model.

The R^2 values define the model's strength, such as the values of latent variables greater than or near 0.5 indicates moderate strength of the model, and the values near or below 0.25 show weak model strength (80). The R^2 values of endogenous variables of the current study model (anxiety and students' performance) are 0.307 and 0.377, respectively, which shows moderate model strength. The cross-validated redundancy (Q^2) values of the model are considered significant if they are larger than zero (80). The Q^2 values of all latent variables of the present study are greater than zero, which demonstrates the significance of the model.

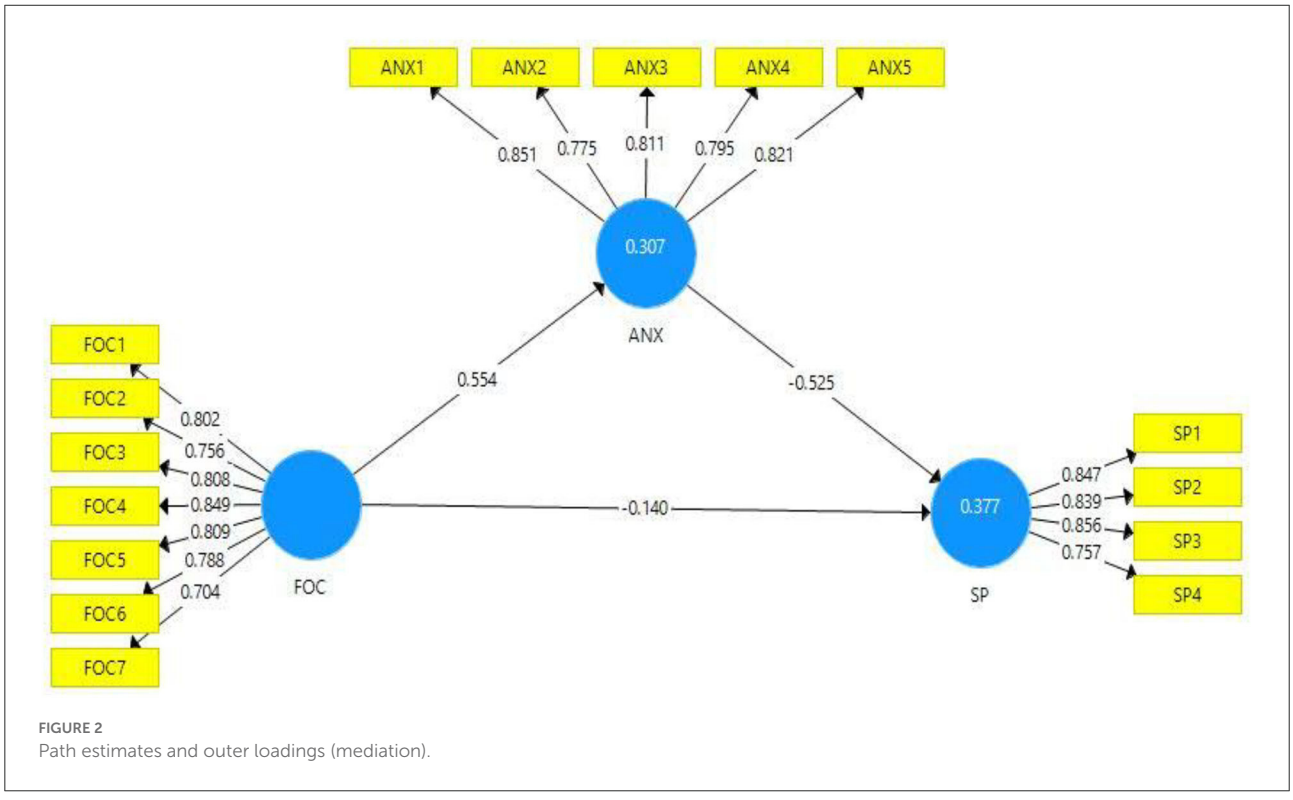

FIGURE 2
Path estimates and outer loadings (mediation).

