HEALTHY HEALTHCARE: EMPIRICAL OCCUPATIONAL HEALTH RESEARCH AND EVIDENCE-BASED PRACTICE

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HEALTHY HEALTHCARE: EMPIRICAL OCCUPATIONAL HEALTH RESEARCH AND EVIDENCE-BASED PRACTICE

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Editorial: Healthy Healthcare: Empirical Occupational Health Research and Evidence-Based Practice

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Editorial on the Research Topic

Healthy Healthcare: Empirical Occupational Health Research and Evidence-Based Practice

HEALTHY HEALTHCARE: LESSONS LEARNED AND A NEW RESEARCH AGENDA FOR OCCUPATIONAL HEALTH PSYCHOLOGY

Many countries within the European Union report significant difficulties in retaining and recruiting healthcare workers and are facing increasing levels of predicted staff shortages over the long term (European Commission, 2020). A substantial amount of scientific research from the past few decades points to the importance of organizational practices and the psychosocial design of jobs as ways of promoting the occupational health of healthcare workers (Løvseth and de Lange, 2020). These practices, along with healthy job design, can help sustain the availability and continuity, as well as appropriate levels of quality in the delivery of healthcare (Løvseth and de Lange, 2020). Despite these suggestions, recurrent data shows that occupational health-related disorders such as burnout and depression are continually increasing among healthcare workers worldwide (Herkes et al., 2019; Schot et al., 2019; Greenberg et al., 2020; Teoh et al., 2020b; Wang et al., 2020).

The challenge, therefore, lies in translating the knowledge and insights established by occupational health psychology into healthy practices that influence the design of jobs within healthcare organizations. Contemporary researchers in occupational health psychology are making strides in generating new knowledge that has the potential to improve the health and well-being of both healthcare workers and patients (Robert et al., 2011; Teoh et al., 2019). However, this knowledge typically focuses on the work-related predictors and outcomes of healthcare workers and may not reach its full potential or be perceived as relevant problems to other relevant groups, including clinicians, leaders, or patients. This is because it often ignores indicators of patient care, and might exclude the influence of organizational practices or the wider system. As a discipline, occupational health psychology can do more to recognize the complexity of organizations, synergies, processes, and the relevance of context when developing knowledge related to healthcare organizations.

Current developments and challenges in healthcare create the need to develop new research agenda for occupational health psychology that emphasize the investigation of integrative perspectives, linking worker health and well-being to quality of patient care and the organization of healthcare services. The aim of this special issue, on the topic "*Healthy Healthcare,*" was to call for

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new occupational health psychology to develop research approaches and transfer evidence-based knowledge and practice to healthcare settings and its management (Løvseth and de Lange, 2020). Approaching occupational health psychology from a *Healthy Healthcare* perspective is important to generating new knowledge on the necessary pathways or interventions that could retain healthcare workers, and to maintain or positively influence the quality of healthcare service delivery.

This editorial, therefore, aims to: (i) introduce the concept of *Healthy Healthcare* and how it relates to occupational health psychology; (ii) summarize the accepted papers in this special issue and discuss how they relate to the concept of *Healthy Healthcare*; and (iii) to present a new research agenda, drawing on occupational health psychology research to further advance our understanding of the concept of *Healthy Healthcare*.

Healthy Healthcare: A New Paradigm

"*Healthy Healthcare*" refers to a new interdisciplinary system-based perspective of healthcare practices encompassing three main pillars: (1) quality of patient care; (2) worker health and well-being; and (3) the organization and practices of healthcare organizations. It recognizes that healthcare systems must be organized, managed, and financed in balance with the health and performance of available workers in mind (Løvseth and de Lange, 2020). Moreover, it emphasizes the importance of a contingent perspective where one size does not fit all contexts and the heterogeneous workforce. This means that knowledge production within a *Healthy Healthcare* perspective should be sensitive to contextual factors and the continuous adaptation and changes in healthcare to meet societal developments. It also realizes that benefits in one pillar (e.g., patient care, workers health, organizational practice) can potentially disadvantage another pillar. Ultimately a system-based perspective considering the dynamics between the patient(s), the worker(s), and the complex healthcare system will lead to a more resource-efficient delivery of high-quality healthcare services.

Within this position paper, we focus on occupational health psychology as a discipline from which research and practice are crucial to inform and advance *Healthy Healthcare*. The inter-disciplinary nature of *Healthy Healthcare* aligns well with the discipline of occupational health psychology given that the latter is also inherently multidisciplinary and draws on occupational health and psychology as well as being inclusive of public health, human factors, organizational studies, economics, industrial engineering, and more (Houdmont and Leka, 2010). Crucially, the general principles of occupational health psychology (Cox et al., 2000) are that it is (a) an applied science, (b) evidence-driven, (c) oriented toward problem-solving, (d) multidisciplinary, (e) participatory, and (f) focused on intervention, with an emphasis on primary prevention, all of which resonate strongly with the concept of *Healthy Healthcare*.

THE CURRENT ISSUE

The complexity of a system-based perspective of *Healthy Healthcare* requires a continuously interdisciplinary focus that is sensitive to contextual differences in healthcare practice. It also requires a variety of methodologies to study system components, their interrelation, the uniqueness of those relations, and their potential effects on each *Healthy Healthcare* pillar. To facilitate knowledge development about *Healthy Healthcare* from the perspective of occupational health psychology, this special issue called for new empirical as well as review studies in different contexts of healthcare that help to bridge understanding across the three *Healthy Healthcare* pillars: (i) the organization of healthcare; (ii) workers' health and well-being; and (iii) the quality of care provided.

In total, six papers were accepted. The special issue includes a systematic review examining the influence of psychosocial work characteristics in explaining the mental health of nursing staff (Broetje et al.). It also includes two different two-wave longitudinal panel studies examining age-related factors among aging healthcare workers (de Lange et al.; Van der Heijden et al.). There is a cross-sectional study investigating the relationship between job autonomy, self-leadership, work engagement, and health among healthcare workers (van Dorssen-Boog et al.), and a process-evaluation qualitative study among hospital executives about the key process factors in implementing health-related work design interventions (Genrich et al.). The issue also includes a qualitative study exploring the emerging psychosocial risks of healthcare accreditation in workplaces (Alshamsi et al.).

Together, these six papers offer important contributions, examining the relationships between each of *Healthy Healthcare* pillars (such as the relations between organizational practices, job design, and worker well-being) for different types of healthcare practices and contexts among a variety of healthcare workers, but also includes insights about the interrelation of the main pillars from the perspective of current systems. This includes healthcare assistants, nursing workers, upper and middle managers within a hospital, different levels of seniority as well as different levels of organizational practices. Moreover, the research questions of these papers address diverse issues related to *Healthy Healthcare* through different theoretical frameworks such as the JD-R Model and theory (Bakker and Demerouti, 2017), the Self-Determination Theory (Deci et al., 2017), Ajzen's Theory of Planned Behavior (Ajzen, 1991), the Selection Optimization and Compensation Theory (Baltes and Baltes, 1990), and the Socio-emotional Selectivity Theory (Carstensen, 2019).

These papers also contribute to *Healthy Healthcare* by using different methodological approaches, including qualitative and quantitative, cross-sectional and longitudinal, as well as a meta-analytical review approach. By using these different methodologies the papers provide valuable new in-depth insights into the mechanisms and processes within different aspects of *Healthy Healthcare*, including the importance of supportive work environments as well as healthy job design to create resourceful and healthy healthcare workers. In other words, these papers individually provide us with relevant new insights that enable us to further summarize the lessons learned and discuss unresolved issues of *Healthy Healthcare* as a concept.

Lessons Learned and Unresolved Issues

Congruent with the majority of studies within occupational health psychology that focus on the healthcare sector, most

articles in this special issue focus on only two out of the three pillars in the system perspective of *Healthy Healthcare*. The relationship between the organization of healthcare and worker efficiency and health or well-being. The effect on patient outcomes, such as indicators of patient safety, satisfaction, or other relevant patient-based outcomes is less frequently investigated. Existing research efforts could also benefit from a stronger emphasis on positive outcomes like work engagement or meaning of work, or the simultaneous interplay between positive and negative factors and outcomes in the different pillars of *Healthy Healthcare*; rather than the current main focus of existing research, which often considers the negative concepts of work demands and the unhealthy consequences of this for the workforce. Similarly, there is a need for more team-based or organizational-level outcomes, as individual-level data outcomes have tended to dominate research to date.

Studies that examine the relationship between all three *Healthy Healthcare* pillars are rare and could be facilitated by an interdisciplinary focus between occupational health psychology and, for instance, health economics, technology, or medicine. These are all contributing factors that hinder the uptake and implementation of knowledge gained from occupational health psychology in healthcare practices by administrators and policymakers. As these stakeholders are typically tasked with the delivery of resource-efficient systems and focussed on the quality of healthcare delivery, concepts related to technology in healthcare (Iyer et al., 2020), capacity planning (Gheasi and de Lange, 2020), clinical and economical concepts (Gheasi and de Lange, 2020) are particularly salient to them. These alternative perspectives and research approaches will help facilitate the uptake of evidence-based knowledge and practices from occupational health psychology into *Healthy Healthcare* practices that are fundamentally important for the development of the resource-efficient delivery of high-quality healthcare services by a competent, motivated, and healthy workforce.

HEALTHY HEALTHCARE: RESEARCH AGENDA

One of the most important conclusions of the current issue is that these studies recognize the importance of sharing insights related to creating a concept of *Healthy Healthcare*. They identify and provide knowledge about ideas within each pillar and the interrelated aspects of the main pillars of the current system.

Taking up the system-based perspectives of *Healthy Healthcare* (Løvseth and de Lange, 2020), we present an updated integrative research model that can be used in future research of occupational health psychology (**Figure 1**). The model includes current pathways among occupational health psychology-related concepts and their outcomes at micro, meso, and macro levels. The model demonstrates the contextual sensitivity of this system-perspective at the individual level as well as within a wider societal, national, governmental, and macro context that influences all factors and relationships within the model (Teoh and Hassard, 2019; Gheasi and de Lange, 2020).

Based on the important contributions from the studies in this special issue, we have developed a *Healthy Healthcare*

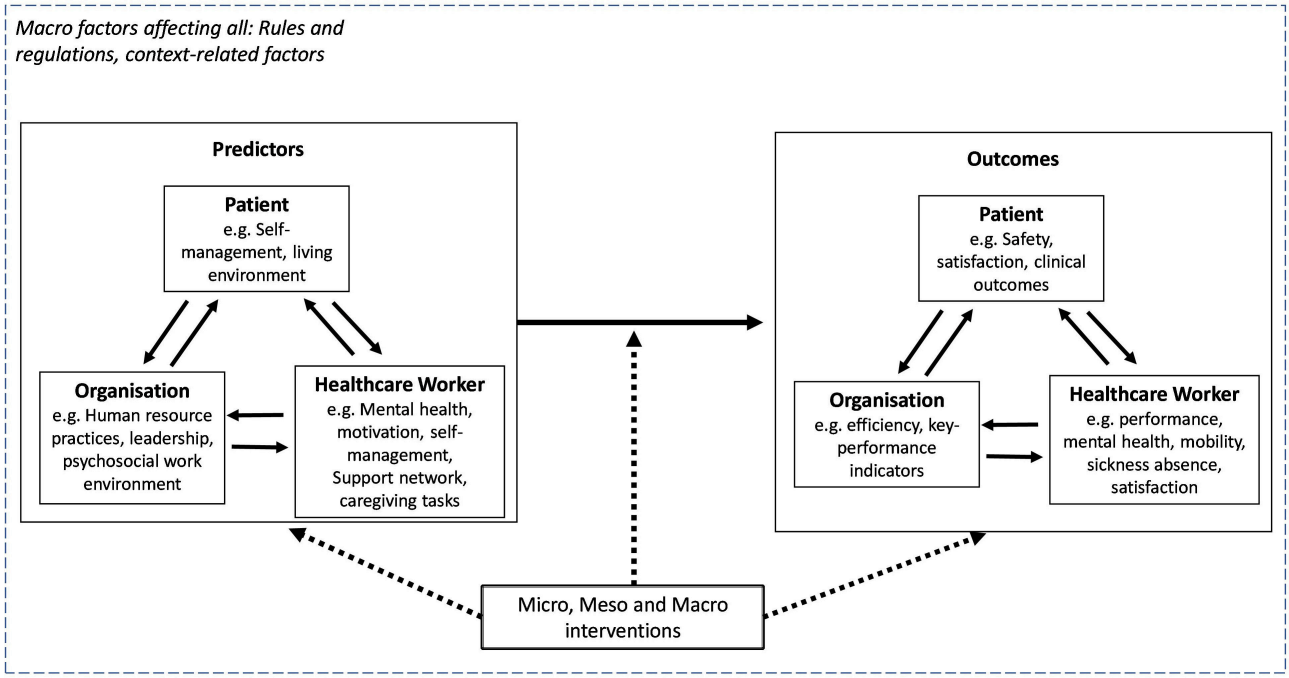

FIGURE 1 | Possible research pathways Healthy Healthcare: factors at micro-, meso-, and macrolevel.

system perspective and model (**Figure 1**). We recommend that future research initiatives in occupational health psychology should consider:

1. *Developing studies and new overarching theories based on the system-perspective of Healthy Healthcare.* Although the topics included in this issue investigated one or two relevant pillars of *Healthy Healthcare* (e.g., mostly healthcare worker and organization), the full concept of *Healthy Healthcare* remains theoretically as well as empirically untested, and further research is needed to develop and examine the core concepts postulated by it. Emphasis needs to be placed on linking different antecedents of its three core pillars, including the mechanisms that explain these relationships to possible outcomes among patients, healthcare workers, and organizations. These will contribute to developing and refining the overarching theoretical model presented in **Figure 1** above.
2. *Multilevel study designs.* Occupational health researchers typically neglect the fact that relationships are situated within a wider context, with important factors at the organizational, sectoral, societal, and national level all influencing the three pillars of *Healthy Healthcare* (Teoh and Hassard, 2019). Furthermore, factors at the individual level can influence macro-level outcomes (e.g., mortality and infection rates, patient satisfaction). The proliferation of more advanced multilevel analysis techniques and the collection of data across different levels and sources provides opportunities for researchers to capture the complexity of this system perspective within their study designs (Teoh et al., 2020a). The input of large-scale datasets on healthcare on a regional as well as a national level also offers new research directions.
3. *Capturing the diversity of the healthcare workforce.* Much of the existing research focuses on healthcare professionals, neglecting a large proportion of other workers in healthcare such as healthcare assistants, paramedics, administrators, porters, and in particular, unpaid workers (Clancy et al., 2019; see for exception de Lange et al. including supportive staff).

Besides, studies of diversity in terms of age (Van der Heijden et al.; de Lange et al.), gender, ethnicity, and immigrant workers (Mackert et al., 2011), studies of healthcare workers in developing and third-world countries (McCoy et al., 2008) are also less common. This is concerning, as unpaid workers are a large part of healthcare service delivery worldwide (Taylor, 2004) and an aging workforce implies demographic changes that substantially affect healthcare practice. Equally, ethnic minorities are more likely to experience poorer working conditions (Kinman et al., 2020), and that the gendered nature of healthcare work has implications for work-life boundaries among workers (Halford et al., 2015). A more inclusive and sustainable view of the workforce is needed to more accurately, and fairly, represent those working in the sector.

4. *Situating leadership within Healthy Healthcare.* The importance of leadership in creating healthy workplaces has been highlighted in earlier research (Furunes et al., 2018; Furunes, 2020), but a concept of health-promoting leadership has not yet been well established in occupational health research and models, which, therefore, warrants further exploration and new research. With critical questions being posed on how we can better understand the influence leadership has on the three *Healthy Healthcare* pillar—workers well-being (Nielsen and Taris, 2019), patient safety and care (Sfantou et al., 2017), and organizational systems and strategy (Bonardi et al., 2019)—developments here will have direct relevance for *Healthy Healthcare*, particularly where research looks at more than one pillar.
5. *Positive well-being.* The more detailed and holistic examination of what well-being is in the field of occupational health psychology has not yet caught-on within research involving the health services (Bakker et al., 2008; Scheepers et al., 2015). Here, the emphasis still is on ill-health and in particular, burnout. However, well-being exists as a much broader construct (Teoh et al., 2020a), and the narrative within related-healthcare research needs to shift to include more positive manifestations of well-being, including prevalence, their processes, and nomological networks, along with interventions. Crucially, this also encompasses patient care, with quality of care not merely being about the absence of disease or infirmity, but facilitating conditions that allow patients and society to thrive and flourish as well.
6. *Primary-interventions.* Within occupational health psychology, there has recently been a focus on the need to identify resources at multiple levels, which has called for interventions to strengthen resources at four levels within the organization: the Individual, the Group, the Leader, and the Organizational level (IGLO model). These potential interventions aim to ensure employee health and well-being (Day and Nielsen, 2017; Nielsen et al., 2017). The systems perspective embraced by *Healthy Healthcare* necessitates organizational-level participatory interventions. Much of the intervention research within healthcare has typically been at the individual level in the form of well-being (Regehr et al., 2014) or skills and competency-based training (Ginsburg et al., 2005). Where organizational-level interventions have been carried out (Weigl et al., 2013; Dixon-Woods et al., 2014), they have tended to focus only on two of the three pillars of *Healthy Healthcare*. Occupational health psychology can contribute to this, as it has seen exponential growth in our understanding of primary and organizational type interventions. Principles such as risk assessments, participation, manager support, and a continuous learning cycle are essential in this process, and more research is needed to support primary and multilevel interventions that seek to change the larger healthcare system (Nielsen and Noblet, 2018).
7. *Embrace different research methodologies and paradigms.* For all that a positivist paradigm can provide in establishing patterns and relationships, what are the work experience and processes that underpin *Healthy Healthcare*? While qualitative methods can explore some of these experiences, specific in-depth approaches (e.g., Interpretative Phenomenological Analysis) can also give voice and provide insights on how individuals make sense of the healthcare system (Peat et al., 2019). Equally, realist evaluation (such as the Context-Mechanism-Outcome framework) and process evaluation

(Salter and Kothari, 2014; Nielsen and Miraglia, 2017) are pivotal to understand what worked for who and in what circumstances when it comes to knowledge transfer and interventions. Consequently, researchers need to embrace a wider range of paradigms and methods to better examine the concept of *Healthy Healthcare*.

CONCLUSION

A system-based perspective is needed to address the challenges faced in healthcare and to increase the uptake of knowledge from occupational health psychology into healthcare. The *Healthy Healthcare* perspective provides a framework to do so by advocating for the examination and linking of three pillars for organizational practices, workers' health and well-being, and quality of patient care. Here, occupational health psychology is not only well placed to embrace *Healthy Healthcare*, but equally, offers considerable expertise and insights to advance the concept further. While the papers in this special issue shed important light in our understanding and the concepts of occupational health psychology, seven further points could also contribute to new future research agenda, namely: (i) developing an overarching theory and concepts of *Healthy Healthcare* (see the suggested framework in **Figure 1**); (ii) embracing more multi-level study designs; (iii) capturing the diversity of the healthcare workforce; (iv) situating leadership within *Healthy Healthcare*; (v) expanding our focus of well-being to include more positive manifestations; (vi) focusing on primary and organizational-level interventions; and (vii) embrac different research methodologies and paradigms.

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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REVIEW
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The Key Job Demands and Resources of Nursing Staff: An Integrative Review of Reviews

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The aim of our review is to identify the key job resources and demands of nursing staff by integrating findings from previously published reviews along the lines of the JD-R model. Understanding these is highly relevant given the ever-increasing pressure in nursing work and the challenges of healthcare organizations in recruiting qualified staff. It is also an important step toward developing targeted workplace interventions. A comprehensive search of the literature identified 14 quantitative and qualitative reviews that were included in our integrative review of reviews. Thematic analysis identified three key job demands and six key job resources of nursing staff, namely work overload, lack of formal rewards, work-life interference, supervisor support, fair and authentic management, transformational leadership, interpersonal relations, autonomy and professional resources. Our results corroborate findings from previous reviews, expand the relevance and generalizability by considering a broader range of relevant health-related and motivational outcomes, and highlight the importance of leadership practices in nursing.

Keywords: job demands-resources model, JD-R model, nurses, integrative review, healthcare, occupational health

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INTRODUCTION

Nurses and their employers are faced with substantial challenges. Nurses have been found to experience considerable strain at work that is related to high workloads, emotional demands, shift work, or understaffing, while healthcare organizations are struggling to attract and retain qualified staff. Studies show that approximately one third of nurses in Europe and the United States feel burnt out (Aiken et al., 2012). Thirty three percent of nurses want to leave their current employer within the next year due to job dissatisfaction and 9% intend to leave the profession altogether (Heinen et al., 2013).

Across the OECD, the health and social work sector constitutes ∼10% of employment and is steadily growing. Between 2000 and 2015, employment grew in this sector by a mean of 42%, surpassing that of the services sector. While recent prognoses predict a less severe nurses shortage than originally anticipated, increasing the retention rates of nurses remains an ongoing challenge (OECD, 2017).

A group that is characterized by particularly high strain are nursing staff working in long-term care, such as nursing homes. German statistics show that the number of sick days of nursing home nurses (24.1 days) substantially surpasses that of acute care nurses (19.3 days), which again surpasses that of the general working population (16.1 days). At the same time, the availability of occupational health programs is much lower for this group (Kliner et al., 2017). Nursing work is

not only characterized by high demands, however, it offers unique rewards as well (Sinclair et al., 2015). With this integrative review of reviews, we intend to contribute to the understanding of the most important workplace antecedents that affect health-related and motivational outcomes, such as exhaustion, job retention or job satisfaction, in nurses.