Two well-known approaches are used to approve the discriminant validity of the current study, namely, Fornell–Larcker criterion and heterotrait–monotrait (HTMT) ratios (79). The Fornell-Larcker criterion is assessed by taking the square roots of AVE values of model constructs (79). Fornell-Larcker criterion values of variables are presented in Table 2. The values under the Fornell-Larcker criterion are accepted if the upper side first value of each column is highest than their below values. Table 2 shows that all values of the Fornell-Larcker criterion are as per the required criteria. Thus, it is confirmed that discriminant validity based on the Fornell-Larcker criterion has been achieved in this study model. In addition, according to the given criteria, the HTMT values of all constructs should be <0.85 though values >0.90 are also acceptable (83). According to the present study results, the HTMT values of constructs are <0.85, which confirms that discriminant validity in the present study's model had been established (Table 3).

TABLE 2 Discriminant validity (Fornell-Larker-1981 criteria) (mediation).

Construct	ANX	FOC	SP
ANX	**0.811**		
FOC	0.554	**0.789**	
SP	−0.603	−0.432	**0.826**

ANX, anxiety, FOC, fear of COVID-19, SP, student performance. Bold values indicate the relationship and significance between the variables.

TABLE 3 Discriminant validity (HTMT) (mediation).

Construct	ANX	FOC	SP
ANX	–	–	–
FOC	0.626	–	–
SP	0.656	0.475	–

ANX, anxiety; FOC, fear of COVID-19; SP, student performance.

TABLE 4 Direct, indirect and total path estimates (mediation).

	Beta	SD	*t*	*p*-value
Direct path				
ANX → SP	−0.525	0.062	8.502	0.000
FOC → ANX	0.554	0.081	6.806	0.000
FOC → SP	−0.140	0.062	2.284	0.022
Indirect path				
FOC → ANX → SP	−0.291	0.065	4.494	0.000
Total path				
ANX → SP	−0.525	0.062	8.502	0.000
FOC → ANX	0.554	0.081	6.806	0.000
FOC → SP	−0.432	0.082	5.249	0.000

ANX, anxiety; FOC, fear of COVID-19; SP, student performance.

Model estimation, direct and indirect (stage 1)

The empirical investigation of the current study was conducted by using a bootstrapping approach through 5,000 samples with replacements to estimate the significance level. The direct, indirect, and total paths are presented in Table 4. The present study considered the "*t*" values and "*p*" values of statistics for the acceptance or rejection of the hypotheses. The results of the current study's hypotheses are seen in Table 5. According to hypothesis 1, fear of COVID-19 negatively affects students' performance; the outcomes ($t = 2.284$, $p = 0.022$) showed that hypothesis 1 of the present study is accepted. In addition, the beta value of hypothesis 2 revealed that one unit change in the independent variable (fear of COVID-19) would result in 0.140 changes in the dependent variable (students' performance). The outcomes ($t = 6.806$, $p = 0.000$) of hypothesis 2 confirmed that the fear of COVID-19 positively correlates with anxiety, which means hypothesis 2 of the present study is also accepted. Additionally, the beta value of hypothesis 2 revealed that one unit change in the independent variable (fear of COVID-19) would result in 0.554 changes in the dependent variable (anxiety). According to the results ($t = 8.502$, $p = 0.000$) of the third hypothesis, anxiety negatively affects students' performance, which confirms that hypothesis 3 of the present study is also accepted. In addition, the beta value of hypothesis 3 showed that one unit change in the independent variable (anxiety) would result in 0.525 changes in the dependent variable (students' performance).

The present study also considered the mediating role of anxiety between fear of COVID-19 and students' performance. For the empirical investigation of anxiety as a mediator, this study proposed hypothesis 4 (anxiety negatively mediates the relationship between fear of COVID-19 and students' performance). The results of the hypothesis testing ($t = 4.494$, $p = 0.000$) confirm that anxiety negatively mediates the relationship between fear of COVID-19 and students'

TABLE 5 Hypotheses testing (mediation).

		Coefficient (beta)	SD	*t*	*p*-value	Status
Hypotheses						
H1	FOC → SP	−0.140	0.062	2.284	0.022	Supported
H2	FOC → ANX	0.554	0.081	6.806	0.000	Supported
H3	ANX → SP	−0.525	0.062	8.502	0.000	Supported
Mediation hypotheses						
H4	FOC → ANX → SP	−0.291	0.065	4.494	0.000	Supported

ANX, anxiety; FOC, fear of COVID-19; SP, student performance.

TABLE 6 Reliability and convergent validity of the study constructs (moderation).

Construct	Item	Outer loadings	VIF	Alpha	roh-A	Composite reliability	AVE
ANX	ANX1	0.851	2.362	0.870	0.871	0.906	0.658
	ANX2	0.775	1.891				
	ANX3	0.811	1.981				
	ANX4	0.795	1.955				
	ANX5	0.821	1.969				
FOC	FOC1	0.802	1.257	0.898	0.901	0.920	0.623
	FOC2	0.756	1.923				
	FOC3	0.808	2.379				
	FOC4	0.849	2.965				
	FOC5	0.809	2.492				
	FOC6	0.788	2.083				
	FOC7	0.704	1.630				
MF	MF1	0.762	1.523	0.807	0.843	0.863	0.559
	MF2	0.737	1.614				
	MF3	0.700	1.523				
	MF4	0.716	1.568				
	MF5	0.818	1.655				
SP	SP1	0.847	2.383	0.849	0.871	0.895	0.681
	SP2	0.839	3.325				
	SP3	0.856	3.508				
	SP4	0.757	1.292				

ANX, anxiety; FOC, fear of COVID-19; SP, student performance; MF, mindfulness.

performance. Additionally, the path value (0.291) of hypothesis 4 also confirms that anxiety negatively mediates the relationship between fear of COVID-19 and students' performance.

Assessment of measurement and structural model (moderation analysis)

For a reflective measurement of the model, Smart-PLS recommends a two-stage method for moderation analysis, including "model measurement and model estimation" (82). The moderation analysis of the present study requires that all basic criteria (construct reliability and validity) and indicators of the model assessment such as out loading values, CR, Cronbach's alpha, rho_A, and AVE are according to acceptable criteria (80). Table 6 describes the particulars of the model assessment indicators.

The results of the moderation analysis confirmed the discriminant validity of the moderation effect (MF) through two approaches using Fornell–Larcker criterion and HTMT ratios. Tables 7, 8 describe the Fornell–Larcker criterion and HTMT ratios. The results show that the inner VIF values of all variables are significantly lower than 5 (Table 6), which demonstrates that there is no collinearity issue in the present study data. The R^2 values of the endogenous variables of the current study's model

TABLE 7 Discriminant validity (Fornell-Larker-1981 criteria) (moderation).

Construct	ANX	ANX*MF	FOC	FOC*MF	MF	SP
ANX	**0.811**					
ANX*MF	−0.513	**1.000**				
FOC	0.544	−0.395	**0.789**			
FOC*MF	−0.399	0.516	−0.372	**1.000**		
MF	0.231	−0.085	0.143	0.011	**0.748**	
SP	−0.604	0.435	−0.432	0.328	−0.202	**0.826**

ANX, anxiety; FOC, fear of COVID-19; SP, student performance; MF, mindfulness. Bold values indicate the relationship and significance between the variables. *Relationship between variables.

(ANX and SP) re 0.307 and 0.401, respectively, which shows moderate model strength (79) (Figure 3).