The Job Demands-Resources (JD-R) model by Demerouti et al. (2001) has been established as a framework to study and address workplace characteristics. The JD-R model proposes two main pathways, linking job resources to motivational outcomes such as work engagement, and linking high levels of job demands to strain (see **Figure 1**, adapted from Bakker and Demerouti, 2007).

Job demands are defined as "those physical, social, or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain physiological and psychological costs" (Demerouti et al., 2001, p. 501). Job resources, on the other hand, refer to "those physical, psychological, social, or organizational aspects of the job that may do any of the following: (a) be functional in achieving work goals; (b) reduce job demands and the associated physiological and psychological costs; (c) stimulate personal growth and development" (Demerouti et al., 2001, p. 501). These relationships proposed by the model have found substantial support in empirical studies (see Bakker and Demerouti, 2007 for an overview). However, Bakker and Demerouti (2017) also point to several issues that warrant further examination. These include possible direct links between job resources and demands as well as the importance of assessing demands and resources not only on the level of the individual, but also on the team and organizational level. Bakker and Demerouti also propose that job demands may need to be viewed separately as hindrance demands and challenge demands (LePine et al., 2005). While both require the exertion of effort, the latter bear the reward of personal growth and achievement. Their appraisal as one or the other may be dependent on the context. The authors also call for further examination of the underlying psychological or physiological mechanisms involved in the health impairment and motivational process, where the JD-R model currently relies on external theories.

A number of job resources and demands have been established for the general working population. Bakker and Demerouti (2007) name mental, emotional and physical demands as the main job demands and a study by Bakker et al. (2005) includes also work overload and work-home interference as demands relevant for most people's work environment. Brauchli et al. (2015), in a study with more than 2,000 employees in different industries, including hospitals, identified the following generalizable job demands: quantitative demands (work interruption and time pressure), qualitative overload and uncertainty at work. With regards to job resources, Bakker and Demerouti (2007) emphasize support, autonomy, and feedback, to which Bakker et al. (2005) add quality of the relationship with the supervisor. Brauchli et al. (2015) identified manager behavior (supportive leadership, interpersonal justice, manager support, manager appreciation), peer behavior (peer support, peer appreciation) and task-related resources (task identity, job control) as generalizable job resources.

The JD-R model has also been applied in the nursing context, most notably by McVicar (2016) and by Keyko et al. (2016). McVicar (2016), based on the finding that job stress and job satisfaction are two highly correlated and inversely related constructs, conducted a scoping review that compared the antecedents of job stress and job satisfaction in nurses. His review included 24 quantitative, three qualitative and one mixed-methods study published between 2000 and 2013, and relevant workplace antecedents of job stress and job satisfaction were categorized into job demands and resources by qualitative analysis. The job demands most consistently related to both job stress and job satisfaction across the review period were work pressure and emotional demands. Work pressure included aspects like workload, staffing and physical resources, while emotional demands included aspects such as dealing with death and dying, interactions with patients and relatives and responsibility associated with care. Another, though less relevant, demand was work-life interference, especially with regards to shift work. The job resources most commonly related to both job stress and job satisfaction were interpersonal and social relations, management and supervision, decision latitude and task significance. Management and supervision comprised the aspects of support and leadership style. The resources of effort-reward and task variety were found to be only associated with job satisfaction but not with job stress. Effort reward included aspects like pay, reward, and job security. In addition to identifying the job demands and resources, McVicar also noted chronological trends, pointing out that the emotional demands of dealing with patients and relatives and work-life inference through shift work were only observed in the second half of the time period analyzed, that is from 2007 to 2013. McVicar's review demonstrates overlap between the antecedents to the two examined outcomes job stress and job satisfaction.

The outcome of interest in Keyko et al. (2016) systematic review was work engagement of nurses. They included 15 quantitative, one qualitative and two mixed-methods studies published until 2013 in their content analysis and identified a total of 77 influencing factors which they grouped into six categories: Organizational climate (leadership, structural empowerment), job resources (interpersonal and social relations, organizational, organization of work and tasks), professional resources (professional practice environment, autonomy, role and identity, professional practice and development), personal resources (psychological, relational, skill), job demands (work pressure, physical and mental demands, emotional demands, adverse environment) and demographic factors. Based on their findings, Keyko et al. present their Nursing Job Demands-Resources model for work engagement in professional nursing practice. Of note is that they place the organizational climate outside of and prior to resources, thereby highlighting the importance of organizational aspects as a "precursor to operational resources" (Keyko et al., 2016, p. 159). Furthermore, Keyko et al., emphasize the impact of professional resources by including them as a distinct resources category in their model.

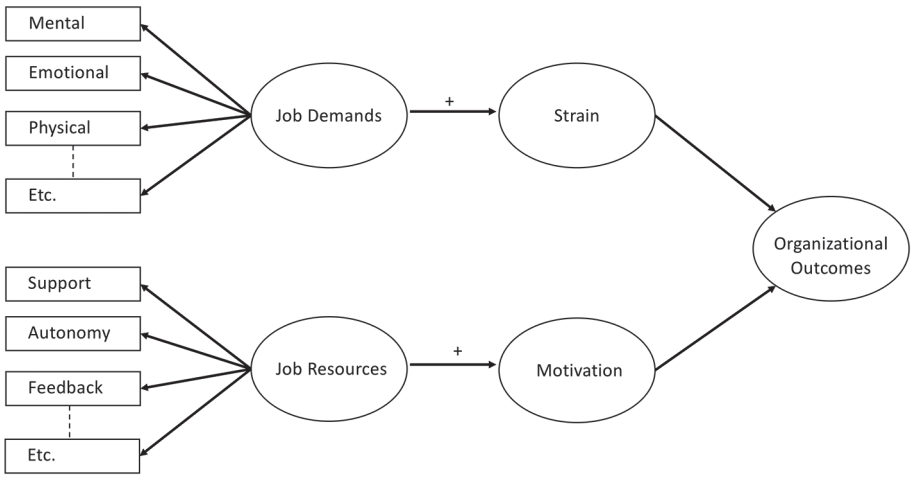

FIGURE 1 | Simplified Job Demands-Resources Model, adapted from Bakker and Demerouti (2007).

Beyond these reviews specifically applying the JD-R model, a large body of literature exists examining workplace antecedents to motivational and health-related outcomes in nurses. For example, Germain and Cummings (2010) examined factors that influence nurse performance and identified 25 factors grouped into five categories (autonomy working relationships, access to resources, individual nurse characteristics and leadership practices). Bernal et al. (2015) reviewed the effects of different psychosocial risk factors (demands-control, effort-reward and social support) on musculoskeletal disease in nurses. And Daouk-Öyry et al. (2014) examined the antecedents of turnover and absenteeism and identified 91 antecedent variables for turnover and 29 for absenteeism, grouped into five main factors (individual, interpersonal, job, organizational, and national). This glimpse at the current literature illustrates the considerable interest in understanding factors influencing nurses' work motivation and health. At the same time, the current reviews are focused on single outcomes only and organize resourceful and demanding work aspects in very different ways, making it difficult to integrate and apply the findings across reviews.

With this integrative review of reviews we want to address the following research question: What are the most important workplace antecedents of nurses that are relevant across a broad range of health-related and motivational outcomes, and how can they be categorized into demands and resources? The JD-R model is uniquely suited to integrating a wide range of findings from different studies. We want to build upon and go beyond the work of McVicar (2016) and Keyko et al. (2016) by considering a broader range of outcomes, based on the health-impairment and the motivational processes in the JD-R model as well as indicators for performance and retention of nurses commonly considered in the literature. These include, among others, motivation, exhaustion, stress, work ability, absenteeism, or turnover. The aim of our study is hence to identify the key job resources and demands of nursing staff by integrating findings from previously published review studies along the lines of the JD-R model.

METHODS

Integrative Review and Quality Appraisal

As calls for evidence-based practice in healthcare and the combination of findings from different individual studies have increased in the late twentieth century, several kinds of review methodologies and of related quality criteria have been developed (Grant and Booth, 2009). Most review approaches allow to include either quantitative or qualitative studies exclusively and some necessitate very similar research questions and study designs. Most of the associated quality appraisal tools evaluate the quality of individual studies to be included in a systematic review or meta-analysis, but few tools exist to assess the quality of reviews themselves. One such example is the AMSTAR 2 (Shea et al., 2017) which, however, focuses on the assessment of randomized and non-randomized clinical trials.

To execute our own review, we chose to conduct an integrative review of reviews. Integrative reviews provide a greater degree of flexibility than other review approaches (Whittemore and Knafl, 2005; Souza et al., 2010) and are well-established in the field of nursing research. They can be applied to a broad range of questions and permit the simultaneous inclusion of quantitative and qualitative findings. However, this flexibility can come at the price of decreased rigor. Whittemore and Knafl (2005) have put forth recommendations aimed at ensuring a high level of quality in integrative reviews and emphasize the importance of a well-specified research question, comprehensive literature search, assessment of study quality and explicit and systematic analytic approaches. To address the quality of the included reviews, we adapted the recommendations by Whittemore and Knafl and report on the relevant aspects that could be inferred from the included publications (research question, search approach, method of quality appraisal, analysis method) below.

Inclusion and Exclusion Criteria

We set the following inclusion and exclusion criteria before conducting our literature search. Due to the breadth of outcomes

considered in our integrative review, we limited our search to review articles only, resulting in an integrative review of reviews. Both quantitative and qualitative reviews were included if they performed a synthesis of their findings, rather than being merely narrative. The reviews had to examine psychosocial workplace antecedents to one or more of the outcomes discussed above and specified in **Table 1**. Again, based on the breadth of the included outcomes and in order to enhance the generalizability of our findings, we included only reviews that were focused on nursing staff in general care settings, both in acute care hospitals and in nursing homes. Like McVicar (2016), we excluded reviews that were focused on highly specialized nursing settings, such as hematology or intensive care. Reviews on both fully licensed nurses as well as on nursing assistants were included, based on the same reasoning that they share most workplace characteristics. We excluded reviews that focused on recent nursing graduates, due to the well-documented crisis they often experience as they transition into their professional role (Kramer, 1974; Duchscher, 2009). Reviews focusing on nurse managers were also not considered, as their day-to-day activities involve many responsibilities involving management, finances, and human resources (Kleinman, 2003), which deviate from those of typical staff nurses. Lastly, we limited our search to reviews published from the year 2000 onward, as nurses' perceptions and sources of job stress and job satisfaction have been found to change over time (McVicar, 2016), and we can assume this to be the case for other outcomes as well. We included reviews if at least two thirds of the individual studies included therein where also from 2000 onward, to ensure the currentness of the data.

TABLE 1 | Search strategy.

Databases	Searched outcomes	Inclusion criteria
• CINAHL • PsycINFO • MEDLINE • Cochrane Library • Peer-reviewed publications • January 2000 –December 2018 • English or German	(Positive health) • Engagement • Enjoyment • Job satisfaction • Motivation (Negative health) • Burnout • Disease[1] • Disorder[1] • Exhaustion • Health complaints • Insomnia • Pain[1] • Strain • Stress (Performance) • Absenteeism • Workability/work ability • Work performance (Retention) • Attrition • Commitment • Intention to leave • Intention to stay • Retention • Turnover [1]Broad search terms were specified with the Boolean expression *AND (work OR job)*	• Quantitative or qualitative reviews • Examination of antecedents/ predictors/determinants/ contributing factors to the listed outcomes • Samples: registered nurses, nursing assistants or nursing aides • Settings: general adult nursing care in hospitals or nursing homes **Exclusion criteria** • Specific nursing samples, such as nursing students or nurse managers • Nursing staff working in specialty care settings, such as ICU or hematology • Examination of the variable in a different context, such as intervention evaluation, effects on patient care rather than on nurses, not examining antecedents on the workplace-level • Meta-reviews • More than a third of the studies included in the review date from before 2000 • Qualitative findings described but not synthesized • Poor quality
Results database search after exclusion of duplicates		104
Results manual search		3
Total identified studies		**107**
Removed based on title or abstract		60
Removed after in-depth reading		33
Final selection of included articles		**14**

Search Strategy

We conducted a comprehensive literature search in the databases PsycINFO, CINAHL, MEDLINE, and Cochrane Library for publications in peer-reviewed journals in English or German published between 2000 and 2018. The database search was supplemented by studies identified based on references in the retrieved literature.

After combining the results from our searches and removing duplicates, 104 publications were identified and their titles and abstracts screened by the first author. Sixty Papers were excluded at this stage based on: focusing on specific nursing samples, the most common ones being nursing students or recent graduates, nurse managers, nurse practitioners and nurses working in specialty care settings such as emergency care, ICU or hematology (40), not being reviews (6), examining the variables of interest from a different angle, for example the effects of resilience on burnout or the financial costs of nursing turnover (5), reviewing the effects of interventions (4), focusing on the effects of nursing care on patients rather than the effects of workplace attributes on nurses (3), being in a language other than English or German (1), or being a meta-review (1). Thirty three papers were read in-depth but excluded because either they contained more than one third individual studies from before 2000 (9), did not address workplace antecedents (9), performed no synthesis of their findings (8), looked at prevalence rates only (3), were not peer-reviewed publications (2), or focused on nurses working in a specialty setting (1). One review was excluded as being of poor quality based on providing no information about the analysis approach used. In addition to the remaining 11 publications, hand searching of the literature identified three additional suitable publications.

Data Extraction and Analysis

In order to integrate the findings from the included review papers, thematic analysis using MAXQDA 2018 (VERBI Software, 2017) was performed to identify and organize the most common workplace-level antecedents that affect health-related and motivational outcomes in nurses. We selected thematic analysis as a flexible and useful research tool for "identifying, analyzing and reporting patterns (themes) within data" (Braun and Clarke, 2006, p. 79) and followed Browne and Clarke's recommended sequence of analysis steps. We began by coding

the relevant antecedents from each publication. An antecedent was considered relevant if it had either significantly predicted the outcome (in a meta-analysis) or was identified as a main contributor in a qualitative analysis (which was the case in most of the included reviews). If a broader category was listed as an antecedent (for example demands or organizational aspects), then we used the detailed description provided to code the specific meanings of that category. We coded our extracted data twice. In the first round of coding we developed and refined the codes and in the second round we applied the final set of codes to all data. Codes were then grouped inductively based on similarity and grouped by themes. Those were then organized into the two categories job demands and job resources. Nine themes emerged from our analysis, three job demands and six job resources.

RESULTS

Search Results

Fourteen reviews met our criteria and were included in our final analysis. Their details are displayed in **Table 2**. Both the health-impairment and the motivational axis of the JD-R model were represented. The outcomes most commonly studied were job satisfaction and turnover. The included 14 reviews were published between 2007 and 2018. Three of them included individual studies from before 2000. Two of the reviews were meta-analyses and one followed a quantitative approach by extracting significant findings. The remaining 11 reviews performed a qualitative analysis, most commonly thematic analysis. The authors typically combined a database search and a manual literature search. All 14 reviews were published in English. For 10 of the reviews, the literature search was conducted for English-language publications only, while four included other languages as well (Spanish, French, Persian, Chinese); however broad geographic areas were represented in the reviews. Most of the reviews addressed the quality of their included studies in a meaningful way. The vast majority focused on staff nurses working in hospitals and only two reviews specifically indicated that a subset of their included data stemmed from nurses working in nursing homes or long-term care facilities, while one specified that it included studies with nursing assistants. It should be noted, however, that the term "nurse" is likely not used equally across the broad range of geographies represented in our review. In some places it may refer to fully licensed staff only, while in others may also refer to staff with lower-level qualifications.

Findings

Three key job demands and six job resources of nurses that are relevant across a broad range of health-related and motivational outcomes emerged from our analysis, as illustrated in **Table 3**.

Key Job Demands

The first key job demand we identified was *work overload*. Work overload encompasses aspects of time pressure and staffing and revolves around the quantitative amount of work that needs to be done within a certain amount of time, rather than the quality of the tasks themselves. Another demand we identified was *lack of formal rewards*. The issue of pay was apparent in many of the included reviews and included satisfaction with and perceived fairness of pay. We categorized lack of formal rewards as a demand, as it appeared to be the lack thereof that was considered draining, rather than that an abundance of it could exert a greater motivational effect. The same can be said for lack of opportunities for career advancement, which is another important facet of this theme. The third demand that emerged from our analysis was that of *work-life interference*. This related predominantly to shift work and rostering and included aspects such as type of shift, number of hours worked and interference of work hours with non-work life.

Key Job Resources

The majority of the relevant workplace antecedents identified in our analysis were job resources. A glance at **Table 2** confirms that most of the included individual reviews also report antecedents that could better be described as resources than demands.

The area that emerged most strongly from our analysis was that of leadership, so much so that it is reflected in three different job resources of nurses. We will address the distinction between management and leadership in the discussion below.

The first job resource is *supervisor support*, which was typically not further specified in the reviewed publications. In addition to that, we identified two distinct types of leadership/management style. The first one, which we call *fair and authentic management*, focusses on the perceived authenticity and fairness of managers, evoking trust in the employees. This includes, but is not limited to, one's immediate supervisor. The other one is *transformational leadership*, a style that is characterized by providing inspiration, guiding change, mentoring staff and following a participatory approach.

Interpersonal relations featured as a major job resource as well. This is relevant in interaction with nursing peers, but also with other groups of stakeholders, such as physicians, patients, their relatives, or other healthcare staff. Our findings suggest that the specific stakeholder group is of less relevance than the quality of the interactions. Mutual respect, support and appreciation contribute to a positive work climate and make social interactions resourceful. The importance of *autonomy* at work is widely acknowledged and featured prominently in our findings as well. It was identified in almost all included reviews. Autonomy comprises control over how to organize one's work and autonomy in making decisions, but also includes aspects of skill discretion. Lastly, *professional resources* was identified as the sixth key job resource for nurses. This encompasses those physical and organizational aspects that support the provision of high-quality nursing care.

DISCUSSION

In this integrative review of reviews, we examined the existing literature on workplace-level antecedents to a broad range of motivational and health-related outcomes in nursing staff with the aim of identifying the key job demands and resources across these outcomes. Our qualitative analysis identified three key job demands and six key job resources, namely work overload, lack of formal rewards, work-life interference, supervisor support,

TABLE 2 | Characteristics of the included reviews.