Model estimation, moderation (stage 2)

The present study checked the moderating role of mindfulness between fear of COVID-19 and students' performance and the relationship between anxiety and students' performance, respectively. For empirical investigation, the

current study assumed hypothesis 5 which outlined that mindfulness positively moderates the relationship between fear of COVID-19 and students' performance. However, the results ($t = 0.052$, $p = 0.803$) revealed that mindfulness does not moderate the relationship between fear of COVID-19 and students' performance (Table 9). Hence hypothesis 5 of the present study is rejected. The outcomes of hypothesis 6 ($t = 2.33$, $p = 0.019$) confirmed that mindfulness positively moderates the relationship between anxiety and students' performance; therefore, hypothesis 6 of the present study is accepted (Table 9).

Mindfulness did not moderate the slope (Figure 4) reflecting the relationship between fear of COVID-19 and students' performance. Contrarily, mindfulness positively moderated the slope (Figure 5) reflecting the relationship between anxiety and students' performance.

Discussion

The COVID-19 pandemic and its adverse consequences paved the way for fears, worries, anxiety, and uncertainties among individuals worldwide. It created difficulties and

TABLE 8 Discriminant validity (HTMT) (moderation).

Construct	ANX	ANX*MF	FOC	FOC*MF	MF	SP
ANX	–	–	–	–	–	–
ANX*MF	0.551	–	–	–	–	–
FOC	0.526	0.416	–	–	–	–
FOC*MF	0.429	0.516	0.392	–	–	–
MF	0.273	0.099	0.168	0.032	–	–
SP	0.626	0.447	0.475	0.353	0.210	–

ANX, anxiety; FOC, fear of COVID-19; SP, student performance; MF, mindfulness. *Relationship between variables.

TABLE 9 Hypotheses testing (moderation).

	Moderation hypotheses	Coefficient (beta)	SD	*t*	*p*-Value	Status
H5	FOC*MF → SP	0.041	0.034	0.052	0.803	Not supported
H6	ANX*MF → SP	0.141	0.060	2.338	0.019	Supported

ANX, anxiety; FOC, fear of COVID-19; SP, student performance; MF, mindfulness. *Relationship between variables.