Author(s), year journal	Aim(s)/research question(s)	Search and criteria M: Method Y: Years L: Languages S: Sample O: Other information provided	Studies included	Quality assessment of included studies	Geography of included studies	Analysis method	Reported antecedents
Bernal et al. (2015), International Journal of Nursing Studies	Estimate the association between psychosocial risk factors in the workplace and musculoskeletal disorders in nurses and aides	M: Database search, 2 reviewers Y: 2001–2014 L: English, Spanish S: Hospital nurses and nursing aides O: Observational studies	17: all quantitative	Adapted version of the Standardized Quality Scale developed by van der Windt et al. (2000). Study details provided	Iran (3), China (2), Denmark (2), Greece (2), United States (2), Australia (1), Brazil (1), Germany (1), Japan (1), Netherlands (1), Mixed (1: Netherlands/Greece)	Random-effects meta-analysis and heterogeneity analysis	• High psychosocial demands–low job control • Effort-reward imbalance • Low social support
Cicolini et al. (2014), Journal of Nursing Management	Examine the relationship between nurse empowerment and job satisfaction in the nursing work environment	M: Database and website search, 2 reviewers Y: 1998–2012 L: English S: Staff nurses O: Quantitative or qualitative studies. Studies using CWEQ or CWEQ-II for measuring structural empowerment and studies using PES for measuring psychological empowerment	12: all quantitative	Quality Assessment and Validity Tool for Correlational Studies' adapted from previous systematic reviews (Cummings and Estabrooks, 2003) Study details provided	Canada (7), China (3), Italy (1), Mixed (1: England Malaysia)	Narrative synthesis	• Structural empowerment
Coomber and Barriball (2007), International Journal of Nursing Studies	Explore the impact of job satisfaction components on intent to leave and turnover in order to identify the most influential factors	M: Database search Y: 1997–2004 L: Not specified S: General adult care hospital staff nurses O: Primary or secondary research	9 studies: 7 quantitative, 1 of which was a meta-analysis, 2 mixed-methods studies	Not specified Study details provided	United States (4), Taiwan (3), Australia (1), Singapore (1)	Thematic content analysis	• Leadership • Educational attainment • Pay • Stress
Cowden et al. (2011), Journal of Nursing Management	Examine the relationship between managers' leadership practices and staff nurses' intent to stay in their current position	M: Database and manual search, 2 reviewers Y: 1985–201 L: English S: Staff nurses or staff nurses and their managers O: Quantitative and qualitative studies	23: 22 quantitative, 1 qualitative	Quantitative studies: adaptation of quality assessment tool for correlational studies by Cummings and Estabrooks (2003); qualitative study: Critical Appraisal Skills Programme by Lewin et al. (2009) Study details provided	United States (15), Canada (4), Australia (1), Germany (1), Jordan (1), Taiwan (1)	Extraction of significant findings	• Transformational leadership • Supportive work environments
Daouk-Öyry et al. (2014), International Journal of Nursing Studies	Develop an integrative multilevel framework that optimizes understanding of absenteeism and turnover among hospital nurses	M: Database search Y: 2007–2013 L: English S: Hospital nurses O: Peer-reviewed, quantitative and qualitative, three reviewers	41: 33 quantitative, 4 qualitative, 4 mixed-methods	Not specified Summary tables of select study characteristics	United States (17), Netherlands (4), Japan (3), Sweden (3), UK (2), Australia (1), Belgium (1), Brazil (1), Canada (1), Finland (1), Jordan (1), Kuwait (1), New Zealand (1), South Africa (1), Spain (1), Taiwan (2)	Content analysis Two reviewers with calculation of inter-rater agreement Table with detailed information on themes and sources	91 antecedent variables for turnover and 29 antecedent variables for absenteeism, grouped into 11 categories and 5 main factors:

(Continued)

TABLE 2 | Continued

Author(s), year journal	Aim(s)/research question(s)	Search and criteria M: Method Y: Years L: Languages S: Sample O: Other information provided	Studies included	Quality assessment of included studies	Geography of included studies	Analysis method	Reported antecedents
							• Individual • Demographics • Personal characteristics • Job attitudes • Health and wellbeing • Interpersonal • Management style • Relationships • Job • Job demand • Job control • Organizational • HR practices • Structure • National • Labor supply • Legislation
García-Sierra et al. (2016), Journal of Nursing Management	Review empirical research about work engagement in nursing and synthesize the findings to better understand this construct	M: Database and manual search Y: 1990–2013 L: English, French or Spanish S: Staff nurses O: Empirical studies, published in a scientific journal	27: 24 quantitative, 3 qualitative	Used own criteria Study details provided	Canada (6), Australia (3), Belgium (3), United States (3), Spain (2), China (1), Ireland (1), Israel (1), Italy (1), Malaysia (1), Netherlands (1), Norway (1), Portugal (1), Uganda (1), Mixed (1: Australia United States)	Thematic analysis	• Organizational antecedents • Areas of work life • Structural empowerment • Social support • Individual antecedents • Personal traits • Professional characteristics • Family issues • Work orientation • Impact of nurse managers
Germain and Cummings (2010), Journal of Nursing Management	Explore leadership factors and behaviors that influence nurse performance and nurse performance motivation	M: Database and manual search, also searched for relevant research reports on Association websites Y: 1996–2007 L: English S: – O: Peer-reviewed, empirical quantitative or qualitative studies, 2nd reviewer assessed a subset of the results	8: all quantitative	Quality Assessment and Validation Tool for Correlational Studies (Cummings and Estabrooks, 2003) and the Effective Public Health Practice Quality Assessment Tool (McMaster University School of Nursing, 2003) Study details provided	Canada (4), US (3), Singapore (1)	Content analysis	Five categories with 25 factors: • Autonomy • Work empowerment • Structural empowerment • Empowerment • Using knowledge and skills • Autonomy • Working relationships • Communication • Informal and formal power • Clearly defined nursing roles and responsibilities • Trust and respect

(Continued)

TABLE 2 | Continued

Author(s), year journal	Aim(s)/research question(s)	Search and criteria M: Method Y: Years L: Languages S: Sample O: Other information provided	Studies included	Quality assessment of included studies	Geography of included studies	Analysis method	Reported antecedents
							• Fair and respectful practices • Raise workload concerns • Access to resources • Managing the unit • Managing resources • Individual nurse characteristics • Ambiguity tolerance • Hardiness • Leadership practices • Enabling the heart • Modeling the way • Challenging the process • Encouraging the heart • Inspiring a shared vision • Leadership: building, coaching and mentoring
Hayes et al. (2010), Journal of Nursing Management	Explore the common factors contributing to nurse job satisfaction in the acute hospital setting	M: Database search Y: 2004–2009 L: English S: Nurses working in the acute care hospital setting	17 Studies: 12 quantitative, 2 qualitative, 1 mixed-methods, 2 development of an instrument	Not specified Study details provided	US (5), Canada (3), Australia (2), China (1), Ireland (1), Italy (1), Jordan (1), Norway (1), South Korea (1), UK (1)	Not specified Table with detailed information on clusters and sources	This review identified 44 factors in three clusters (intra-, inter- and extra- personal): • Intra-personal • Age • Education • Experience • … • Inter-personal • Autonomy • Interactions • Professional status • Relationships • Task requirements • Work life interference • … • Extra-personal • Organizational policies • Pay • Workload • …
Hayes et al. (2012), International Journal of Nursing Studies	Examine recent findings related to the issue of nursing turnover and its causes and consequences	M: Database and manual search Y: from 2006 onward L: English S: Nurses and nursing aides working in	51: all quantitative	Not specified Study details provided	Canada (7), United States (5), Australia (3), Europe (2), Taiwan (2), Belgium (1), China (1), Finland (1), Ireland (1), Japan (1), Korea (1), Macao (1),	Integrative approach	• Organizational factors • Workload, stress and burnout • Management style • Empowerment

(Continued)

TABLE 2 | Continued

Author(s), year journal	Aim(s)/research question(s)	Search and criteria M: Method Y: Years L: Languages S: Sample O: Other information provided	Studies included	Quality assessment of included studies	Geography of included studies	Analysis method	Reported antecedents
		hospital, long-term or community care			South Africa (1), UK (1), Not specified (23)		• Role perceptions • Individual factors • Career advancement and pay benefits

Keyko et al. (2016), International Journal of Nursing Studies	Understanding influencing factors on and outcomes of work engagement in professional nursing practice	M: Database and manual search, second reviewer assessed subset of results
		Y: Until 2013
		L: English
		S: Registered nurses in direct-care positions
		O: Peer-reviewed, quantitative and qualitative studies
			18: 15 quantitative, 1 qualitative, 2 mixed-methods	Quantitative studies: adaptation of the tool by Cummings and Estabrooks (2003); qualitative study: Critical Skills Appraisal Programme
				Study details provided
					Canada (7), USA (7), Australia (1), China (1), Iran (1), Taiwan (1)	Content analysis based on the JD-R framework	77 influencing factors grouped into six categories:
							• Organizational Climate
							  • Leadership
							  • Structural empowerment
							• Job Resources
							  • Interpersonal and social relations
							  • Organizational
							  • Organization of work and tasks
							• Professional Resources
							  • Professional practice environment
							  • Autonomy
							  • Role and identity
							  • Professional practice and development
							• Personal Resources
							  • Psychological
							  • Relational
							  • Skill
							• Job Demands
							  • Work pressure
							  • Physical and mental demands
							  • Emotional demands
							  • Adverse environment
							• Demographic factors

McVicar (2016), Journal of Nursing Management	Identify core common antecedents of job stress and job satisfaction in nurses	M: Network and database search Y: 2000–2013 L: English S: Nurses in clinical practice that were not entirely from one specialty	27 studies with 28 datasets: 24 quantitative, 3 qualitative, 1 mixed-methods	Appraisal framework by Brown et al. (2013)	United States (3), Canada (2), Iceland (2), Italy (2), Taiwan (2), Australia (1), Belgium (1), China (1), Germany (1), Iran (1), Ireland (1), Jordan (1), Netherlands (1), Norway (1), Singapore (1), South Korea (1), UK (1), Mixed (3: Japan South Korea Thailand United States, Kenya Tanzania Uganda, Sweden Norway), Not specified (1)	Quantitative studies: Significant antecedents ($p \leq 0.05$) were included or top 5 antecedents when ranked means were reported Qualitative studies: Major themes Antecedents were clustered and fit onto the JD-R framework, which was extended where necessary.	• Interpersonal and Social Relations (Co-working, Interpersonal relationships and professional status) • Management and supervision (Support, Leadership style) • Decision Latitude • Effort-reward (Financial reward, Job professional development opportunities, Job security)

(Continued)

TABLE 2 | Continued

Author(s), year journal	Aim(s)/research question(s)	Search and criteria M: Method Y: Years L: Languages S: Sample O: Other information provided	Studies included	Quality assessment of included studies	Geography of included studies	Analysis method	Reported antecedents
							• Task significance (Role ambiguity) • Task variety (Job content routinization) • Work Pressure (Workload time staffing, Physical resources) • Work-Life Interference (Work–family Conflict, Shift working) • Emotional Demands (Dealing with death and dying, Interaction with patients and relatives, Responsibility associated with care commitment)

Utriainen and Kyngäs (2009), Journal of Nursing Management	Examine factors evoking job satisfaction among nurses	M: Database search
		Y: 1995–2007 (varies slightly between databases)
		L: Not specified (English)
		S: Nurses working in hospitals
		O: Peer-reviewed, studies carried out in Western countries
			21: 16 quantitative, 5 qualitative	Not specified beyond search approach
				Study details provided
					United States (12), England (3), Canada (2), Norway (2), Finland (1), Australia (1)	Content analysis, inductive	• Interpersonal relationships
							  • Human relationships with co-workers
							  • Feeling of togetherness
							  • Interaction and communication
							  • Team work
							  • Social climate and ethicality
							  • Peer support
							• Patient care
							  • Significance of patient care to nurses
							  • Opportunity for high-quality patient care
							  • Good human connections with patients
							• Ways of organizing work
							  • Work-family-relationship
							  • Supportive leadership
							  • Work environment
							  • Manageable and suitable workload
							  • System of nursing practice
							  • Salary and benefits
							  • Variety of work
							  • Autonomy
							  • Professionalism and professional development

(Continued)

TABLE 2 | Continued

Author(s), year journal	Aim(s)/research question(s)	Search and criteria **M: Method** **Y: Years** **L: Languages** **S: Sample** **O: Other information provided**	Studies included	Quality assessment of included studies	Geography of included studies	Analysis method	Reported antecedents

Vagharseyyedin (2016), Iranian Journal of Nursing and Midwifery Research	Integrate determinants of nurses' organizational commitment in hospital settings	M: Database and reference search
		Y: 2000–2013
		L: English or Persian
		S: Hospital nurses
		O: Published in peer-reviewed journals, nurses results reported separately, experimental studies were excluded
			33: 32 quantitative, 1 qualitative	AACN (American Association of Critical Care Nurses) revised evidence leveling system	Canada (7), Iran (6), Taiwan (6), United States (3), Australia (2), Belgium (1), China (1), Finland (1), Japan (1), Korea (1), Singapore (1), Mixed (3: Asian-American, EU, Malaysia England)	Thematic analysis	63 factors grouped into nine themes and four main categories:
							• Personal characteristics and traits of nurses
							  • Biopsychosocial parameters
							  • Personal and family life
							• Leadership and management style and behavior
							  • Nature of relationships
							  • Leadership style
							• Organizational context
							  • Organization's norms and performance
							  • Organizational policies and procedures
							• Characteristics of job and work environment
							  • Growth and development, Content and organization of tasks
							  • Mutual respect

Zhang et al. (2018), Applied Nursing Research	Conduct a meta-analysis on the relationship between structural empowerment, psychological empowerment and burnout for registered nurses.	M: database and manual search Y: from 1990 onward L: English or Chinese S: Registered nurses working in hospitals O: Quantitative cross-sectional studies reporting Pearson or Spearman correlation coefficients; results appraised by two reviewers	24: all quantitative	Quality In Prognosis Studies (QUIPS) tool by two reviewers Study details in table	China (11), Canada (6), United States (3), Egypt (1), Netherlands (1), Sweden (1), Turkey (1)	Meta-Analysis with data extraction by two reviewers	Structural empowerment

TABLE 3 | Identified key job demands and resources of nursing staff with represented aspects.

DEMANDS	
Work Overload	
• Workload	Hayes et al., 2010, 2012; Daouk-Öyry et al., 2014
• Work pressure, workload/time/staffing	McVicar, 2016
• Demand-control/effort-reward imbalance	Bernal et al., 2015
Lack of Formal Rewards	
• Pay/benefits/financial rewards/unequitable pay	Coomber and Barriball, 2007; Hayes et al., 2010, 2012; Daouk-Öyry et al., 2014; McVicar, 2016; Vagharseyyedin, 2016
• Growth and development opportunities	Hayes et al., 2012; Daouk-Öyry et al., 2014; McVicar, 2016
• Job security	Vagharseyyedin, 2016
• Effort-reward imbalance	Bernal et al., 2015
Work-Life Interference	
• Work-life or work-family conflict	Daouk-Öyry et al., 2014; McVicar, 2016
• Rostering/scheduling/shift work	Hayes et al., 2010; Keyko et al., 2016; McVicar, 2016
RESOURCES	
Supervisor Support	
• Supervisor support	Cowden et al., 2011; Hayes et al., 2012; McVicar, 2016
• Social support from supervisor/organization	Hayes et al., 2010, García-Sierra et al., 2016
• Organizational/management support	García-Sierra et al., 2016
Fair and Authentic Management	
• Authentic leadership	García-Sierra et al., 2016; Keyko et al., 2016
• Management: trust, fairness, respect	Germain and Cummings, 2010; Vagharseyyedin, 2016
• Supervisor incivility	Vagharseyyedin, 2016
• Organizational trust and fairness	Vagharseyyedin, 2016
Transformational Leadership	
• Transformational leadership	Cowden et al., 2011; Hayes et al., 2012; García-Sierra et al., 2016
• Leadership practices: vision, inspiration, mentoring	Germain and Cummings, 2010; Vagharseyyedin, 2016
Interpersonal Relations	
• Personal and professional interactions between employees or with other stakeholders	Utriainen and Kyngäs, 2009; Hayes et al., 2010; Daouk-Öyry et al., 2014; Keyko et al., 2016; McVicar, 2016; Vagharseyyedin, 2016
• Social climate/work climate, community	Utriainen and Kyngäs, 2009; García-Sierra et al., 2016
• Mutual respect/professional status	Hayes et al., 2010; McVicar, 2016; Vagharseyyedin, 2016
Autonomy	
• Autonomy	Germain and Cummings, 2010; Hayes et al., 2010; Keyko et al., 2016
• Control/skill discretion/decision latitude	Daouk-Öyry et al., 2014; Keyko et al., 2016; McVicar, 2016
• Demand-control	Bernal et al., 2015
Professional Resources	
• Professional practice environment/possibility for high-quality patient care	Utriainen and Kyngäs, 2009; Keyko et al., 2016
• Access to resources	Germain and Cummings, 2010
• Structure/organization of tasks and work	Daouk-Öyry et al., 2014; Vagharseyyedin, 2016

fair and authentic management, transformational leadership, interpersonal relations, autonomy and professional resources.

***Work overload*:** The demand of work overload we identified, was determined primarily by workload, time pressure and staffing. It is widely acknowledged that the workload for nurses has substantially increased in recent years and has reached unsustainable levels in many places. McVicar (2016) also identified a job demand called work pressure and emphasized the importance of workload, time and staffing. A study by Skinner and Pocock (2008) examining sources of work-life conflict, found that having too much work to do, was a stronger predictor of work-life conflict than time-related aspects such as number of work hours or control over work schedule, also highlighting the toll that excessive workloads take on employees.

Although not immediately obvious, work overload is also related to moral distress. Moral distress has been defined as an occurrence in which one knows the right action to take, but is constrained from taking it (Jameton, 1984). In a study examining moral distress among registered nurses in the United States, Zuzelo (2007) found that working with staffing levels that are considered unsafe, was the most morally distressing event out of 29 events that participants were asked to rate.

***Lack of formal rewards*:** Our findings illustrate the importance of pay and advancement opportunities for nursing staff, especially with regards to motivational outcomes. However, we gained the impression that pay was not a motivator, but rather that unfairness of pay, insufficient pay and also lack of advancement opportunities were perceived as adversarial. Coomber and Barriball (2007) reverberate this and refer to their included studies in which participants have expressed perceived unfairness of pay, especially given the high levels of education, experience and responsibility in nursing work. Both Coomber and Barriball (2007) and Hayes et al. (2012) point out that insufficient pay may more strongly affect turnover intention in male nurses than in female ones. This turnover intention, however, may also be strongly affected by the availability of suitable alternatives. While several of the included reviews note the importance of advancement opportunities, Hayes et al. (2012) remark that advancement opportunities seem to rank particularly highly among younger nursing staff.

***Work-life interference*:** Work-life interference may be particularly relevant to staff working shifts. From our findings, it appears that not only is shift work itself challenging, but also the rotating nature of shifts as well the limited plannability of spare time that nurses often experience. Work-life interference may also have particular relevance in nursing given the high percentage of women in that field who are disproportionately responsible for combining work and family responsibilities. Flinkman et al. (2010) review of 31 publications on nurses' intention to leave the profession found that family-work conflict was associated with higher intention to leave when it was inquired, however the authors point out that this aspect was rarely examined. Both McVicar (2016) and

Keyko et al. (2016) acknowledge the importance of shift work and work-life interference. Keyko et al. group it under the physical and mental demands, while McVicar also identified a theme named work-life interference, which represents the facets of work-family conflict and shift working.

Three of the six key job resources for nurses that we identified relate to leadership, namely supervisor support, fair and authentic management and transformational leadership. The debate regarding the differences and overlap between management and leadership is ongoing. While management has more connotations of administration and dealing with the status quo, leadership seems more oriented toward change (Lunenburg, 2011). Maccoby (2000) described management as a necessary function, while leadership is about the relationship "between leader and led that can energize an organization" (Maccoby, 2000, p. 57). However, those functions may largely overlap (Nienaber, 2010). In face of these conceptualizations and the ongoing debate, we understand management and leadership to be different activities and functions that may be exercised by a person of authority in an organization, with management emphasizing administrative functions and leadership emphasizing change-oriented ones, and have named the job resources accordingly. While we analyzed the data inductively, we arrived at these three leadership-related resources which are already familiar from the literature and we find some of the established definitions to be good descriptors of the meaning of our themes also.

***Supervisor support*:** Findings related to this theme were typically either described in terms of support from supervisor, social support from peers and colleagues, or in terms of management/organizational support. However, what this support entails was typically not specified. The description of social support as emotional, instrumental, informational and appraisal support based on House (1981), seems to capture the meaning of our theme quite well. McVicar (2016) also reports a job resource of management and supervision support, while Keyko et al. (2016) did not identify such a resource.

***Fair and authentic management*:** The understanding of authentic leadership is predominantly shaped by Avolio et al. (2004, p. 802) view of authentic leaders as "persons who have achieved high levels of authenticity in that they know who they are, what they believe and value, and they act upon those values and beliefs while transparently interacting with others." While some of the included reviews specifically referred to the concept of authentic leaderships, others, such as Germain and Cummings (2010) and Vagharseyyedin (2016) described leadership more generally in terms of fairness and trust.

***Transformational leadership*:** Transformational leadership was coined by Downton (1973) and Burns (1978) and today constitutes one of five components of the magnet model of the American Nurses Credentialing Center. Transformational leadership focuses on leading employees through change and emphasizes the importance of vision, influence and communication. Again, several of included reviews specifically examined this construct (Cowden et al., 2011; Hayes et al., 2012; García-Sierra et al., 2016), while others referred to the displayed leadership behaviors (Germain and Cummings, 2010; Vagharseyyedin, 2016).

Support for our results also comes from a systematic review of nine systematic reviews by Halter et al. (2017), who report managerial style—especially transformational leadership—and supervisory support as among the most relevant factors affecting nurse turnover. Findings from Gregersen et al. (2011, 2014) concerning the comparison of different leadership approaches, also lend support to the leadership-related resources we identified and provide insights into the possible relationships between them. Gregersen et al. (2011) literature review of employees in different industries linked leadership to employee well-being and found that social support was strongly associated with employee health, as were transformational leadership and employee-oriented leadership. Based on a subsequent empirical study with more than 1,000 nursing home employees in Germany (Gregersen et al., 2014) they propose that an important shared element between these different health-promoting leadership approaches may lie in trustful inter-individual relationships between the supervisor and the employee. This supports an individualized approach to interacting with each employee, rather than adhering strictly to a specific leadership style. The three leadership-related resources we identified could serve as pointers for positive leadership behaviors that need to be further tailored to fit each leader and employee. A need for differentiation is also illustrated by findings from Bringsén et al. (2012) who conducted a focus group study on workplace health resources among Swedish healthcare workers. They discovered that while a proportion of the participants associated health with flexibility at work, the others associated it with stability.

Interpersonal relations: Our job resource of interpersonal relations refers to mutually respectful, supportive and appreciative relations between nurses and other stakeholders such as physicians, management, other healthcare staff, patients, and their relatives. Utriainen and Kyngäs (2009) emphasize the relevance of the general social climate for job satisfaction, while García-Sierra et al. (2016) focus on the impact of social support. Daouk-Öyry et al. (2014) also point out the negative impact of feeling undervalued or disrespected by colleagues or lack of collegiality. Aspects of professional status and mutual respect also play into this job resource. Interestingly, it appears to be the quality of the relationships rather than the specific stakeholder group that is more relevant. In a way this makes sense. Nurses act as a hub between many different stakeholder groups in patient care, among which physicians, for example, are only one group. Like us, neither McVicar (2016) nor Keyko et al. (2016), both of whom highlighted the importance of interpersonal relations, found enough evidence for a theme relating to interactions with a particular stakeholder group. As Aiken et al. (2013, p. 151) pointed out: "Nurses' relationships with physicians appear not to be as problematic as nurses' relationships with management."

Interprofessional collaboration is a closely related concept and can be viewed from two different perspectives.