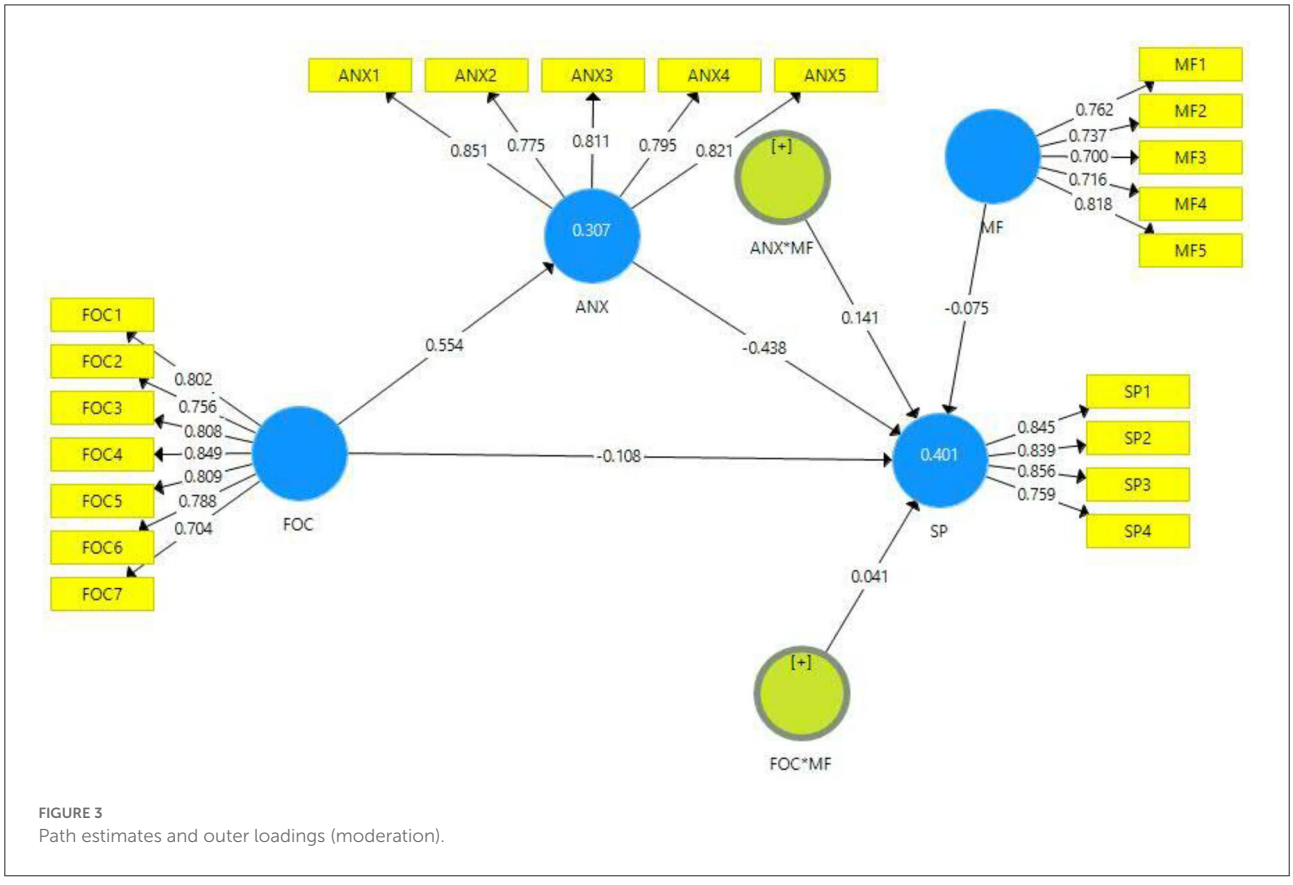

FIGURE 3
Path estimates and outer loadings (moderation).

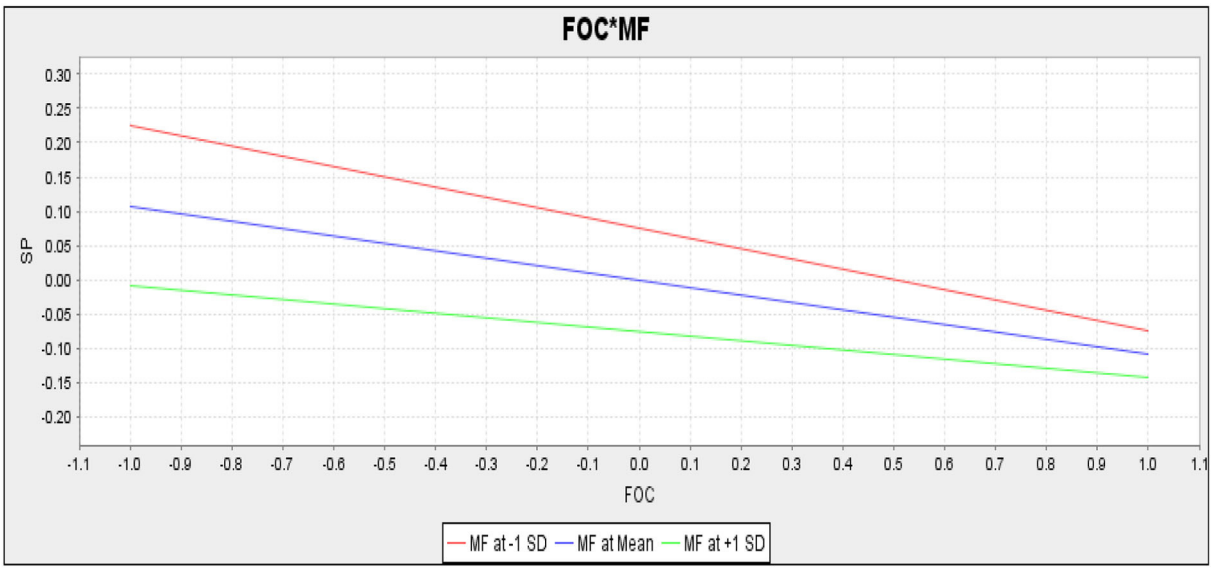

FIGURE 4
Slope for fear of COVID-19 (FOC) and mindfulness (MF) (moderation).

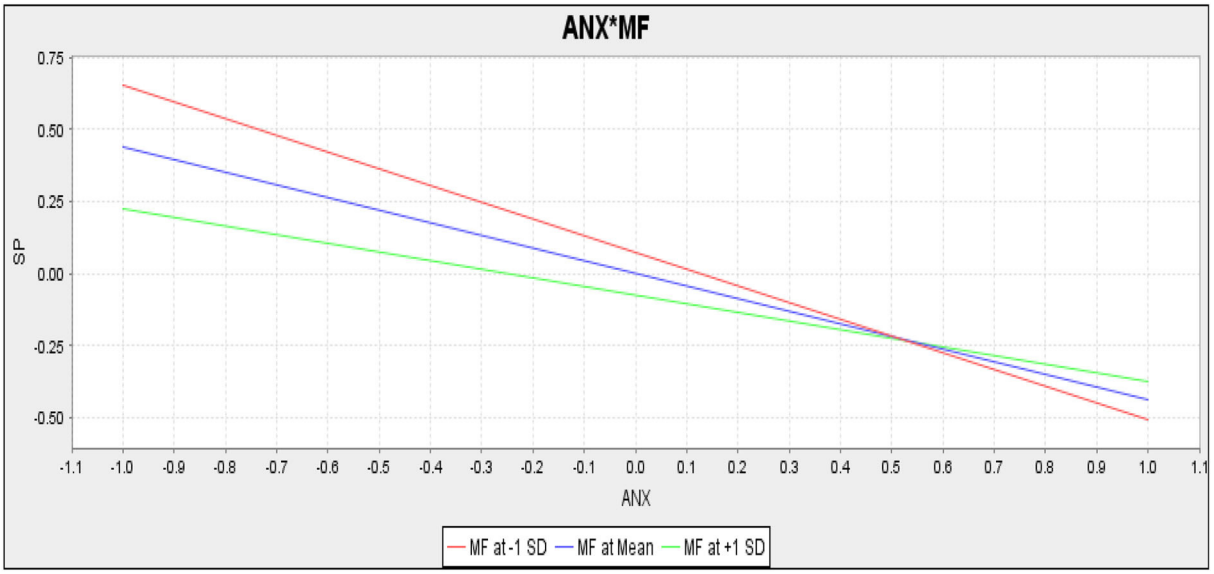

FIGURE 5
Slope for anxiety (ANX) and mindfulness (MF) (EHL) (moderation).

problems in almost everyone's daily life routine (84). People had to adjust their working patterns according to the turbulent pandemic situation. People felt uncertain about their future due to unpredictable deviations experienced during the epidemic. Organizations had to plan alternative schedules and strategies to execute their day-to-day work routine (85). Likewise, educational institutions were also forced to shift their academic activities from face-to-face to online platforms (86). These shifting study patterns required proper arrangements, tools, and tactics to deal with an evolving and dynamic situation. Online academic activities may have caused attitudinal and behavioral changes in students' learning patterns (87). With the support of stress theory, this study tried to determine how fear of COVID-19 impacted students' academic performance. For empirical investigation, this study assumed that fear of COVID-19 negatively affected students' performance. The study also assumed that fear of COVID-19 had a positive association with anxiety, and anxiety negatively affected students' performance.

Moreover, this study also attempted to determine the mediating role of anxiety in the relationship between fear of COVID-19 and students' performance. Similarly, the study also attempted to check the moderating role of mindfulness between fear of COVID-19 and student performance and the relationship between anxiety and student performance.