The first, and in our impression more dominant one, relates to the coordination of care by different groups of healthcare professionals with the goal of reducing overlapping responsibilities and ensuring optimal continuum of care (WHO, 2010). The second perspective relates to the psychosocial interactions between different groups of professionals and includes aspects of mutual respect and recognition. In our findings, this second perspective also became apparent in our job resource of interpersonal relations.

***Autonomy*:** Most of the reviews included in our analysis recognized the importance of either autonomy (Germain and Cummings, 2010; Hayes et al., 2010), autonomy/control (Keyko et al., 2016), job control (Daouk-Öyry et al., 2014), decision latitude (McVicar, 2016) or demand/control (Bernal et al., 2015). Germain and Cummings (2010) also emphasize the importance of management in empowering autonomy among nurses. Our understanding of autonomy is closest aligned with Weston's description of clinical autonomy as "the authority and freedom of the nurse to make nursing care decisions concerning the content of clinical patient care in an interdependent practice" (Weston, 2008, p. 407). Autonomy has also been reported as a main job resource for the general working population (Bakker and Demerouti, 2007; Brauchli et al., 2015). A related concept that gained prominence in nursing is that of control over nursing practice. Control over this describes nurses' ability to shape departmental and organizational policies and practices related to nursing care (Weston, 2008), however this higher-order concept is predominantly located on the organizational level and looks beyond task design and individual decision-making.

***Professional resources*:** With professional resources, we refer to the immediate resources that support nurses in doing their work well. This includes tangible resources like work equipment but also intangible ones, such as access to necessary information and the organization of work tasks. This resource emerged as the vaguest result from our analysis. This may have been caused, at least in part, by the overlap with two other established concepts, professional practice environment and structural empowerment. Both concepts, however, are much broader in scope. Such broader themes of professional practice environment and professional practice and development have also been reported by Keyko et al. (2016), while McVicar's (2016) demand of physical resources was narrower.

Professional practice environment was one of the key findings that came out of the original magnet studies (McClure et al., 1983), when researchers conducted group interviews with nurses across the United States in hospitals that were known for being able to attract qualified staff despite a national nurse shortage. Aspects that were found to contribute to a professional practice environment were qualification and competency of nurses and managers, autonomy, and professional recognition among others. Structural empowerment of nurses focuses on organizational structures, policies and programs, opportunities for growth and visibility of nursing in the organization with the aim of empowering professional nursing practice and describes work environments that provide access to information, resources, support, and the opportunity to learn (Kanter, 1977). We view professional practice environment and structural empowerment as higher-order concepts that in fact include most of job resources we have identified. However, determining workplace attributes at the level of job resources and demands allows them to be more directly addressed on the team and leadership level. This is the reason why two of the review publications we included are not represented in **Table 3**. Cicolini et al. (2014) and Zhang et al. (2018) specifically examined the impact of structural empowerment on job satisfaction and burnout, respectively. However, the breadth of structural empowerment made them unsuited to fitting into our pattern of individual job demands and resources.

There are some notable similarities of our findings with established job demands and resources for the general working population, as well as differences to them. Our demand of work overload is comparable to Bakker et al. (2005) demand work overload as well as to Brauchli et al. (2015) demand time pressure, all of which emphasize quantitative aspects. Similarly, work-home interference (Bakker et al., 2005) resembles our work-life interference. Like our findings, all of the publications also acknowledge the importance of the job resources autonomy/control and support.

Separate physical, emotional, or physical demands (Bakker et al., 2005; Bakker and Demerouti, 2007) or work interruption, qualitative overload or uncertainty at work (Brauchli et al., 2015) did not emerge as key job demands from our analysis. While several of the included reviews specifically described emotional or physical demands in nurses, neither of these were reported consistently enough to form their own theme in our analysis. Had the included reviews involved more samples of nursing home staff, however, a different picture may have emerged, as physical demands have been found to be particularly high in that setting (Simon et al., 2005). Emotional demands featured strongly in McVicar's (2016) results, but also contained a sub-aspect of dealing with patients and relatives, which we grouped under interpersonal relations. It remains unclear whether emotional and physical demands constitute highly relevant job demands for nurses and what exactly constitutes emotional demands in nursing. Is it dealing with suffering and death, compassion fatigue (Joinson, 1992) or the emotional labor (Hochschild, 1983) of regulating ones' own emotions in the interactions with patients and their relatives? One might argue that these aspects are inherent to nursing and caring work and cannot be affected on the team or leadership level and that the focus should rather be on those workplace aspects that hinder nurses in coping with these demands (e.g., work overload) or support them in successfully doing so (e.g., social support).

Another aspect that could be closely related to emotional demands is the experience of aggression and violence, which was rarely included in the reviews we examined. Meanwhile, the health sector reports the highest percentage of workers who experience adverse social behaviors such as verbal abuse,

physical violence, unwanted sexual attention, humiliating behavior, and harassment (Eurofound, 2017).

As illustrated in **Table 2**, studies from many different countries are reflected in our integrative review of reviews, although the majority stems from Northern America and Europe. A previous qualitative analysis of workplace stressors of nurses in five countries, including Hungary, Israel, Italy, the United Kingdom, and the United States found significant differences between the evaluation of different stressors but also showed similar patterns across the countries, which led the study authors to conclude that there are both emic (culture-specific) and etic (culture-general) sources to work stress in nurses (Glazer and Gyurak, 2008). Aiken et al. (2012) showed that although the degree to which nurses report burnout, job dissatisfaction or the intention to leave varied substantially between 13 surveyed countries (twelve European countries and the United States), these outcomes were associated with work environment aspects like staffing, managerial support, or participation in decision-making in all countries. This supports the potential for our findings to have an impact, even across different cultural settings.

Limitations and Outlook

Several limitations need to be considered in interpreting our findings. First of all, although we intended to identify the relevant job resources and demands for both nurses and nursing assistive personnel working in both hospital and nursing home settings, the vast majority of studies included in the reviews we found were based on registered nurses in hospitals. This limitation needs to be considered when applying our findings to other nursing roles or work contexts, such as nursing homes, home care or assistive nursing personnel. Given the increasing importance of these roles and settings, the high demands placed on them and the lower levels of support often available to them (Kliner et al., 2017), future research should focus on examining workplace demands and resources in those contexts.

Next, only constructs that have been studied as antecedents and have found their way into reviews were reflected on our study. This implies that constructs which have thus far received limited attention in research, such as workplace violence, were underrepresented, while trending research topics, like transformational leadership, may have been overrepresented. Of course, this will have affected our findings.

The reviews in our analysis reflect studies conducted in many different countries and regions. Accordingly, our findings will have to be interpreted differently in different contexts. For example, career advancement opportunities for nursing staff may be very limited in some places, while in others, such as the United States, they are quite substantial. Many local aspects such as educational preparation of nursing staff, standards of care, labor regulations or social norms (see for example Hofstede, 1980) need to be considered when working with these job demands and resources.

Lastly, our findings should be further examined quantitatively to determine whether the proposed key job demands and resources do indeed explain more variance in health-related and motivational outcomes in nurses than do those identified for the general working population.

Conclusion

The aim of our study was to identify the key job resources and demands of nursing staff by integrating findings from previously published review studies along the lines of the JD-R model. Our analysis revealed work overload, lack of formal rewards and work-life interference as the three key job demands of nursing staff. The key job resources were supervisor support, fair and authentic management, transformational leadership, interpersonal relations, autonomy and professional resources. In our analysis we considered a broad range of relevant health-related and motivational outcomes in nursing staff. With this integrative review of reviews, we were able to: (a) corroborate findings from previous reviews by McVicar (2016) and Keyko et al. (2016), (b) broaden the perspective beyond single outcomes on what makes workplaces motivating and health-promoting for nursing staff, which enhances the relevance and generalizability of our findings, and (c) illustrate the paramount importance of leadership practices in nursing. Understanding the most important job demands and resources can support the development of targeted interventions. This could occur on different levels, initiated either by nurse team leaders or managers or at the organizational level. As a first step, the use of established assessment tools can serve to determine to which extent the identified job demands and resources are present in a given work setting, based upon which steps to strengthening existing resources, building additional ones and reducing job demands can be implemented. For researchers, the understanding of the key job demands and resources specific to nursing staff supports the investigation of the relative importance of these different workplace-level antecedents to health-related and motivational outcomes.

AUTHOR CONTRIBUTIONS

The data analysis and manuscript were prepared by SB with support from GJ and GB. All authors critically reviewed and contributed to the manuscript and approved the final version.

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Hospital Medical and Nursing Managers' Perspectives on Health-Related Work Design Interventions. A Qualitative Study

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Background: Research indicates that the active support of managers is essential for the sustainable implementation of health-related work design interventions in organizations. However, little is known about managers' perceptions of such health promotion measures.

Objective: Our study aims to provide information that help to foster managers active support of health-related work design interventions in hospitals. Based on Ajzen's Theory of Planned Behavior (TPB) we explore the attitudes, perceived organizational norms, and perceived behavioral control of managers in the hospital regarding such interventions.

Methods: Semi-structured interviews with 37 managers (chief physicians, senior physicians, and senior nurses) were carried out in one German hospital. A software aided qualitative content analysis was applied.

Results: We observed that the majority of managers are aware of the importance of health-related work design. We found a high variation in the perception of organizational norms related to mental health promotion of employees. Behavioral control for supporting interventions is perceived more on an individual (e.g., appraisal interviews, professional development or support) and team level (e.g., fair work schedule, regular team meetings), less on an organizational level.

Conclusion: To enable and to motivate hospital medical and nursing managers to support health-related work design, hospitals need to establish clear organizational norms that the health promotion of their employees is an important organizational goal. Moreover, managers need to get more work-design competencies and decision latitude to get more control. Important arguments for the top hospital management could be that health-related work design is highly effective for economic success, for treatment quality, and that the middle management already has a positive attitude toward the implementation of measures that help promote the mental health of their staff.

Keywords: occupational health, work design interventions, evidence-based practice, healthcare, leadership, employee mental well-being, qualitative research

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INTRODUCTION

Physicians and nurses in hospitals are exposed to high work stress that puts them at risk for impaired well-being and health (Angerer et al., 2008; Pisljar et al., 2011; Burke et al., 2016; Coutinho et al., 2018). The Fourth European Working Conditions Survey reported, that in the European Union, 40 percent of employees in the healthcare sector suffer from constant health problems (Parent-Thirion et al., 2007). The recent Sixth European Working Conditions Survey shows that, compared to other professions, health care workers experience the highest work intensity, the most frequent interruptions, high emotional demands, and the highest exposure to social stressors, for example bullying, humiliating behavior or physical violence (Parent-Thirion et al., 2017). Beyond that, working conditions in hospitals are characterized by ongoing restructuring (Burke et al., 2016), demographic change (Halaweish and Alam, 2015) with aging employees (Weigl et al., 2011a, 2012), an increasing number of multimorbid patients (Warth et al., 2016), increased pressure on performance (Coutinho et al., 2018), and an increasing shortage of qualified workers (Goodin, 2003; Simoens et al., 2005). These developments show that working conditions in hospitals have become more stressful for employees than ever before.

Studies demonstrate that high workload, time pressure, work interruptions, high work demands with low control, mismatch between effort and return, insufficient social support or poor management style impair the mental health of employees in hospitals (Kivimäki et al., 2007; Angerer et al., 2008; Weigl et al., 2011b, 2014, 2016). Furthermore, impaired mental health of employees in hospitals can lead to intentions to lay off (West et al., 2009), an increased risk of presenteeism, sick leaves, decreased performance and even medical errors (Angerer and Weigl, 2015). Various studies provide evidence that burnout among health care professionals - caused by occupational stress - can endanger patient care: Empirical studies have shown that physicians with burnout are more likely to be involved in patient safety incidents (Shanafelt et al., 2010; Hall et al., 2016). High workload can lead to lack of professionalism that determines the quality of patient care (e.g., adherence to treatment guidelines, quality of communication). Unfavorable working conditions are also associated with lower ratings of patient satisfaction (Anagnostopoulos et al., 2012). In their review and meta-analysis, Panagioti et al. state: "Physician burnout is associated with suboptimal patient care and professional inefficiencies; health care organizations have a duty to jointly improve these core and complementary facets of their function" (Panagioti et al., 2018, p. 1318). In a meta-analysis, Zangaro and Soeken (2007) have examined the relationship between various variables on the job satisfaction of nurses. Occupational stress showed the highest correlation of all variables (Zangaro and Soeken, 2007).

Therefore, for hospitals the implementation of occupational health promotion interventions becomes increasingly important to ensure the well-being and employability of their staff, and to ensure the safe care of their patients. An essential part of occupational health promotion interventions, are health-related work design interventions, also called organizational or organizational-level interventions (Dahl-Jorgensen and Saksvik, 2005; Cox et al., 2010; Hasson et al., 2014; Montano et al., 2014). Health-related work design interventions aim to improve the working conditions of employees, based on established models of job stress, motivation and action regulation (Karasek, 1979; Hackman and Oldham, 1980; Semmer, 2006; Hacker and Sachse, 2014).

Notwithstanding the importance of such interventions, a significant lack of effective and well-evaluated health-related work design interventions in health care settings and beyond has been deplored for years (Richardson and Rothstein, 2008; Rugulies and Aust, 2019). Particularly, there is a need to better understand the design of intervention *processes* in order to effectively implement health-related work design interventions, and to develop complex systems like organizations (Saksvik et al., 2002; Murta et al., 2007; Nielsen et al., 2010, 2014).

Recent organizational studies point out the importance of the active support of managers for a successful implementation of such interventions (Nielsen, 2013). Using the Theory of Planned Behavior (TPB) (Ajzen, 1991) we assume that the active support of medical and nursing managers for health-related work design interventions in hospitals might strongly depend on their *attitudes*, perceived *organizational norms* and *behavioral control* toward such measures.

Against this background, the aim of our qualitative study is to examine medical and nursing managers' perception of health-related work design interventions in the hospital based on the TPB. To the best of our knowledge, we present the first study that examines the perspective of hospital managers on such interventions. With this systematic qualitative analysis, our study aims to contribute to the further theoretical and conceptional underpinning of the design and successful implementation of much needed work design interventions in hospitals.

Available organizational research in this context is mainly focused on the *effectiveness* of health-related work design interventions, i.e., summative evaluation (Mikkelsen and Gundersen, 2003; Richardson and Rothstein, 2008; Montano et al., 2014). Moreover, success factors or obstacles to effectiveness as well as effective or faulty implementations are only considered *retrospectively*.

Recent studies suggest that the so far rather ambiguous results on the effectiveness of health-related work design measures can be explained by systemic or contextual factors (Nielsen and Randall, 2012; Nielsen et al., 2014). Therefore, currently, the focus of research is increasingly shifting from a mechanistically oriented input-output perspective to a systemically oriented context- and *process-oriented perspective* (Saksvik et al., 2002; Murta et al., 2007; Nielsen et al., 2010, 2014). The question is *how* to change workplaces and job characteristics to improve employees' well-being. To analyze and understand these process factors adequately, appropriate theoretical models for evaluation and implementation research are needed (Kristensen, 2005; Nielsen and Randall, 2012; Nielsen and Abildgaard, 2013). In other words, research wants to know, what processes and structures are necessary to design "better jobs" (Nielsen and Abildgaard, 2013). Recent, systematic reviews take up this perspective to examine the context and process factors of

health-related work design interventions, particularly the role of managers (Nielsen and Abildgaard, 2013; Müller, 2016; Daniels et al., 2017).

Current implementation research clearly shows that support from managers is one of the key factors for the success or failure of organizational interventions (Dahl-Jorgensen and Saksvik, 2005; Bourbonnais et al., 2006, 2011; Mattila and Elo, 2006; Nielsen et al., 2006; DeJoy et al., 2010; Petrou et al., 2016; Lundmark et al., 2017). Studies identify different forms of managerial support for organizational interventions: Managers have to support interventions actively and continuously. A lack of support from operational managers is mentioned as one of the main problems in the implementation research (Bourbonnais et al., 2006, 2011). Managers have to embed interventions in existing organizational structures. The structural secure of measures is needed before starting the implementation (Mattila and Elo, 2006; Nielsen et al., 2006; DeJoy et al., 2010). Managers have to establish a consensus on goals, opportunities, and limits of interventions to avoid critical side effects (Dahl-Jorgensen and Saksvik, 2005). Managers must provide time and human resources to enable execution of the interventions (Bond and Bunce, 2001; DeJoy et al., 2010). Managers should inform their employees about the intervention, communicate intervention goals in a motivational way, and allow their employees to participate (Petrou et al., 2016; Lundmark et al., 2017). Finally, managers have to decide whether to implement the developed work design measures.

These findings are important because organizational interventions that reported no, moderate or indifferent effects often argue with a lack of support from managers (Bourbonnais et al., 2011; Nielsen, 2013; Müller, 2016). In this study we assume that the TPB (Ajzen, 1991) will provide us with valuable insights and a more theoretically substantiated understanding of the role of managers in the implementation of organizational interventions.

Theoretical Model: Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) (Ajzen, 1991) as the extension of the Theory of Reasoned Action (Fishbein and Ajzen, 1975, 2015) is one of the most extensive studied models of human behavior and is used in a wide range of health and social-behavioral contexts (Godin and Kok, 1996; Armitage and Conner, 2001; Conner and Sparks, 2005). The TPB assumes that *attitudes*, *subjective norms and perceived behavioral control* (PBC) are predictors of behavioral *intention*. The intention acts as a mediator between attitudes, subjective norms, as well as PBC, and the dependent variable *behavior*. Besides, PBC is assumed to have a direct effect on behavior. Attitude is considered as the conviction of a person that a behavior leads to a consequence that is evaluated as positive or negative. Subjective norms are the "perceived social pressure to deal with behavior or not" (Fishbein and Ajzen, 2015). PBC is the perceived ease or difficulty and/or controllability to conduct a behavior, depending on internal and external factors. According to the TPB, a persons' intention to behave is given when he or she has a positive attitude toward the goal of the behavior, perceives corresponding social norms, and perceives a behavioral control to carry out the behavior successfully (Ajzen, 2002). In this vein, we expect that a manager supports health-related work design measures, if she or he considers such measures as helpful, if the organization is perceived to place a great value on health promotion, and if she or he thinks that working conditions can be improved.

In a meta-analytical review of 185 independent studies, Armitage and Conner (2001) found that 27% of the variance in behavior and 39% of the variance in intention can be explained by attitudes, subjective norms and PBC (Armitage and Conner, 2001). In particular, it was found that PBC has significant explanatory power for intention and behavior, while the subjective norm has the lowest explanatory power. Overall, it was found that intentions can be predicted with high accuracy from attitudes, subjective norms and PBC. And intentions, together with PBC, have a predictive effect on the behavior itself (Ajzen, 1991).

Based on the above-mentioned findings we consider the TPB model as particularly well suited for our research context. It can represent the perceptions of managers concerning the implementation of health-related measures to support the mental health of employees. The TPB has not yet been taken up frequently in organizational contexts. There are first studies that make use of the theory to examine the intentions of employees to turn over or employees' career choice and development behavior (van Breukelen et al., 2004; Arnold et al., 2006). Others use the theory in the context of organizational safety climate (Avci, 2014) or for planning health-related behavioral trainings (Bartholomew et al., 2006).

We identified three quantitative studies using TPB in the context of health-promoting interventions at work (Downey and Sharp, 2007; Wilde et al., 2011; Röttger et al., 2017). Two studies report the perspective of managers with the responsibility for implementing or promoting health-related measures in the workplace (Downey and Sharp, 2007; Wilde et al., 2011). Downey and Sharp (2007) stress that there are different groups of managers with different roles and different areas of responsibility. In their study the differentiate between general managers (GM) and human resource managers (HRM). GMs are responsible for formulating corporate strategies and decide whether employee health is part of them. HRMs are responsible for the planning and controlling of personnel and manage occupational health programs in companies. In order to sensitize managers for health-promoting measures, the authors recommend the development of programs that are appropriate for these specific management target groups.

Besides, Downey and Sharp (2007) extend the TPB model by another predictor, the "moral responsibility." In this additional variable, they examined the managers' personal moral obligation toward the well-being of employees. The study showed significant effects of moral responsibility on health-promoting behavior and interactions with "behavioral control." While GMs are significantly motivated by moral responsibility, HRMs are not, but are significantly influenced by behavioral control (Downey and Sharp, 2007). By adding this further predictor, Downey and Sharp (2007) follow recommendations of Ajzen (1991), according

to whom the TPB is fundamentally open to include additional predictors to increase significantly variance in behavior. Ajzen (1991) himself also acknowledges that moral components can influence intentions in the same way as attitudes, subjective (social) norms and PBC. We therefore have integrated this moral component as subcategories (see section "Belief in Role" and "Belief in the Importance of Mental Health") of the category "attitude," similar to the study of Wilde et al. (2011). Wilde et al. (2011) examined the conditions under which managers are more likely to show health-promoting leadership behavior. They refer to the 3 TPB predictors (*attitude, organizational norms, and PBC*) and differentiate the attitude component into an individual factor ("personal attitude") and an organizational factor ("perceived outcomes on the employees' health"). The "personal attitude" is described by items related to moral responsibility (e.g., "The health of my employees is very important to me," "The health of my employees is more important to me than the achievement of given company goals,"and "I believe I am responsible for the health of my employees as a manager"). Based on the TPB, it is shown that it seems important to address individual as well as organizational factors if health-promoting leadership in companies should be strengthened.

The third study (Röttger et al., 2017) examines the participation behavior of employees in health-related interventions in organizations. The aim of this study was to derive recommendations for managers to increase the participation of employees. The results are broadly compatible with the assumptions of TPB that health-related behavior or respective intentions can be explained by the three variables attitude, subjective or organizational norms and PBC.

All three studies show that attitudes significantly predict the intention to support or participate in health-promoting measures. If managers or employees perceive a benefit, it is more likely that they will be committed to health-promoting work design measures. Concerning organizational norms, the studies report slightly different results. Wilde et al. (2011) assume that organizational norms (described as a "culture of healthy leadership") are so strongly prescriptive for managers that they directly influence health-related leadership behavior. They report a high correlation between organizational norms and health-related leadership behavior and appeal to a detailed examination of this component in organizational studies. In contrast, Röttger et al. (2017) found a small negative effect of organizational norms on employee's intentions to participate in health-promoting measures. The authors explain this finding with an effect of "psychological reactance" (Brehm, 1966; Brehm and Brehm, 1981) which in this context means that the perception of employees that existing organizational norms dispossess them from making free decisions can lead to defensive reactions. In addition, all three studies indicate that organizational (external) factors such as time, personnel or financial resources or a "lack of power to commit resources" (Downey and Sharp, 2007) moderate the direct influence of PBC on behavioral outcomes such as health-related behavior, the implementation of work design or participation in health-related interventions. This latter finding indicates in accordance with the TPB that external resources are required to effectively exercise PBC.

Based on these previous findings (Downey and Sharp, 2007; Wilde et al., 2011; Röttger et al., 2017), we assume that hospital managers are more likely to support organizational health promotion measures if:

(1) They consider organizational mental health promotion to be important and feel morally responsible for it (*Attitude*).
(2) There are *organizational norms* that to place a great value on health promotion. However, the role of *organizational norms* is not completely unambiguous, as they might also lead to reactance.
(3) They think that they possess internal or external resources to improve working conditions (*PBC*).

Accordingly, we developed our research questions, based on the three predictors of the TPB *Attitude, Organizational Norms* and *PBC* shown in **Figure 1**.

The present interview study aims to fill a research gap by approaching the managers' perspective toward mental health promotion by work design. While the previous studies on TPB in the context of health-promoting interventions at work focused on individual-related interventions or individual leadership behavior, we focus on the role of leaders in the implementation of organizational level work design interventions. Moreover, especially with regard to hospital managers, there seems to be a research gap, as we have not been able to identify a study that includes this group of managers. In line with existing studies, we hereby capture the specific perspectives of medical and nursing managers to take into account the differing roles and responsibilities of different groups of managers (Downey and Sharp, 2007).

Considering the so far sparse research on that topic we believe that a qualitative design will be particularly suitable for further theory building, as its openness and flexibility allow a better insight into the subjective perspective of the respondents and their patterns of thought and interpretation.

METHODOLOGY

Study Design

We conducted semi-standardized individual interviews in German language with upper medical managers (chief physicians), middle medical managers (senior physicians) and middle nursing managers (senior nurses) of a German hospital with two locations, belonging to a larger corporate organization. The larger clinic has approximately 500 beds and employs approximate 700 physicians and nursing staff. The smaller one has around 350 beds and about 450 medical and nursing employees and was converted from a specialized clinic to an emergency/casualty hospital.

In German hospitals a chief physician is the head of a department within a hospital (e.g., surgical department, psychiatric department). She or he is responsible for personnel management, the coordination of patient treatment, and budgeting in her or his department. Beside this management tasks a chief physician also participates directly in the patient treatment. The proportion of management tasks is about 70%

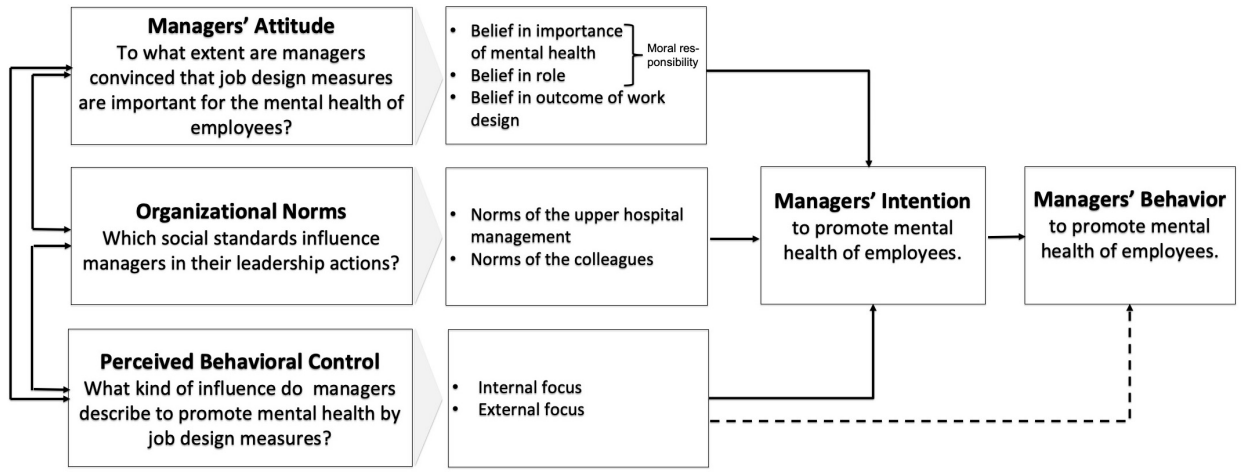

FIGURE 1 | Research model based on the Theory of Planned Behavior (TPB; Ajzen, 1991).

in bigger hospitals, only 30% in smaller ones (Knüppel et al., 2006). The hospital of our study is one of the larger ones. The interviewed senior physicians officially represent the chief physicians. They have a "sandwich position" between chief physician and assistant or specialist physicians as well as hospital staff (Schmitt and Krasko, 2020). Senior physicians are directly subordinate to the chief physicians. They are the heads of smaller departments within the larger departments such as the surgical and psychiatric department. In comparison to the chief physicians, they take on more clinical tasks, as well as personnel management tasks. Senior nurses organize the processes within a nursing unit. Their main tasks include coordinating nursing care as well as economic and personnel management issues (Roloff, 2019). Physicians are not professional superiors of nursing but decide on medical treatment. For better readability, we refer in the following to the term manager when we refer to all three groups.

Our interview study has been proven by the ethic committee of the University Düsseldorf. In addition, we informed the hospital's works council and the data protection authorities about the contents and the course of the study. All consents were available before the interviews were conducted.

We present the key results of the interviews along with the category system described in **Table 1**. Based on the TPB have deductively analyzed the three main categories: Managers' *Attitudes*, *Organizational Norms* and *Perceived Behavioral Control (PBC)*. Inductively we have divided each category into further subcategories.

Concerning the variable *Attitude*, we examined if managers are convinced of the importance of work design measures for the mental health of employees. Additionally, we evaluated two further inductive 'moral components': the managers' belief in the importance of mental health and their belief that responsibility for employee's mental health is part of their leadership role. To understand which organizational standards influence managers' leadership actions, we examined their perceived norms of the upper management and their colleagues.

As described above, we further assessed internal and external factors related with *PBC* to promote work design measures. In our study, *internal focus* includes on the one hand managers' perception that they personally have the abilities, experiences or skills to implement health-related work-design measures (self-efficacy component). On the other hand, internal factors include managers' perception that they can control the organizational conditions that are relevant for the implementation of measures (controllability component). The *external focus* means the managers' perception of how supportive the organizational conditions are for the implementation of health-related work-design measures, or if they even hamper the implementation of such measures.

Recruitment

The data collection took place from April to July 2018. We recruited chief physicians (upper management), senior physicians (middle management) and senior nursing staff (middle management).

Participation was voluntary but recommended by the hospital managing director, medical directors and nursing service management. The participants were allowed to conduct the interviews during their working hours. We recruited the participants in various ways: (1) Information about the interview study at meetings of chief physicians and senior nurses, (2) Sending participant information about the interview study and reminder by e-mail and, (3) Appointment coordination by telephone after expression of interest by the managers, partly via secretarial offices. We informed the participants about the data protection and privacy; participants had to sign a letter of informed consent before start of the interview. The interviews were carried out "Face-to-Face" within the hospital. It was almost always possible to conduct the interviews without interruption (e.g., through emergency treatment). By approval of the managers, the conversations were audiotaped. The interviews lasted on average 45 min. They were conducted by a certified pedagogue with systemic qualification, a psychologist and a

TABLE 1 | Category system for interview analysis.

Managers' Attitude	Definition research question	Anchor sentence examples	Inclusion criteria: Related issues	Exclusion criteria
Belief in importance of mental health	The managers' belief in the importance of employee mental health.	The mental health of employees is a very important issue for me, which is neglected in everyday life. But there is a great need for it (SP 37).	How important is the mental health of employees in your hospital? −>Own attitude to the topic	Attitudes that extend beyond health-promoting leadership behavior. Indirect formulations that are subject to interpretation.
Belief in role	The manager's belief in whether the promotion of employee health is the responsibility of the manager.	It is not only the task of the supervisor to pay attention to the employee's health, but also vice versa. We do not differentiate, we are all involved in people, whether nurses in training or senior physicians (SP 37).	How would you describe your role as a supervisor for the mental health of your employees at work?	
Belief in outcome of work design	The manager's belief that work design measures have a positive or negative effect on the health of employees.	For me, it is a quality if we can openly communicate mistakes, uncertainties or the need for support. I believe that working in flat hierarchies also makes us better as a team (SP 34).	What stressors are the most important and which working conditions do you consider supportive and motivating for your employees? Do you see a connection between the stressors you have just mentioned and the mental health of your employees?	
Organizational Norms				
Norms of the upper hospital management	Perceived social pressure or organizational standards of hospital management that influence managers in their behavior to promote mental health.	I feel that the issue of mental employee health is not a priority for the upper hospital management (SP 33)	How important is the mental health of employees in your hospital?	Statements with managers' own attitude to the topic.
Norms of the colleagues	Perceived social pressure or organizational standards of colleagues that influence managers in their behavior to promote mental health.	I think it's very important to everybody. I think that people deal with it in very different ways (CP 07)	What opinions do your colleagues have on the subject?	
Perceived Behavioral Control				
Internal focus	The manager's experience of self-efficacy and/or sense of control for the implementation of work design measures by his own resources.	It motivates employees when you give them confidence and let them make their own decisions, but stand behind them (SP 38).	What changes do you think can be implemented to reduce the strain on your employees in their day-to-day work? What opportunities do you see for yourself to maintain the 'mental' health of your employees and to reduce the stressors you mentioned?	Statements related to employee activities.
External focus	The manager's experience of self-efficacy and/or sense of control for the implementation of work design measures in connection with organizational possibilities and limits.	In the age of a shortage of skilled workers we are whistling from the last hole. I wish I could, but there's no time for team reflection. What we can do to minimize stress. We don't do this enough; we should do it more often (SP 37).		Statements related to employee activities. External factors that can be influenced by managers −>Internal factors

medical student which is also an examined nurse. All interviewees explained their background and stated that there might be clarifying questions about specific professional issues. The expert role was assigned to the participants.

Design of the Interview

We used an interview guide as a basis for the interviews. For introduction, we asked the managers about their perception of the most important organizational stressors and resources for their employees: "*What do you think are the most important work stressors for your employees?*" "*Which working conditions do you consider supportive and motivating for your employees?*" Based on the TPB (Ajzen, 1991), we asked the following questions to the variable "*Attitude*" toward health-related work design measures: "*Do you see a connection between the stressors you have just mentioned and the mental health of your employees? How would you describe your role as a supervisor for the mental health of your employees at work?*" In respect to the "*Organizational Norm*" according to Ajzen's subjective norm, we wanted to know: "*How important is the mental health of employees in your hospital? What*

opinions do your colleagues have on the subject" To assess aspects of "*PBC*" we asked the following questions: "*What changes do you think can be implemented to reduce the strain on your employees in their day-to-day work? What opportunities do you see for yourself to maintain the* "*mental*" *health of your employees and to reduce the stressors you mentioned?*"

A draft of the interview guide was discussed by the study team. It was afterward tested in an expert interview with a doctor from one university hospital and then slightly modified. The interview study was conducted by three interviewers of the study team. After the conduction of the first six interviews, we consolidated whether it was necessary to make further modifications. No changes to the guide were necessary. The interviews were conducted until the point of "theoretical saturation" was achieved. Glaser and Strauss defined this as points of analysis at which 'no additional data are being found whereby the researcher can develop properties of the category. As he sees similar instances over and over again, the researcher becomes empirically confident that a category is saturated. When one category is saturated, nothing remains but to go on to new groups for data on other categories, and attempt to saturate these categories also' (Glaser and Strauss, 1967, p. 61; Guest et al., 2016). After each interview, the interviewer reflected and documented the conversation and particular perceptions (atmosphere, disruptions, and communication problems) in the course of the interview. During the data evaluation, these recordings were compared to the evaluation results and taken into account in the interpretation.

Data Analysis

The transcription of the digitally recorded interviews was acquired by a transcription office and then analyzed by the study team using structuring content analysis (Hsieh and Shannon, 2005; Elo and Kyngas, 2008; Mayring, 2015). This type of analysis pursues the goal to deductively summarize and systematize the contents of the interviews on the basis of theoretically derived dimensions in such a way that the results can be understood intersubjectively (Potter and Levine-Donnerstein, 1999; Creswell, 2014). Definitions, anchor examples, and coding rules were defined for all upper and subcategories (see **Table 1**). We tested the reliability of our coding rules in two steps: At first, as a formative reliability test, three members of the study team applied the coding guidelines based on three randomly selected transcriptions and then checked and discussed the results regarding similarities and differences. The results were discussed with the large study team including the project leaders. Slight modifications were made to the coding guide. This procedure was followed by a summative reliability test. For this purpose, 2×4 transcribed interviews were coded by one researcher and independently counter-coded by another researcher. Based on the results, the interrater reliability was calculated. A Cohens-Kappa value of 0.72 indicated moderate to good reliability of our coding system (McHugh, 2012). In the first review of the transcriptions, the statements of the managers were assigned to the described categories. In the next step, we analyzed the statements within each category for a possible more in-depth systematization. In this way, further subcategories were formed based (inductive approach). All subcategories are shown in **Table 1**. Meaning units were words, statements, and paragraphs which were assigned to the categories. The meaning units were condensed for reporting the interview results. The digital software MAXQDA 2018.1 was applied for the analyses.

STUDY RESULTS

Sample

We interviewed 37 managers, including 23 medical professionals (14 chief physicians, CP, out of total 29; 9 senior physicians, SP, out of total 20) and 14 senior nurses (out of total 44). The interviewees work in different medical departments, shown in **Table 2**. The age of the participants ranged from 34 to 60 years.

Interview Results

Managers' Attitude

Belief in the importance of mental health

In general, we found that the managers are sensitized to the importance of the mental health of employees. They place great importance on the topic of mental health in the hospital. Despite the high relevance, managers repeatedly stated that the topic is often neglected in their work routines. We did not observe major differences in the responses between the occupational groups.

> *"I think the subject [mental health] is very, very important. Employees are reaching their limits" (CP 6). "From my point of view, the subject is extremely important. We bring in a lot of commitment to our job. In my understanding of practicing the job as a doctor, you have to feel just as comfortable in your job as in other areas of life" (CP 7).*

> *"For me, employees' mental health is a very important topic. Although it is neglected in everyday working life, there is a great need for it" (SP 37).*

> *"It's important that we do a lot of mental hygiene in our team" (SN 16). "Altogether I find the topic interesting. It is never really discussed and is being missed out" (SN 17). "The issue [mental health] should be more openly discussed. Needing support should not have a negative connotation" (SN 24).*

Belief in role

Almost without exception chief physicians, senior physicians and senior nurses feel responsible or co-responsible for the mental health of their staff, even if the top priority is good patient care. They see themselves in the duty of care, want to make sure that the employees are doing well or want to be a role model, which is being perceived as a troubling role conflict by some of them. Participants report, that it is not always easy to reconcile the demands of economic efficiency and the assurance of good patient care while at the same time being a good role model for employees. The personal work demands and responsibilities are often high, which is why everyone has to take care of everyone: managers for employees and vice versa.

> *"I also want the employees to feel good, I have a responsibility for them. I don't want to exhaust the employees, but I also have to take the economic factor into consideration at the same time" (SN 26).*

TABLE 2 | Sample of the study.

	Chief physicians	Senior physicians	Senior nurses
Number	14	9	14
Female	2	2	9
Male	12	7	5
Age range	43–60 years	38–60 years	34–60 years
Departe-ments	Anesthesia, dermatology, gynecology, vascular surgery, cardiology/intensive care medicine, pediatrics and juvenile medicine, hospital hygiene, hand and plastic surgery, pneumology and sleep medicine, radiology, spinal surgery, vascular surgery, psychiatry, urology, internal medicine.	Anesthesia, cardiology, neurology, pneumology and sleep medicine, spinal surgery, urology, hand and plastic surgery.	Oncology and hematology, pediatric and youth intensive medicine, anesthesia, occupancy management, sleep laboratory, internal intensive medicine, trauma surgery, general surgery, pediatrics and youth medicine, spinal surgery, geriatrics and psychiatry.

"As the chief physician, I have to take on a role model function and at the same time I have to give clear instructions. I have never been ill in the past 15 years, but I cannot demand that from my staff" (CP 06). "It is my responsibility to keep an eye on the mental health of my employees. I am also responsible for ensuring that the finances are correct, but for me, medical care comes before economic interest" (SP 31). "It is not only the task of the managers to look at the employee, but also vice versa. We do not differentiate, we all work with people, no matter whether they are nurses in training or senior physicians" (SP 37).

Even if everyone feels responsible, managers describe differentiated understandings of their roles. These are dependent on the work situation and are reflected in examples of behavior. These roles range from more protective roles:

"*I believe that I have a very important role to play about this issue [mental health of employees]. I am more of a mom; I arrange or solve things. Sometimes I feel overburdened myself, but it's my job to look after myself" (SN 29).*

or supportive roles:

"12-h days have been the routine for me, since everyone knows that me, the boss is still on duty and it is possible to talk to me. If I promise employees something, then I want to be 100% sure that I can keep the promise" (CP 07).

up to more promotive roles:

"I have to recognize where the boundaries of colleagues are, and expanding them. Demanding and encouraging are important aspects" (SP 36)

or demanding roles:

"Medical care has to be at the top, it has to be guaranteed and sometimes you have to be very hard [to the employees]. I think I am a little bit more human" (SP 33).

Only one chief physician thinks that the responsibility belongs to each individual. He perceives himself rather helpless in the role of a manager. Another senior physician describes a common responsibility with a focus on occupational medicine and upper management.

"Mental health is the responsibility of each individual. I have little influence on it" (SP 08). "Every employee in a managerial position has a responsibility for the mental health of their employees. Everybody has to take care of the health of someone else, if someone notices a need and it is possible for him to act. The task lies in particular with the occupational physicians and in the broader sense with the upper management" (SP 32).

Belief in the outcome of work design

In general, we can report that managers are aware of the interdependencies between working conditions and the mental health of employees.

"You have to make the workplace attractive so that people also want to work here. If I am satisfied with my work or I have a structured schedule, then I am personally more relaxed. I am more balanced, stress-resistant, even if it is a lot of work" (SP 35). "Stress at work can make you sick. I think we have colleagues in our hospital where burnout is inevitable" (SP 38). Stress is caused by a lack of personnel and a 10% are due to poor organization' (SN 18).

Managers mention a range of job characteristics or approaches of work design that they believe have an impact on the mental health of employees. They particularly describe interactional or social supportive approaches for health promotion in hospitals, like the assisting with tasks or employee appraisals. Less often approaches for structural work design are mentioned, like changing work tasks or work processes. Additionally, to the mental health-promoting effects, managers also mention motivational, economic or patient-related effects which they attribute to work design measures as well.

The following **Table 3** shows the most frequently mentioned approaches to work design that are assumed to have a positive effect on health-related but also on motivational, economic or

TABLE 3 | Managers' focus on health-related work design measures.

- Respectful and appreciative teamwork
- Development of a functional team with flat hierarchical and social supportive structures
- Appropriate distribution of tasks and job autonomy
- Simplification and relocation of administrative tasks
- Opportunities for occupational and personal learning and development
- Functioning interdisciplinary cooperation, communication and workflows
- Flexible working time models, staff-oriented shift schedules and break times
- Meaningful work
- Team justice
- Good leadership behavior

patient-related factors. Selected approaches are illustrated in the following by citation.

The majority of managers describe health-related benefits of effective teams with social support structures. This social support can be individual or team-related.

"I think there's a connection between work stress and mental health, that's how it is. For instance, if the stress is perceived as too high or certain experiences cannot to be coped with well. If this is not discussed accordingly, of course, it can also affect health. Depending on how sensitive someone is" (CP 09).

"I take the number of absences due to illness as a value by which I recognize how satisfied and able to work employees are. A bad team atmosphere leads to a downward spiral. A central point for me is a functioning communication. It doesn't work without it" (CP 05).

"A healthy climate promotes teamwork. When you realize that a team works, everything is much easier. If there is less pressure, then you have more ideas. The motivation is completely different" (SN 28).

In comparison to the other occupational groups, senior physicians more often mention the benefits of flat hierarchical structures. Some of them report from experiences of their own departments, others with a view to other departments of whom they believe that strong hierarchies are still existing.