The results of the present study show that hypothesis 1 was accepted, which proved that fear of COVID-19 had a negative association with students' performance. The findings are consistent with prior studies (88, 89), and according to these authors, the fear of being a victim of COVID-19 adversely impacted students' wellbeing and affected their academic performance. Moreover, the findings of this study confirmed that the fear of COVID-19 positively correlated with anxiety, which meant that hypothesis 2 was also accepted. Prior studies have demonstrated that fear of COVID-19 had adverse consequences on students' mental and psychological health (30, 49). Additionally, a study specifically acknowledged that fear of COVID-19 was a huge stumbling block in the students' learning process and led to anxieties and stresses of multiple kinds (90). Moreover, these adverse health conditions affect students' critical thinking abilities and academic performance. The findings proved that anxiety negatively affected students' performance which meant that hypothesis 3 of this study was accepted.

The current study revealed that anxiety negatively mediated the relationship between fear of COVID-19 and students' performance, confirming that hypothesis 4 was also accepted. These findings are consistent with similar other studies (2, 5). According to these studies, the fear of being a victim of COVID-19 adversely impacted students' wellbeing and critical thinking abilities. In addition, the fear of COVID-19 increased students' anxiety levels which in turn decreased their performance (91).

The present study also assumed the moderating role of mindfulness in the relationship between fear of COVID-19 and student performance. Similarly, it also sought to check the moderating role of mindfulness in the relationship between anxiety and student performance. The present study's findings reveal that hypothesis 5 was not accepted, which meant that mindfulness does not moderate the relationship between fear of COVID-19 and students' performance. Also, mindfulness may not positively moderate the relationship between fear of COVID-19 and student performance due to the disengagement and lack of self-efficacy of students (92). This study also found that mindfulness positively moderated the relationship between anxiety and student performance, which meant that hypothesis 6 was accepted. Previous research has also flagged that mindfulness could help individuals cope with anxiety and stress in their daily lives (93, 94). Moreover, it is understood that mindfulness can assist individuals in recovering from anxiety disorders. Mindfulness, therefore, can alleviate students' anxiety and positively impact their academic performance.

Theoretical and practical implications

This research study has multiple theoretical and practical implications. Theoretically, this study adds valuable literature on the impact of fear of COVID-19 on students' academic performance and the mediating role of mindfulness in students with fear of COVID-19 and anxiety. The study fills the theoretical study gap on this particular research subject *via* literature review and novel data analysis. It is important to study these factors to improve the mental health status of HSK students and to enhance their academic performance by using mindfulness as a skill to overcome fear, stress, and anxiety. This study found that mindfulness positively mediated the relationship between fear of COVID-19 and HSK students' performance. It also positively moderated the relationship between anxiety and students' performance. Mindfulness reduces the fear of COVID-19 and anxiety and thus enhances students' academic performance. The literature provides extensive knowledge on mindfulness and mindfulness skills which can be used by students, teachers, and family members of the students and educationists to understand the use of mindfulness to boost the mental health of students in present times.

Furthermore, this study explains the positive association between fear of COVID-19 and anxiety. It also presents enough data and literature on the negative association of both of these parameters with the academic performance of students. The fear of COVID-19 negatively affects the academic performance of the students. It increases anxiety in students, which ultimately leads to stress and low academic performance. This study has explained the variables through the lens of stress theory; it adds to the literature on stress theory and how stress affects mental health by increasing fear and anxiety, which ultimately affects the students' academic performance. The study can be used practically to study variables like fear of COVID-19, anxiety, mindfulness, and student performance.

Along with theoretical implications the current study has many relevant and realistic practical implications as well. The knowledge and understanding obtained by this literature can be practically used by experts and other scientists to bring a practical change in the mental health of students by incorporating mindfulness skills into students' life and routines, which can promote their academic performance. This study has practical implications by offering an example for relevant research studies on other research subjects. It can be used to make desired changes in the mode of teaching and curriculum keeping in view the status of fear, anxiety, and stress to enhance the mental health of students. One of the most important practical implications of this study is to help design "academic support" using direct or indirect socializing sources for such students.