"I believe in flat hierarchies. Strong hierarchies lead to dissatisfaction and stress. An important factor in a working relationship is that you communicate openly and fairly, regardless of hierarchies" (SP 31).

"It also has to do with mental health when I am dissatisfied because I am not seen or because my issues are not seen. That leads to dissatisfaction. It is shown by fluctuations in the departments. The flat hierarchies are doing quite good for employees' satisfaction" (CP 02).

A functioning interdisciplinary cooperation, transparent communication and workflows are starting points for many managers to avoid stress for employees.

"Due to the lack of communication, many problems are generated at the back. The time and effort are much higher because you do not clarify things directly. We would have to give ourselves this hour for exchange of information, e.g., conduct consultations at the patient's bedside in order to solve problems directly. If we carry the problems around with us, it is a burden" (SP 36).

Another important approach across all occupational groups is the design of flexible working time models, staff-oriented shift schedules and break times. Even if there are managers who disagree, the majority of the interviewees agree that it is becoming increasingly important to develop working time models that are more focused on the work-life balance and lifespan of employees.

"I believe that attendance and shift work is not healthy for older employees" (SP 34). "Employees must also have periods where they can sleep thoroughly" (SP 33).

"If I constantly have to work in exhaustion mode, it affects my resilience. We've reached a limit that is often exceeded. Especially assistants do not have a lot of compensation range. That might endanger their health at some point" (CP 11).

"Today, you can recruit employees by offering financial incentives. However, it is even more important to consider the work-life balance of the employees. But developing employee and family oriented working time models requires money" (CP 06).

In general, the interviewees see a strong association between mental health or well-being with job satisfaction, job motivation, and productivity. Especially chief physicians describe the connection between mental health, employee's motivation and increased productivity in the economic context. In addition to the human perspective, chief physicians take on a stronger functional perspective on the impacts of work design measures. Moreover, they believe that a healthy working atmosphere has positive effects on the attractiveness of the hospital as an employer, on reduced fluctuation of employees or an increase in work performance.

"Fluctuations in the departments can be attributed to dissatisfaction of employees. [. . .] *"Satisfied employees are more efficient, less ill. The productivity of the hospital is increased. It is important to promote employees" commitment and trust. We have to show that something is done for them. Good training is one of the most important things. This is the only way I can attract employees, and we have to do so" (CP 02).*

"Mental health affects work input and the ability to work" (CP 05). "If I can generate a certain level of job satisfaction, employees work more optimistically and better" (CP 06).

"Stress affects the quality and quantity of work" (SN 26).

Some interviewees additionally mention patient-related effects of work design, like the better quality of patient care or the reduction of complaints.

"If we're fine, the patients are better too" (SN 16). "Stress results from doing things in a very timely manner and the patient does not get enough care" (SN 20). "Mental health effects good patient care, the staff would be more motivated" (SN 24).

In a comparison of occupational groups, chief physicians more often establish functional connections between mental health and economic outcomes, which can be explained by the fact that they are in charge of budget responsibility and therefore are more strongly affected by financial-related role conflicts.

Organizational Norms

In summary, we found, that managers have very different perceptions of the *organizational norms* regarding mental health promotion in the hospital. Their views seem to depend on their previous experiences with how health related issues were handled by the management. The question about the importance of the topic mental health for the hospital is answered by the managers mainly by referring to upper hospital management (i.e., board of management), or to the nursing service management. Senior physicians seem to have a more negative view of *organizational norms* than the others.

Level of upper hospital management

Most physicians and nurses believe that the topic of mental health promotion does not have a high importance/value for the upper hospital management (board of management and nursing service management). Instead, they believe that financial priorities are at the center of attention of the upper hospital management. Some managers suspect, that the hands of upper hospital management are also tied when trying to improve the working conditions for employees. The pressure of the employees may be perceived by the upper hospital management, but there seems to be a lack of practical solutions or ideas.

> *"I don't know if they [the upper hospital management] don't want to or can't see it because they might have instructions from the top [the corporate management] to save on personnel" (SN 21).*

> *"No one at the upper hospital management seems to be worried about the subject [mental health]. Here one works with Excel-Sheets and it is important that the numbers are correct. I don't think mental health has a high priority for them" (CP 15).*

> *"In general, we think that we are left alone with the problem here. Nobody cares how the situation is going to develop. The stress level is known to the upper hospital management, the nursing service management, and the works council. But there are no real offers or measures of improvement" (SN 22).*

Those managers who have been working in the company for some time emphasize that the financial pressure has increased with the takeover of the corporate organization. Others merely assume that mental health promotion must be a upper hospital management subject matter because it is such a pressing issue. But it is not open communicated.

> *"The subject [employees' mental health promotion] is not openly discussed. The topic is rather a marginal topic for the hospital management, who probably don't want to sting into a hornet's nest. But I assume that the topic is also important to them if they want to change the number of sick leaves" (SN 26).*

Some offers for employees' health promotion are perceived by the interviewed managers, but they doubt whether they actually reach the employees. Some staff members introduce measures on their own initiative like running groups, etc.

> *"At the upper hospital management level there are certainly verbal efforts, but at the practical level, this is not seen" (CP 06).*

It is assumed that health promotion measures are exclusively a matter of maintaining the work ability and performance. Some interviewees do not see any efforts from the upper hospital management at all. They think that the topic is ignored, and nothing is done. These managers describe a certain helplessness and frustration. More senior physicians than chief physicians seem to take this negative perspective. Some have the opinion that everyone has to deal with stress for themselves, it seems to be part of the job.

> *"No member of the upper hospital management seems to be worried about the topic" (CP 15).*

> *"The topic is not actively addressed in the upper hospital management, it is suppressed. Perhaps for fear that it might be a sign of weakness" (SP 37). "I would say that the topic of mental health has no value for the hospital. Nothing is done. If there is an initiative, it is private one. Such as a running team. But the employer does not promote that" (SP 33).*

> *"The subject is not really discussed. It also seems that you have chosen the wrong job if you cannot cope with the strain" (SN 17).*

Few managers report that they have seen the upper hospital management as very supportive on the topic. They attribute this to their own personal experiences and report on situations in which they have experienced the upper hospital management as helpful.

> *"The topic of mental health is an important concern for the upper management in this organization. I have never experienced this before in other hospitals" (CP 04).*

> *"I believe that the subject is becoming increasingly important. I have been here for a long time and have noticed that the hospital management and the nursing service management are interested in keeping the employees healthy" (SN 25). "The topic is considered. The main thing is that we are ready to work. We have a good relationship with our nursing service management" (SN 29).*

Level of the colleagues

At this level, we observed a difference between the physicians and nurses. While the nurses are convinced that their colleagues also consider the topic important and are interested in it (although it does not seem to be formally discussed), some physicians report on contrary attitudes of their colleagues. Especially for that occupational group, not all of them seem to think that mental health promotion is important.

> *"I don't think the topic of employees' mental health is always on the agenda of every chief physician. There are always assistants who are unhappy because the boss does not take care of the department's needs. To some extent, there are still the old, hierarchically shaped bosses. This has nothing to do with humanity" (CP 02). "In some departments, it will be a topic. There will be others that will repress the subject and some departments that are intact and well equipped with personnel so that it is not so bad" (CP 13).*

> *"We've never thought about the topic before, but I think it is an issue. Just when the study was presented to us. in any case. The colleagues are thinking the same" (SN 16). "We are all in the same boat here. It is not about who is worse, who is better, but that we come forward together. That is already a very great cohesion here. Loyalty is also a big issue for us" (SN 27).*

What unites the occupational groups is the fact that the issue is only discussed informally among the colleagues.

> "*You can informally discuss it [mental health] with close colleagues" (SN 28). "There is an exchange, but more on a collegial, informal level" (CP 08).*

Therefore, it seems to be a sensitive issue that is given importance, but generally it is not communicated in an open, well-structured and solution-oriented way.

> *"The matter [mental health promotion] is repressed, pushed away. When you are in a bad mood, and say "it totally sucks here," there are no consequences. Nobody asks what they are supposed to change*

or how we can improve" (SP 35). "Internally, it is already talked about, but without structured thoughts. Our team is characterized by very conservative attitudes. You can't discuss certain things constructively with some of the colleagues" (SP 38).

Perceived Behavioral Control

The *PBC* is influenced by *internal* and *external* factors that moderate the indirect or direct influence of PBC on behavior. Therefore, we present the results from both perspectives. The interview results show that managers perceive mostly behavioral control to provide socio-emotional support at the individual or the team level. They report less behavioral control to change the work processes and work organization. While many managers report that they reach their limits due to the complex and restrictive organizational conditions, few describe organizational possibilities or ideas for better work design measures.

Internal focus on managers' behavioral control

Managers are most likely to experience internal behavioral control in social supportive measures on individual contact or at the team level. They report that it is helpful for themselves if they are in good and direct contact with the employees and notice problems at an early stage: e.g., stressful treatment cases or team conflicts. They experience self-efficacy when they are aware of their employees' problems, and can actively address them. To some extent it is the offer of professional social support, but it is also the social-emotional social support in which the managers experience themselves effectively.

"Sometimes it is already sufficient for employees to notice that we are aware of the existing demands. I have a good feeling for the satisfaction of my employees because we see each other in meetings every morning" (CP 13).

"I can't assess the mental health of my employees. I'm not a psychologist or a counselor. It's not my job either, I only have little knowledge of human nature. I can offer conversation for my employees. I don't know everything, but if the employees have a problem, they can talk to me and I try to mediate. I can listen and give practical tips from an aging man. That's all I can do. I think I'm doing quite well overall; I get perceived like this" (CP 15).

Some managers feel that it is a challenge to find a balance between supporting, demanding and encouraging their employees. Some consider it easier to relieve overworked employees, instead of helping them to cope with the demands for themselves. As a result, the managers must be careful not to reach their own limits.

"I can relieve the workload of my employees by taking the work off their hands. Sometimes I do so too quickly. That's a fine line because you want to teach something and not be used for it. I have to delimit myself as a senior physician. Caring on one hand and not being exploited on the other hand. That's difficult" (SP 38).

"We are raised with a helper's syndrome, which isn't always good. But I can't save everyone" (SN 18).

Some interviewees report, that they benefit from their experience knowledge:

"I've been on the job for years and know what managing, leading and motivating means. I also know when my possibilities are exhausted, when I have reached my limit. Everything is possible if you know exactly who is responsible for what" (SN 27).

Others report benefits from their self-control and self-reflection skills. They perceive that they can control the workload by setting priorities to reduce stress for their employees. In this case, certain tasks are not being "sat out," yet being moved down in the line of priority instead. A lack of managers' ability to self-control can quickly lead to overwhelming the staff.

"It is essential for us to carry out prioritize. I manage many things on my own" (SN 27).

"It's problematic because I have a tendency to sacrifice myself. Because I can't say no when it comes to patients. I could not prevent the illness from my secretary. Painful for me, because I know that I am part of it and could not prevent it, although I would like to have" [. . .] "There are so many requests and requirements in a hospital that need my attention and which I would like to see met. It is simply not possible, however. It is difficult to draw the line. Taking care of everyone is not easy. On the contrary, it often does not succeed at all" (CP 07).

"You have to be a little flexible yourself, organizational skills are important. But many people can't do that, get sick, get job anxiety" (SN 20). "A high workload makes you somehow headless. You notice that you sometimes can't implement your plans. Sometimes you walk a fine line: you want to be good to your employees, but you also want to take care of the tasks and demands of the nursing service management" (SN 28).

Finally, measures with a focus on justice, appreciation, and participation of employees were mentioned. Even if there is a general lack of functioning duty schedules in hospitals, managers see possibilities for action by letting employees participate to design and to ensure a most fair work time distribution. Appreciation can be given by managers in offering trainings, feedback, new tasks or job autonomy to employees.

"I can let employees participate in creating the duty schedule so that they can express their wishes. I can try to consider their wishes by priority, so that they are somehow satisfied" (SN 22). "I have the opportunity to treat everyone equally. No matter what I think of them. I try to do that very hard. I can give someone a goodie when people step in for others. Equal treatment is very important (patient distribution, creating the duty schedule)" (SN 17).

External focus on managers' behavioral control

The perception of managers' behavioral control to implement work design measures is influenced, and often limited, by organizational factors. Restrictions for the implementation of work design measures are mainly perceived at the organizational level, partly also at the team level. Few managers perceive supportive organizational structures. The perceptions differ between occupational groups and across departments.

The managers perceive that high work intensity, the economic requirements, the lack of staff and missing job autonomy are the biggest challenges. These factors are often mentioned as difficulties to implement better working conditions by work design.

"Economic demands regulate our action's" (CP 09). "Improvement measures cannot be implemented for financial reasons" (CP 08). "We feel that we are doing a balancing act between work intensity, the necessary overall performance in patient treatment and ensuring that employees maintain their work-ability" (CP 11).

"Changes that cost something are not popular here in the hospital. Times in healthcare have become more difficult" (SP 33).

The development of functioning team structures is experienced as challenging or impossible, especially by physicians. The cooperation in the departments is characterized by continuous staff fluctuations. Various system-related reasons are mentioned. The medical training system requires a continuous change of personnel in the department. In-house rotations of the personnel are called complicating. Illness-related absences or dismissals aggravate the situation.

"The training of medical specialists alone makes for a continuous change in the team and it's functioning. No matter how good the functional units may be, we reach our limits in terms of personnel and economic responsibility" (CP 07).

"Too much rotation in personnel deployment makes people dissatisfied: a physician who takes the trouble today and thinks about what can be done better is somewhere else tomorrow and does not see the result. It also prevents team spirit. Our employees have no home base" (CP 013).

"I can make sure that the team function. But that has become more and more difficult in recent years. The team has changed completely since the acquisition of the new company" (SN 22).

Two chief physicians describe limitations in team development because of the strict separation between care and medicine. In general, limited possibilities to participate in the recruitment and selection of staff are described. They feel externally determined by the upper hospital management or the nursing service management and restricted in their job autonomy.

"Today, as chief physicians, we no longer have the autonomy (the position) to control a functioning unit. Today we are the foremen and are externally controlled by a superior economist. This makes it difficult to manage a functioning team from one's point of view. Besides, as chief physicians, we lead two different questions: medical (physicians) and care (nurses). But they are not one unit. The nursing management defines how it has to work and we have limited access" (CP 05).

Regular (interdisciplinary) team communication within flat hierarchical team structures are perceived by nursing staff and senior physicians as helpful in preventing work stress. While some managers perceive organizational structures that facilitate such an exchange, other managers describe their possibilities in that respect as limited. Senior physicians mention that due to the lack of communication in the team, many problems arise that have could have been avoided. Flat hierarchies are particularly appreciated by senior physicians and nurses but still not existing, which complicate the implementation of work design measures.

"I would always wish for it, but there is no time to reflect on certain things in the team. For example, what we can do to minimize stress. We don't realize that enough, we should do it much more often" (SP 37).

"It is really a pity that there is no real team spirit here. That would have to be strengthened. There are many more issues that have to be addressed in order to get more job satisfaction, but, unfortunately, there is no dialog for improvement. The general attitude toward improvement is very conservative" (SP 38). "Hierarchies and stuck working structures exist. This makes it difficult to change situations in a positive manner" (SP 32).

"We have a management circle in our department: the chief physician, the senior physicians and me as a senior nurse. On that board, I am able to communicate the information collected from the senior nurses. We talk about urgent things with an immediate need for action. Which might be handled in a small project. I let my colleagues participate and I thank God they join in. We also have case conferences and supervision. The communication is good, also the networking of the senior nurses works well" (SN 27).

Managers experience the greatest challenge in designing cross-departmental cooperation. Interface problems are difficult to solve and the physicians in particular often complain about the lack of cooperation with managers from other departments. Solving interface problems take time, energy, persistence, and requires suitable organizational structures to work on coordinated changes. The complexity of organizational structures in the hospital makes improvements of working conditions more difficult.

"Chief physicians do not work with the same goals in mind" (CP 01). "Many are very egocentric, and our enterprise fails because of this. What matters is the subject at work, not personal interests or vanities. The hospital extremely unorganized to the extent that one hand does not know what the other is doing" (CP 03). "Improving processes and structures takes several years. To implement measures across departments is difficult. Especially frustrating when you have tried everything. The fact that improvement often fails at the interfaces is already known (CP 02)."

In terms of this challenge, some interviewees see opportunities for chief physicians to form stronger alliances to bring across their common goals to the upper hospital management.

"Suggestions for work design would have to be bundled and sent to the employer via the chief physicians. I think that is how it would work. The departments, the chief physicians as representatives, would have to submit a consensus and ask for implementation. That would be the easiest way" (SP 33).

"If all the managers were to stand together, this would already be a great potential for cooperation with upper hospital management" (SN 23).

The cooperation with the upper hospital management is often perceived as restrictive and exhausting. Some managers point out that it takes a lot of time and effort to deal with the upper hospital management to get the problems solved. Others, who have made bad experiences in the support of the hospital management, seem resigned. They do not describe any possibilities on their own to change working conditions to the positive.

"Sometimes it's a long-lasting struggle with the upper hospital management to get demands accepted. However, it works" (CP 15). "I have no autonomy on my own to improve the situation for employees. I have little influence on my own and can only delegate the demands from above to the bottom-up" (CP 08).

"Management by Waiting. I simply sit things out. Someone takes care of it. You're looking forward to be free and then you keep on running in the hamster wheel. I don't see any possibilities for me to act, I don't have them. I can't take the pressure out; the patients are there. Of course, I transmit the pressure" (SN 19).

On the other hand, some managers benefit from the continuity in cooperative contact with upper hospital management or other stakeholders. A good and active contact with the upper hospital management or the nursing service management does not enable the direct implementation of improvements, but there is a perception that change processes can be initiated.

"I've been on the job for years and know what managing, leading and motivating means. I also know when my possibilities are exhausted, when I have reached my limit. Then I can contact the upper hospital management and nursing service management that support me. You can compensate for a lot of things by reflecting on yourself. But there are also moments when you somehow need feedback, what are you doing wrong, why are you feeling so bad. We are in a department in which with me and a new deputy have many possibilities to change things. Now we are doing everything possible and have already changed a lot. Our managers give us autonomy, as long as things work. And our colleagues are invited to join us. Thank God they do" (SN 27).

SUMMARY AND DISCUSSION

Organizational research has shown that the support from managers is one of the key factors for the success or failure of organizational interventions (Bond and Bunce, 2001; Mattila and Elo, 2006; Nielsen et al., 2006; DeJoy et al., 2010; Bourbonnais et al., 2011; Petrou et al., 2016; Lundmark et al., 2017). However, current implementation research criticizes that success factors or obstacles for effective implementation were neglected or only considered retrospectively (Nielsen, 2013). There is a need for a theoretically sound and proactively oriented implementation research (Nielsen, 2013; Müller, 2016). With our qualitative approach and the application of the Theory of Planned Behavior (TPB) (Ajzen, 1991), we therefore explored the attitudes, organizational norms, and perceived behavioral control of managers concerning the promotion of health-related work design measures in hospitals, in order to contribute to the further theoretical and conceptional underpinning of the design and successful implementation of much needed work design interventions in hospitals.

The results on "*attitude*" show that the interviewed managers are sensitized to the topic of mental health and attach great importance to work design measures. In general, this finding indicates that the surveyed managers are willing to support health-related work design measures. However, the reasons differ depending on the occupational group: Almost all interviewees feel responsible for the mental health of their employees, but some perceive a role conflict between the fulfillment of medical and economic responsibility and the needs of the employees. Particularly, chief physicians describe the desired outcomes of work design measures from a more functional perspective (i.e., better health increases employee motivation, work ability, productivity, etc.) than the other two occupational groups (senior physicians and the senior nurses). The arguments of the latter two groups are rather based on an individual or moral health-related perspective, i.e., they consider the benefits of health promotion as a value in itself. This finding is in accordance to a study by Downey and Sharp (2007), which assumes that managers who are more under financial pressure report less moral responsibility for the employees' health promotion than others. Even though we did not ask the question about financial pressure directly, the role of the chief physicians is in German hospitals associated with more responsibility for the budget than in the other occupational groups. Those differences between occupational groups are important, when it comes to recruiting or motivating managers for work design interventions.

Organizational norms are perceived very differently depending on the individual experiences of the managers and depending on their occupational group. The majority of managers do not perceive health-promoting *organizational norms*. They state that there seems to be almost no official or open dialogue on mental health promotion, neither at the organizational level nor at the departmental level. A credible and transparent positioning of the hospital management to the topic mental health promotion is mainly missing. Poor leadership styles of colleagues are criticized, departmental differences are perceived, especially by chief physicians. Few managers who have personally experienced previous support in the implementation of work design measures organizational change processes by upper hospital management describe that workplace health promotion has a high priority for the executive board. Others report the opposite. They perceive little support and sometimes appear resigned. Managers who perceive hospital management as more supportive often experience more behavioral control to implement health-related organizational measures than others. At this point, we assume a relationship between *organizational norms* and *perceived behavioral control*, which has to be examined in future studies.

In accordance with previous studies (Downey and Sharp, 2007; Wilde et al., 2011), we believe that interventions to strengthen health-promoting organizational norms can make an important contribution to ensure that managers support organizational health-promoting measures. This assumption is supported in a very recent study by Biron and Karanika-Murray (2014) which is referring to the Psychosocial Safety Climate (PSC) a specific dimension of organizational climate which describes common perceptions relating to "policies, practices and procedures for the protection of worker psychological health and safety" (Dollard and Bakker, 2010, p. 580). The study of Biron and Karanika-Murray (2014) shows that organizational factors in terms of PSC influence managers' ownership of health-related intervention activities. Also, Biron and Karanika-Murray (2014) were able to show that the perception of

support by the upper hospital management, the integration of the topic mental health in the strategic management as well as functioning communication processes are important to strengthen the managers' commitment to health-related work design interventions.

In respect to *perceived behavioral control*, managers report that they are mainly able to provide social support, appreciation or equal rights for employees on an individual or team or departmental level. Concerning structural measures such as work design and improvement of work organization; managers perceive a rather low behavioral control. The implementation often fails due to lack of time and staff, especially due to fluctuations and absence due to illness. Cross-departmental organizational change processes are perceived as even more difficult or even impossible to implement. Success factors are considered to be an open and interdisciplinary communication culture, a common health-related goal orientation of all stakeholders, resources for the development of measures in project structures and support by hospital management. All in all, it can be assumed that work design measures are not implemented very frequently by managers. They seem to prefer individual and team related measures, focused on providing social support. Interventions to increase managers' perception of self-efficacy and the controllability to strengthen the mental health of their employees should therefore primarily concentrate on organizational approaches to work design.

Limitations and Future Research

Due to the voluntary participation of managers in the interview study, we cannot rule out a sampling bias. We must assume that we have primarily reached those managers who had already positive attitudes toward the topic of employees' mental health. Moreover, participants might have shown a socially desirable response behavior. Other recruitment settings (e.g., congresses, in-house trainings) or strategies (e.g., direct letters and financial compensation) might have led to a different selection of participants.

Since we only interviewed managers of one hospital, the results cannot be generalized without further ado. The interview guideline appears to be suitable for use in other hospitals, so that its generalizability could be tested. It should be also taken into account that the results of our study only describe the perception of medical and nursing management. No conclusions can be made about how the upper hospital management really acts to improve the mental health of employees. In a follow-up study the upper hospital management also might be asked about their perception toward the topic of mental health promotion (e.g., in a focus group) and then compared with the results of the medical and nursing management.

Moreover, the study design does not allow us to make any statements about the actual behavior of managers. We decided against the assessment actual behavior for several reasons: In the context of the interviews it is difficult to make valid statements about actual behavior. Conceptually, it is difficult to separate actual behavior in the interviews from the perception of "behavioral control." In some cases we have concluded from reported behavior on PBC. Furthermore, quantitative studies have shown that the three predictors of the TPB can predict actual behavior. In view of the reference studies and our results, we assume that managers who report more positive attitudes, perceive supportive norms and behavioral control indeed design more health-promoting working conditions for their employees. We have retrospectively examined this assumption by additionally analyzing the interviews of two managers with contrary perspectives the TPB components (**Table 4**). The statements in **Table 4** indicate that medical and nursing managers who show higher values for the TPB components are more likely to practice health-promoting measures in work design than managers with lower values.

Nevertheless, it would have been desirable if we could have matched the statements of the managers with the assessments of their employees regarding their actual leadership behavior.

Leadership behavior has a significant impact on the employees' health (Kuoppala et al., 2008; Montano et al., 2017), the perception and the behavior of employees in the departments. Future quantitative research might examine the interactions between managers' perceived organizational norms (organizational culture) and the managers' actual behavior with regard to employee well-being and their work situation.

We are aware that all qualitative research is contextual; it takes place within a specific time and place between two or more people (Dodgson, 2019). The interviewers used a structured and pre-tested interview guide, to minimize situational or personal bias. However, complete objectivity is not given in qualitative research (Dodgson, 2019). For example, it cannot be excluded that in-depth questions differed due to personal or professional experience and interests of the interviewers.

Conclusion and Practical Implications

Our study contributes to the research on health-related work design by showing that the theory of planned behavior (Ajzen, 1991) might be a useful theoretical framework for planning organizational interventions that are aimed to maintain and enhance the mental health of employees in hospitals. The theory can be used to capture the action guiding perceptions of managers, e.g., in relation to the implementation of health-related work design interventions. Moreover, the theory of planned behavior can be used to identify approaches for interventions that directly affect behavioral changes of managers in order to support such measures. In this way, the results of our study complement existing recommendations on how to improve the quality of the implementation of organizational interventions (Murta et al., 2007; Egan et al., 2009; Nielsen and Randall, 2012). While previous papers state that managers need to be supportive, or have even the role of "active crafters" (Nielsen, 2013) that participate in the design of organizational interventions, using the TPB allows us to understand why managers are often not willing or able to do so. Or, to put it positively: Our study allows us to better understand how to initiate the support of managers:

In respect to managers *attitudes* our findings indicate, that good treatment quality of patients and cost efficiency are often top priorities, especially for chief physicians and upper

TABLE 4 | Examples of managers' statements with higher and lower TPB values.

Mental health promotion	Example 1: Higher TPB values (SN 27)	Example 2: Lower TPB values (CP 8)
Attitude	"This is a major issue (mental health). Because of the stress, there are always sick leaves. The bitching among each other increases, the employees walk around with grumpy faces."	*"The topic is important for all occupational groups."* *"Mental health is the responsibility of each individual. I have little influence on it."*
Organizational Norms	*"There are not only differences in the hierarchy, but also differences in subject and occupational group specifics. In psychiatry we are much more advanced. Mental health is taken care of here."* *"We are all in the same boat here. It is not about who is worse, who is better, but that we come forward together. That is already a very great cohesion here. Loyalty is also a big issue for us."*	*"The topic of mental health is not a priority for the upper hospital management."* *"There is an exchange on the level of colleagues, but more on an informal level."*
Perceived Behavioral Control (internal)	*"I've been on the job for years and know what managing, leading and motivating means. I also know when my possibilities are exhausted, when I have reached my limit. Everything is possible if you know exactly who is responsible for what."* *"It is essential for us to carry out prioritize. I manage many things on my own."*	*"I have no autonomy on my own to improve the situation for employees. I have little influence on my own and can only delegate the demands from above to the bottom-up."*
Perceived Behavioral Control (external)	*"We have a management circle in our department: the chief physician, the senior physicians and me as a senior nurse. On that board, I am able to communicate the information collected from the senior nurses. We talk about urgent things with an immediate need for action. Which might be handled in a small project. I let my colleagues participate and I thank God they join in. We also have case conferences and supervision. The communication is good, also the networking of the senior nurses works well."* *"I've been on the job for years and know what managing, leading and motivating means. I also know when my possibilities are exhausted, when I have reached my limit. Then I can contact the upper hospital management and nursing service management that support me. You can compensate for a lot of things by reflecting on yourself. But there are also moments when you somehow need feedback, what are you doing wrong, why are you feeling so bad. We are in a department in which with me and a new deputy have many possibilities to change things. Now we are doing everything possible and have already changed a lot. Our managers give us autonomy, as long as things work. And our colleagues are invited to join us. Thank God they do."*	*"It fails here because of too many administrative tasks and too little staff. I have no latitude to improve the situation for employees. There is no support from the upper hospital management. Improvement measures cannot be implemented due to financial restrictions."*

hospital management. Managers are often not aware that the health of employees is a main resource for achieving these priorities. From our point of view, managers who have not yet been sensitized to the topic of mental health promotion of employees could be reached more easily by informing them on the interrelationships between mental health, staff motivation, treatment quality, economic success and patient satisfaction (Podsakoff et al., 2007; Angerer et al., 2012; Weigl et al., 2016; Han et al., 2019). The reported role conflicts of the managers could be addressed if managers and the upper hospital management recognizes that employee health and cost efficiency are no contradictions. Moreover, when planning interventions, the different attitudes of different groups of managers should be taken into account: Chief physicians are more likely to be convinced with arguments that emphasize the link between mental health and performance. For senior physicians and nurses, moral and ethical aspects may be more important.

TABLE 5 | Practical approaches to foster managerial support of health-related work design interventions according the dimensions of the Theory of Planned Behavior model.

Attitude	• To reach all managers who are not yet sensitized for the issue of mental health promotion. • To reduce role conflicts, e.g., by demonstrating that employee health and performance orientation are not necessarily opposites.
Organizational Norms	• To establish a credible and transparent communication process on the importance of mental health promotion in hospitals. • To develop participative strategic and operational goals and measures to promote the mental health of employees who are integrated into existing structures.
Perceived Behavioral Control	• To develop the managers' skills needed to implement work design measures. • To provide managers with necessary resources to implement work design measures.

Our results on *organizational norms* suggest that hospitals need to establish an official and continuous dialogue on common health-related goals at the organizational or departmental level. This dialogue could be initiated by upper hospital management with the participation of upper and middle managers. Health-related company goals and offers should be developed transparently with the participation of employees. The existing management structures or instruments should be examined for possibilities to integrate health-related goals.

Our results on *perceived behavioral control* indicate that managers particularly need additional personal and external resources to implement health-related work design interventions (e.g., time, know-how). One the one hand the managers need more competencies to design work structures and processes. For example, they should be made familiar with participative approaches for healthy work design, that are based on well-founded theory and empirical evidence (e.g., Aust and Ducki, 2004; Bourbonnais et al., 2006, 2011). On the other hand, upper hospital management should provide additional external

resources and accompany the development of work design measures ideally and operationally (Daniels et al., 2017). The key messages are summarized in **Table 5**.

Our qualitative findings might stimulate future studies that further validate our results. Moreover, our findings might further guide the development of interventions to improve health-related work design in hospitals. These measures are important to reduce the risk of impaired mental well-being among hospital staff and increase job satisfaction, which in turn have a positive effect on the quality of patient treatment.

AUTHOR'S NOTE

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DATA AVAILABILITY STATEMENT

The data sets generated for this study will not be made publicly available. The data supporting the results of this study can be requested from MG, but restrictions apply if the use could endanger the anonymity of the participants.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Ethics Committee of the Medical Faculty, University Düsseldorf. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

AM developed the study concept. MG and BW performed the data collection. MG performed the data analysis and interpretation, and drafted the manuscript. AM, PA, and BW provided the critical revision of the manuscript. All authors designed the study and approved the final version of the manuscript for submission.

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"I Just Can't Take It Anymore": How Specific Work Characteristics Impact Younger Versus Older Nurses' Health, Satisfaction, and Commitment

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Given the increasing shortage of active nurses in industrialized countries throughout the world, it is of utmost importance to protect their health, satisfaction, and commitment so that they can continue working in their healthcare institution. Building upon the proposed pattern of specific relationships developed by Houkes et al. (2003), we investigated a model of relationships among working conditions (quantitative, emotional, and physical demands), labor relations (quality of interpersonal relations and psychological support), work content (meaning of work, influence at work), and employment conditions (opportunities for development) on the one hand, and health, job satisfaction, and institutional affective commitment on the other hand, for younger versus older nurses. We used data of 3,399 nurses from the Netherlands and 3,636 nurses from Poland from the larger European Nurses' Early Exit Study (NEXT) and performed longitudinal structural equation modeling (SEM) and multi-group analyses. The results showed that the proposed pattern of relationships generally holds, but that the nurses' level of commitment is more determined by meaning of work than by opportunities for development and that psychological support is associated with job satisfaction (and not only with burnout as hypothesized, in both the Netherlands and Poland). Comparing younger (<40 years) versus older (≥40 years) nurses, we found ample support for differences in the proposed model relationships across age category, some being in line with and some being contradictory to our expectations. We argue that a non-normative, tailor-made approach to aging at work might help us to protect the nurses' career sustainability across the life span. This study provides evidence-based practical recommendations on how to enhance the health, job satisfaction, and commitment of nurses throughout their working life.

Keywords: nurses, labor relations, work content, conditions of employment, burnout, job satisfaction, institutional affective commitment, age

INTRODUCTION

Demographic changes such as aging and dejuvenization have increased the need for care in Europe (Wang and Shi, 2014). At the same time, Europe faces a considerable shortage of nurses (Chan et al., 2013) due to the "baby boomer" generation approaching (early) retirement and the high level of premature professional turnover (Buchan et al., 2015). This is not expected to improve in the short run (Chan et al., 2013).

Nursing is a highly demanding profession which entails high risks for health problems (Aiken et al., 2001; Mark and Smith, 2012), limiting nurses' work ability (Ilmarinen, 1999) and employability (career potential) (Fugate et al., 2004; Van der Heijden et al., 2009), and herewith their capacity to work until official retirement age. In addition, many nurses leave the nursing profession, which they consider unattractive and extremely burdensome, due to the nature of the work, no sense of purpose of their own work, and negative interpersonal relations, as well as a disconnection with the profession and the institution, lack of job satisfaction, burnout, and low assessment of their own health (Aiken et al., 2012).

Nurses' health, job satisfaction (Lu et al., 2019), and organizational commitment (Brunetto et al., 2013) are among the key factors that predict whether they are able to stay active in the labor market and to prevent premature leave (Hasselhorn et al., 2003). Based on the literature on work characteristics (Parker et al., 2017a) and highly influential models in the scholarly domain of aging (Ilmarinen, 2007; Brady et al., 2019), work characteristics can be seen as of essential importance to maintain or even improve employees' health, job satisfaction, and organizational commitment and – therefore – their work ability, especially of older workers. It is therefore of utmost importance to understand the impact of work characteristics on nurses' health, satisfaction, and commitment and age-related differences therein.

As a part of the European Nurses' Early Exit Study (NEXT) research project,[1] this study aims to increase our understanding of how work characteristics subdivided into four clear categories (in line with Houkes et al., 2001) – (1) working conditions, (2) labor relations, (3) work content, and (4) conditions of employment (see also Kompier and Marcelissen, 1990; Kompier and Di Martino, 1995) – impact over time on nurses' health (i.e., burnout, disability), job satisfaction (as a motivational variable), and institutional affective commitment (as a career-related variable). Building on the Selection, Optimization, and Compensation Theory (SOC) and the Socio-emotional Selectivity Theory (SST) – being two complementary perspectives on aging at work – we moreover investigate whether this pattern of relationships is different for younger (<40 years) versus older (≥40 years) nurses [see Finkelstein and Farrell, 2007, p. 100, on the Age Discrimination in Employment Act (ADEA); see also Boerlijst et al., 1998; Taylor and Walker, 1998; Van der Heijden et al., 2009, for justification for this dichotomy in research that has been conducted in Europe]. Although age is often included as a covariate or confounder in research studying the associations between work characteristics and outcomes, more empirical work is needed to study if and how age affects relationships between model variables (De Lange et al., 2010).

Considering the recommendations by Lave and March (1990) and Kristensen (1996), and in line with Houkes et al. (2001), we will test our proposed research model in two different countries. This will help us to gain more insight into the robustness and generalizability of our study and adds to the paucity of comparative career research (Thomas and Inkson, 2007). In particular, we will focus on the Netherlands and Poland, which both experience a severe shortage of nurses due to the increase in healthcare needs of the aging society, the rising incidence of chronic diseases and disabilities, retiring older generations of nurses, the emigration of staff, and changes in the educational system (Zgliczyński et al., 2016; Taskforce Healthcare, 2017). The problems related to the shortages of the workforce are thus similar in both countries, however, in the literature some overlapping and divergent experiences have been reported among nurses in the Netherlands and Poland, which makes it particularly relevant to examine whether one theoretical model can explain these experiences. Levels of emotional exhaustion, for example, are lower in the Netherlands than in Poland (Huisman-de Waal et al., 2019; Kózka et al., 2019). Eight out of 10 Dutch nurses are proud to work in their healthcare setting but would appreciate more managerial support and recognition. Polish nurses' desire to leave is related to organizational and socio-economic factors, such as bad working conditions, interpersonal conflicts, wrong management system, low status of work in social hierarchy, shortage of human resources, job insecurity, competition, lack of trust, and low salaries in relation to their efforts. Given the similarities and differences between both countries, we argue that they are a good basis for our empirical research.

The outline given above stresses that, apart from adding to the theory development on the impact of work characteristics on nurses' health, job satisfaction, and organizational commitment, this study also has practical merits in providing healthcare managers in the Netherlands and Poland with evidence-based advice on how to fine-tune work characteristics for nurses across the life span.

THEORETICAL FRAMEWORK

Work Characteristics as Predictors of Health, Job Satisfaction, and Commitment

Work design, which is defined as the content and organization of one's work tasks, activities, relationships, and responsibilities (Parker, 2014, p. 662), has implications for important employee and organizational outcomes, including health and well-being, motivation, innovation, and performance. In their seminal work, Houkes et al. (2001) aimed to contribute to the work design literature by improving and refining exemplary work design models, such as the model for Work, Stress, and Health (Kompier and Marcelissen, 1990; Kompier and Di Martino, 1995), the Demand–Control–Support

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model (DCS model; Johnson and Hall, 1988; Karasek and Theorell, 1990), and the Effort–Reward Imbalance model (ERI model; Siegrist, 1996). Notwithstanding the contribution of these models to the theorizing in the field of work psychology and their added value for the design of employee jobs, Houkes et al. (2001) argued that the work design literature was in need of more refined models to better understand specific patterns of relationships between various work characteristics and outcome variables and to suggest evidence-based interventions at the workplace.

To arrive at more specific and testable hypotheses, Houkes et al. (2001) studied how various characteristics of the working conditions, labor relations, work content, as well as conditions of employment yield specific relationships with outcomes such as exhaustion, as an indicator of employees' health and well-being; job satisfaction, being a motivational outcome; and turnover intentions, which can be considered a career outcome. They argued and found that emotional exhaustion was most strongly predicted by workload, which is indicative of the conditions under which work needs to be done, and social support, referring to an aspect of the social and labor relations at work. In line with Hobfoll (1989); Houkes et al. (2001) posited that this is the case because workload threatens people's abilities to maintain and obtain resources, which in turns triggers emotional exhaustion. Social support, in contrast, is considered a valuable resource, as it brings direct instrumental help, feedback, information, or emotional support (House, 1981), and is helpful in buffering the demanding characteristics of one's work (Bakker et al., 2005). The availability of social support may therefore increase employees' pool of resources and contribute to their health and prevent emotional exhaustion.

Intrinsic motivation was primary predicted by work content variables such as feedback, autonomy, and skill use. These factors are enjoyable aspects of the job itself and speak to the interest of employees, and, following Hackman and Oldham (1976), these factors have great motivating potential. Finally, Houkes et al. (2001) argued and found that turnover was most strongly predicted by employment conditions such as unmet expectations regarding one's salary, job security, and position. The lack of good employment conditions frustrates employees' growth needs, and as a result, it is likely that employees are pushed to look for growth opportunities elsewhere.

Several studies have provided support for the applicability of the model of Houkes et al. (2001) in the nursing sector. More specifically, these studies showed that job control was consistently a stronger predictor of motivational outcomes such as job satisfaction, while job demands consistently were the strongest predictors of emotional exhaustion (primary indicator of burnout) (Tummers et al., 2002; Janssen et al., 2004). We aim to build on the model of Houkes et al. (2001) by studying the specific longitudinal effects of several aspects of nurses' working conditions (quantitative, emotional, and physical demands), labor relations (quality of interpersonal relations and psychological support), work content (meaning of work and influence at work), and conditions of employment (opportunities for development) on nurses' burnout and disability as health indicators, job satisfaction as a motivational outcome, and institutional affective commitment as a career-related outcome. Earlier empirical work in the nursing sector has already shown that these variables matter. For example, meta-analytic findings indicate that nurses who are confronted with working conditions such as high workload and a lack of social relations are more prone to burnout (Li et al., 2018). Other working conditions such as quantitative, emotional, and physical demands are furthermore an important risk factor for nurses' well-being, both in their personal life and at the workplace (see, for instance, Van der Heijden et al., 2008), while social support of one's direct supervisor and near colleagues are among the most important factors to maintain health and well-being when nurses face challenging work demands (Estryn-Behar et al., 2007; Van der Heijden et al., 2017).

Furthermore, an overview of the literature indicates that work content variables such as meaningfulness and control are among the most important work aspects that contribute to nurses' motivation for the job and are associated with nurses' job satisfaction (Toode et al., 2011; Lu et al., 2019). Finally, nurses' turnover intent increases when employment conditions, such as opportunities for growth and development as well as pay and salary, are unsatisfactory (Flinkman et al., 2010; Halter et al., 2017). Perceived organizational support for further development (Tansky and Cohen, 2001) and career growth (Weng et al., 2010; Weng and McElroy, 2012) also appear to be associated with organizational commitment, being one of the outcome indicators in our research model.

Although these studies convincingly show that working conditions, labor relations, work content, and employment conditions matter for nurses' health, motivation and career outcomes, they did not systematically test the relative importance of these categories of work characteristics in predicting these outcomes as proposed by Houkes et al. (2001). For example, the reviews by Lu et al. (2019) and by Toode et al. (2011) also indicate that demanding working conditions are associated with job satisfaction, being our motivational outcome, and that social relations contribute to nurses' motivation as well, yet the relative contributions of working conditions and labor relations vis-à-vis work content and conditions of employment in the prediction of outcomes were not examined. In order to bring more specificity in the way we theorize and study the impact of work characteristics among nurses, and to allow for specific interventions, we tie in with the model of Houkes et al. (2001) and formulate the following hypotheses (see **Figure 1**):

> *Hypothesis 1:* Nurses' health, in terms of their burnout and disability, is primarily predicted by working conditions (quantitative, emotional, and physical demands) and labor relations (quality of interpersonal relations and psychological support). More specifically, burnout is mainly predicted by quantitative demands, emotional demands, quality of interpersonal relations, and psychological support, and disability is mainly predicted by physical demands.