Limitations

Like other studies of social sciences, this study also has some limitations, which could be opportunities for scholars to research in the future. First, this study was conducted with small sample size; future studies may increase the sample size to verify the present study's model. Second, this study used the structured questionnaire method for data collection; in the future, researchers may consider other methods of data collection for better response, such as semi-structured questionnaires, open-ended questionnaires, and interview methods. Third, this study was conducted in China, and the results cannot be generalized; scholars in the future may conduct the same study by considering other developing or developed countries to understand the study model in a better way. Fourth, this study examined the mediating role of anxiety; in the future, the researchers may consider other mental disorders like depression. Finally, this study took mindfulness as a moderator; however, future research may assess the moderating role of other factors such as self-efficacy and emotional intelligence in validating this study's model.

Conclusion

The outbreak of COVID-19 and its adverse consequences have led to fears, anxiety, and uncertainties among individuals worldwide. Almost everyone has had to face some difficulties and challenges in daily life due to the pandemic. Educational institutions also had to shift their academic activities to online platforms, which in turn caused attitudinal and behavioral changes in students' learning patterns. Using stress theory, the present study attempted to determine the association of fear of COVID-19 with students' performance. In addition, the present study also tried to determine the impact of fear of Covid-19 on anxiety. The study assumed that anxiety negatively correlated with students' performance, and also assumed the mediating role of anxiety in the relationship between fear of COVID-19 and students' performance. Similarly, the study aimed to check the moderating role of mindfulness between fear of COVID-19 and student performance and assumed the moderating role of mindfulness in the relationship between anxiety and student performance. This study's findings confirmed that fear of COVID-19 negatively affected students' performance and positively correlated with anxiety. The study's findings also revealed that anxiety negatively affected students' performance and confirmed that anxiety negatively mediated the relationship between fear of COVID-19 and students' performance. However, the study's findings revealed that mindfulness did not moderate the relationship between fear of COVID-19 and student performance. On the other hand, the findings confirmed that mindfulness positively moderated the relationship between anxiety and student performance.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by Shandong University of Finance and Economics, China. The patients/participants provided their written informed consent to participate in this study. The study was conducted in accordance with the Declaration of Helsinki.

Author contributions

YL: conceptualization and data collection. ZM: writing the draft. Both authors agreed to the submitted version of the manuscript. Both authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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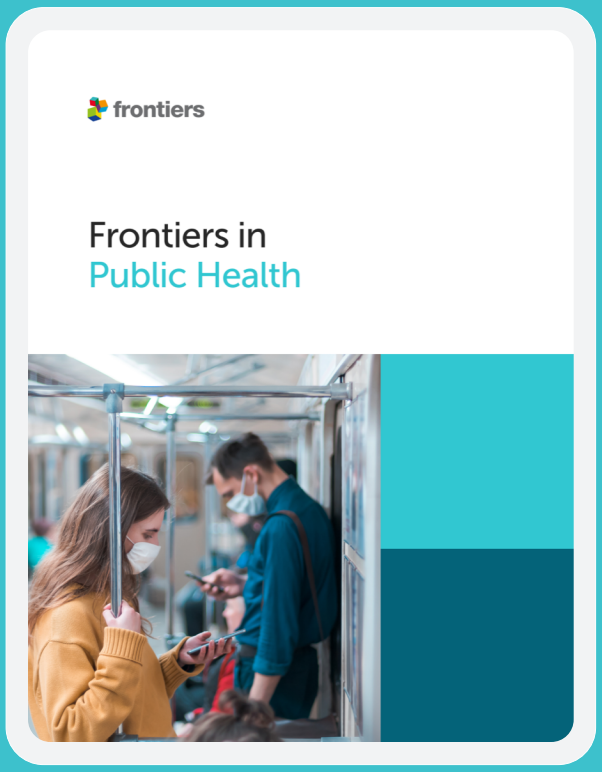

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