> *Hypothesis 2*: Nurses' job satisfaction is primarily predicted by work content (meaning of work and influence at work).

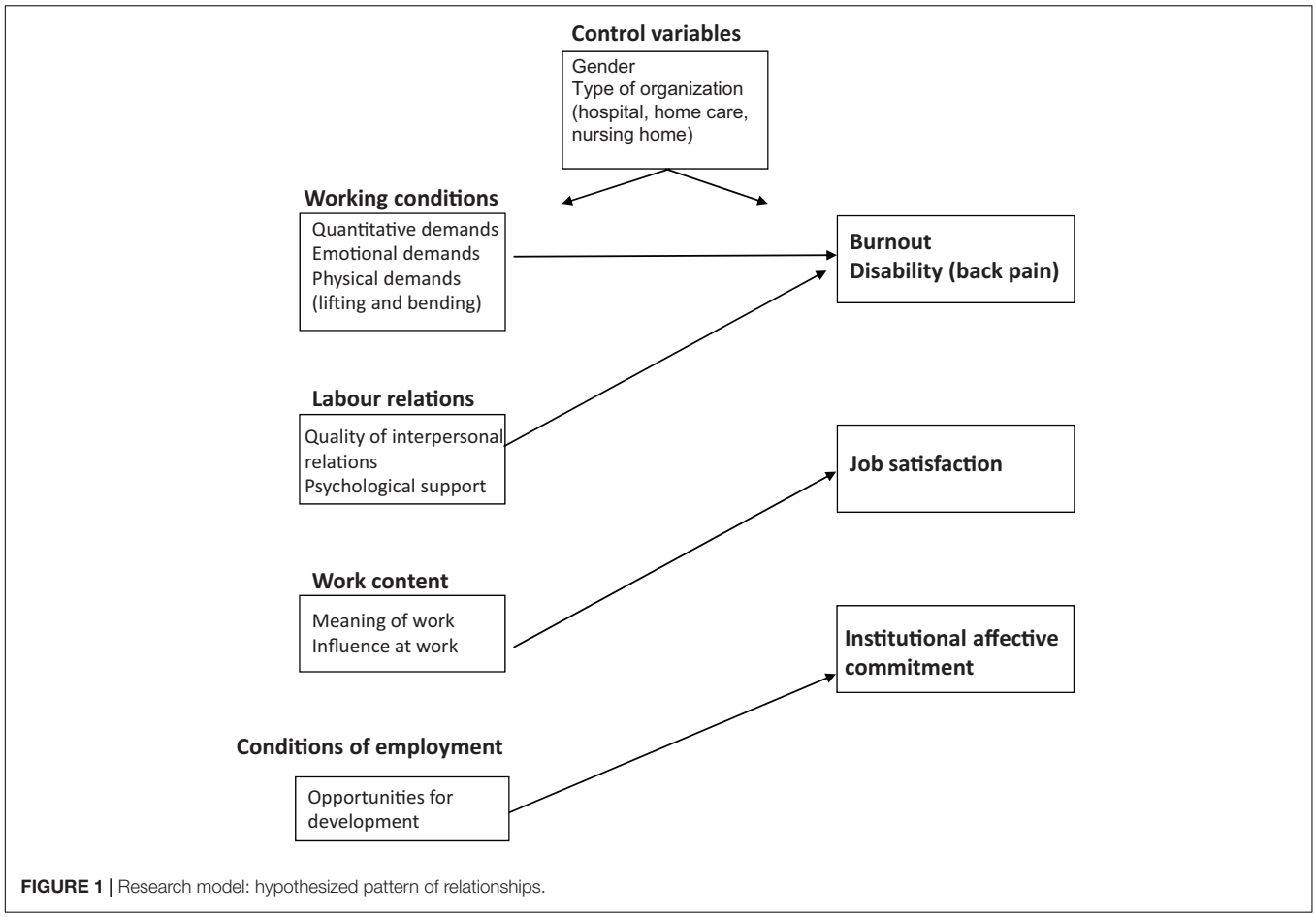

FIGURE 1 | Research model: hypothesized pattern of relationships.

Hypothesis 3: Nurses' institutional affective commitment is primarily predicted by conditions of employment (opportunities for development).

Please note: Our current selection of indicators of the four areas of work characteristics in the NEXT data set expands upon the theoretical model and the selection of variables of Houkes et al. (2001) and the initial work of Kompier and colleagues (Kompier and Marcelissen, 1990; Kompier and Di Martino, 1995). Working conditions refer to the amount of work, the physical conditions, and the safety issues related to work. In line with this definition, we included three different types of work demands (i.e., quantitative, emotional, and physical demands), thereby expanding the work of Houkes et al. (2001), who focused on quantitative demands only. Labor relations refer to the (formal and informal) relationships and interactions employers and employees have with each other and the amount of support these relationships provide (Kompier and Marcelissen, 1990; Houkes et al., 2001, 2003). Although social support was not an available measure in the NEXT data set, we were able to include quality of interpersonal relations and psychological support, thereby stretching the operationalization of this construct in the work by Houkes et al. (2001). Work content refers to content and characteristics of the tasks to be done (e.g., Kompier and Marcelissen, 1990). For this category of work characteristics, we have included meaning of work and influence at work, which resembles the operationalization of Houkes et al. (2001) (that is, motivating potential, consisting of autonomy and task significance). Conditions of employment refer to the agreements that are being made between employee and the organization, and concerns aspects such as salary and career and growth opportunities (Kompier and Marcelissen, 1990). Houkes et al. (2001) used the more negative indicator "unmet career expectations" including expectations around salary, position, and job security. We focus on opportunities for development as a good alternative indicator for conditions of employment in the contemporary labor market, as it focuses on one's intrinsic growth opportunities in the job.

The Impact of Nurses' Age

Because the workforce is aging, researchers are increasingly examining how older employees – compared to their younger colleagues – experience their work and work setting. While considerable attention has been devoted to whether maintenance- (e.g., participation) and growth-related (e.g., training and development) HR practices have different implications for workers differing in age (e.g., Kooij et al., 2010), the job design literature has been relatively silent about the potential differences in the impact of work characteristics on

older and younger employees' health and well-being, on their motivation (see Schreurs et al., 2012, for a cross-sectional paper example), and on (other) career-related outcomes.

To formulate specific hypotheses, we borrow from life span development theories, in particular, the SOC (Baltes et al., 1999) and SST (Carstensen, 1995), in arguing that older nurses face the challenges of loss, growth, and change over time (Kanfer and Ackerman, 2004). Older workers, for example, experience a decline in physical capacities and fluid intelligence yet an incline in crystallized intelligence and experiences. Moreover, the salience of particular life goals fluctuates depending on one's life cycle, with some goals gaining more importance and others becoming less valuable when employees grow older. All this, in turn, may influence how the various aspects of work conditions, labor relations, work content, and conditions of employment influence employee health, motivational, and career-related outcomes.

First, because older employees are confronted with several losses, they may become more sensitive to demanding situations. We argue that this may be the case because such situations may appeal to the impaired skills, abilities, or energy of older workers or require them to mobilize all remaining energy and other resources to overcome these demands (Hobfoll, 1989; Hobfoll et al., 2018). Given that older employees may lack the relevant compensatory resources, they would rather use other strategies, such as preventing such demanding situations from happening or disengaging from situations that pose unattainable goals (Moghimi et al., 2017). Within the work context, however, nurses are unlikely to be able to avoid all demanding working conditions. Therefore, we expect that the health-impairing impact (Bakker et al., 2005) of demanding working conditions, such as quantitative, emotional, and physical demands, may be stronger for older than for younger workers. More specifically, we assume:

> *Hypothesis 4*: Age impacts the relationship between working conditions and health such that the positive relationship between quantitative and emotional demands and nurses' burnout and the positive relationship between physical demands and nurses' disability are stronger for older compared to younger workers.

Second, because of the experience of loss, older employees are also likely to become more sensitive to resourceful situations, which are beneficial in and of themselves but are especially valuable because they help older employees to deal with the wide range of demands they are confronted with (Hobfoll, 1989; Hobfoll et al., 2018). Not all resources may, however, be experienced as equally beneficial. Following the SST (Carstensen, 1995), with increasing age, one's time frame changes, causing older employees to value different things than younger employees. While younger nurses may perceive time as more "open-ended" (Carstensen, 1995; Kooij et al., 2018; Dordoni et al., 2019), older nurses' future time perspective is more limited and framed in terms of the "remaining time." Younger employees are therefore more likely to focus on all possibilities lying ahead and value keeping all options open. This translates, for example, into attaching high importance to extrinsic rewards, such as pay and promotion, as these help to achieve other things in life. In addition, younger workers also highly value opportunities for development. Even when such opportunities do not serve immediate payoff, they might come in handy somewhere in the future. This line of reasoning also applies to social relations. Younger employees have a wish to expand their social network, as new people may help them to gain new knowledge and information and may be helpful to reach future goals.

Older employees, in contrast, are more oriented toward making the remaining time count. They therefore have a stronger focus on the present and prioritize emotional well-being over growth and learning. Older workers therefore highly value intrinsic qualities of a job, such as the work content, rather than opportunities for growth and development, and they attach more importance to the quality of relationships in comparison with their quantity. Rather than having more relationships, they deepen their existing ones and value the support they get from these. Therefore, we argue that for the older nurses, the impact of the quality of their interpersonal relationships with various stakeholders, ranging from nursing management to colleagues, and the quality of the psychological support (e.g., in terms of their satisfaction with the support provided at work) are especially important for their emotional well-being (i.e., prevention of burnout). Given that we expect labor relations to be one of the primary predictors of health, work content to be the primary predictor of job satisfaction, and opportunities for development to be the primary predictor of organizational commitment, we therefore formulate:

> *Hypothesis 5:* Age impacts the relationship between labor relations and health such that the positive relationship between the quality of interpersonal relations and psychological support on the one hand and nurses' burnout on the other hand is stronger for older compared to younger workers.
>
> *Hypothesis 6:* Age impacts the relationship between work content and job satisfaction such that the positive relationship between meaning of work and influence at work with nurses' job satisfaction is stronger for older compared to younger workers.
>
> *Hypothesis 7:* Age impacts the relationship between conditions of employment and institutional affective commitment such that the positive relationship between opportunities for development and institutional affective commitment is weaker for older workers.

METHODOLOGY

Design, Participants, and Procedure

This study comprises an incomplete two-wave panel design (Zapf et al., 1996) utilizing the Dutch and the Polish part of the database of a large European survey study on nurses' reasons, circumstances, and consequences surrounding premature departure from the nursing profession (NEXT). The

NEXT study has been approved by the ethical committee of the University of Wuppertal in Germany. Stratified sampling has been used in order to, as far as possible, reflect the national distribution of nurses working in the Netherlands and in Poland in three different types of institutions (hospitals, nursing homes, and home care institutions) and to cover the different regions in the two countries in a representative way. In particular, the researchers have tried their best to ensure proportionate ratios regarding employment figures, gender distribution, age structure, and working hours across the distinguished types of institutions, while at the same time incorporating the geographical spread across the specific regions in the Netherlands and Poland. To reach this goal, a thorough analysis of the healthcare industry across the two countries, and the population of nurses working in it, was conducted in order to make sure that the study sample would be representative of the participating country's industry breakdown as regards the distinguished criteria.

The longitudinal design of the study (1-year time lag) comprised a baseline questionnaire and a follow-up questionnaire covering aspects of nurses' working and private lives, which were sent to a total of 9,309 Dutch and 7,091 Polish nurses at baseline measurement. These two samples covered all nurse qualification levels, as this was expected to increase the variation in (the level of) work characteristics and resources (Warr, 1990) of nurses who were working in hospitals, nursing homes, and home care institutions. A total of 4,024 Dutch and 4,354 Polish participants returned the baseline (T0) questionnaire, which means a response rate of 43.2 and 61.4%, respectively. The follow-up questionnaire (T1) was returned by 2,433 (25.1%) and 4,547 (64.5%) nurses, respectively. **Table 1** provides some descriptives of the Dutch and Polish sample (distribution of age, gender, and type of institution).

Measures

Three indicators for *working conditions* were included in the present study. *Quantitative demands* were measured using a four-item scale from the COPSOQ (Copenhagen Psychosocial Questionnaire) (Kristensen and Borritz, 2001), which refers to demands in terms of number of work hours (extensive demand) and/or work pace (intensive demand). An example item was: "How often do you lack time to complete all your work tasks?" Response categories ranged from: 1, "hardly ever," to 5, "always." One missing item per subject was allowed for scale calculation. *Emotional demands* were measured using a four-item scale specifically developed for healthcare professionals by De Jonge et al. (1999). Participants were asked to indicate on a five-point rating scale how often they were confronted with "death," "illness or any other human suffering," "aggressive patients," and "troublesome patients" in their work. Response categories ranged from: 1, "never," to 5, "always." One missing item per respondent was allowed for scale calculation. *Physical demands* were measured using three items that were constructed by the NEXT study group (Hasselhorn et al., 2003) (physical load major factors in nursing index): (a) "lifting patients in bed without aid," (b) "maintaining an uncomfortable posture," and (c) "working in a standing posture." The response categories for the first two items were: (1) "0 to 1 times a day," (2) "2–5 times a day," (3) "6–10 times a day," and (4) "more than 10 times a day." The response categories for the third item were: (1) less than 2 h, (2) 2–3 h, (3) 4–5 h, and (4) 6 h or more. The final score has been computed as a sum score divided by three. Physical load was considered to be low when scored from 1 through 2, medium when scored from 2.01 through 2.99, and high when scored from 3 through 4. No missing item was allowed to calculate the mean score.

As regards *labor relations*, two indicators were used. *The quality of interpersonal relations* between nurses and five relevant groups in their working environment (i.e., nursing management, the sister/charge nurse, colleagues, doctors, and administration) was assessed using a five-point scale ranging from: 1, "hostile and tense," to 5, "friendly and relaxed." No missing item was allowed for calculating the mean score. The original scale range of 1–5 has been recorded into 1–4 (by combining scores 2 and 3) to make the variables measured at T0 and T1 comparable. *Psychological support* was measured by means of one item (Hasselhorn et al., 2003): "Are you satisfied about the psychological support at work?" The response scale ranged from 1, "very unsatisfied," to 4, "very satisfied."

As regards *work content*, we incorporated two indicators. *Meaning of work* was measured using three items from the COPSOQ (Kristensen and Borritz, 2001) ("Is your work meaningful?", "Do you feel that the work you do is important?", and "Do you feel motivated and involved in your work?"). The possible scale range was from: 1, "to a very small extent," to 5, "to a large extent." No missing items were allowed for calculation of the means. *Influence at work* was measured using a four-item scale containing modified items based on the Demand–Control Questionnaire (Theorell et al., 1988). An example item was: "I can decide for myself how to fulfill the tasks that are assigned to me." The respondents were asked to indicate on a five-point rating scale how accurate the statements were in relation to their personal occupational situation, with response categories ranging from: 1, "totally inaccurate," to 5, "totally accurate." One missing item per participant was allowed for scale construction.

As regards *conditions of employment,* we included one indicator, i.e., opportunities for development. *Opportunities for development* was measured using a four-item scale from the COPSOQ (Kristensen and Borritz, 2001). An example item was: "Do you have the possibility to learn new things through your work?" Response categories ranged from: 1, "to a very small extent," to 5, "to a large extent." One missing item per participant was allowed for construction of the scale mean.

As regards the outcomes variables in our research model, the indicators for *health* were burnout and disability. *Burnout* was assessed using a five-item scale taken from the COPSOQ (Kristensen and Borritz, 2001). An example item was: "How often are you emotionally exhausted?" The response scale ranged from: 1, never/almost never, to 5, (almost) every day. One missing item per participant was allowed to calculate the mean score. *Disability* was measured with Von Korff et al.'s (1992) four-item instrument to measure peoples' pain and/or disability due to low back pain and neck/shoulder pain. An example item was: "Considering the past half year, how much has neck or low back pain interfered with your daily activities?" The response categories ranged from

TABLE 1 | Demographics, descriptives and reliabilities for the samples of the Netherlands and Poland (N ranges from 1,150 to 4,200).

#	Variable	Range	α	M/%	*SD*	α	M/%	*SD*
			The Netherlands			Poland		
	Age	18–64/70	–	38.20	9.73	–	38.72	7.63
	Age in two groups	–	–		–	–		–
	−≤40			57.3			57.9	
	−>40			42.7			42.1	
	Gender	–	–		–	–		–
	- Female			90.7			99.0	
	- Male			9.3			1.0	
	Type of institution	–	–		–	–		–
	- Hospital			62.8%			74.0%	
	- Nursing home			18.7%			4.2%	
	- Home care			18.5%			7.1%	
1	T0 quantitative demands	1–5	0.70	2.99	0.55	0.69	3.38	0.66
2	T0 emotional demands	1–5	0.65	3.45	0.55	0.77	3.49	0.77
3	T0 physical demands	1–4	0.60	2.22	0.70	0.64	2.64	0.80
4	T0 interpersonal relations	1–4*	0.72	2.79	0.49	0.76	2.64	0.58
5	T0 psychological support (1 item)	1–4	–	2.72	0.58	–	2.21	0.80
6	T0 meaning of work	1–5	0.82	4.20	0.58	0.73	3.99	0.82
7	T0 influence at work	1–5	0.71	3.19	0.66	0.83	2.97	0.95
8	T0 opportunities development	1–5	0.70	3.62	0.77	0.76	3.67	0.83
9	T0 burnout	1–5	0.84	1.68	0.60	0.91	2.61	0.99
10	T0 disability**	1–10	0.31 (0.90)	0.46	1.11	0.57 (0.94)	1.46	1.59
11	T0 job satisfaction	1–4	0.70	2.84	0.37	0.78	2.39	0.55
12	T0 institutional commitment	1–5	0.76	3.21	0.66	0.75	3.43	0.88
13	T1 burnout	1–5	0.85	1.65	0.59	0.92	2.80	1.02
14	T1 disability**	1–10	0.34 (0.92)	0.42	1.10	0.47 (0.92)	1.34	1.58
15	T1 job satisfaction	1–4	0.73	2.85	0.40	0.79	2.32	0.56
16	T1 institutional commitment	1–5	0.78	3.05	0.68	0.74	3.25	0.80

**Original range 1–5, recoded into 1–4 (by combining scores 2 and 3) to make variable comparable to T1 measurement. **α between brackets after deletion of Item 1 (number of days kept off work due to Neck Shoulder/Low Backpain complaints). Disability score was calculated following the method described by the author (Von Korff et al., 1992).*

0 (no interference or change) to 10 (highest interference or very much change). Back- or neck-pain-related disability was considered to be low for nurses scoring 0, medium for nurses scoring from 1 through 2, and high for nurses scoring from 3 through 10. One missing item per participant was allowed for score building. *Job satisfaction* was measured with four items from the COPSOQ (Kristensen and Borritz, 2001). A sample item was: "How pleased are you with your job as a whole?" Responses were made on a four-point rating scale (1, very unsatisfied, to 4, very satisfied). One missing item per participant was allowed to calculate the mean score. *Institutional affective commitment* was measured with Allen and Meyer's (1996) four-item scale. This scale was used in its original form; however, the wording was – where appropriate – slightly changed. An example item was: "I am proud to belong to this institution." Responses were made on a five-point rating scale (1, strongly disagree, to 5, strongly agree). One missing item per respondent was allowed to calculate the mean score.

Gender and type of institution (hospital, nursing home, and home care) were included as *control variables* that could be expected to confound relationships between work characteristics and the outcomes. Cronbach's alphas of all variables are shown in **Table 1**. The measures used in this study have all proven to be valid and reliable in this study and in previous empirical work.

Analyses

All data were analyzed for the Netherlands and Poland separately. Prior to testing the hypotheses, we performed dropout analyses (to examine possible mean differences between employees in the panel group and the dropouts) and several preliminary analyses (means, standard deviations, Pearson's *r* correlations, and Cronbach's alphas). We first tested whether the proposed pattern of relationships (Hypotheses 1–3) held for the complete Dutch and Polish samples and then tested for differences between younger and older nurses by means of multi-group analyses (MGAs) (Hypotheses 4–7) in IBM AMOS25 (Byrne, 2016).

In all structural equation modeling (SEM) analyses, we simplified the covariance structure by assuming that the latent and observed variables were identical in order to prevent identification problems and unreliable parameter estimates (cf. Schumacker and Lomax, 2010). MGA enables investigating to what extent a proposed pattern of relationships is actually

consistent with the observed data in two or more samples simultaneously (Byrne, 2004; Schumacker and Lomax, 2010). Furthermore, with MGA, it is possible to investigate whether a proposed pattern of relationships is invariant (i.e., has the same strength and direction) across different groups (cf. Byrne, 1994, 2016) and whether differences exist between groups (Schumacker and Lomax, 2010).

We used an incomplete panel design to analyze the longitudinal data, using work characteristics measured at T0 and outcome variables measured at both T0 and T1 (e.g., Zapf et al., 1996). We specified the synchronous and cross-lagged paths in accordance with the pattern of relationships as depicted in **Figure 1**. We allowed the work characteristics as well as the residual errors of the outcome variables to correlate. To assess the overall model fit, several commonly used fit indices were used (cf. Diamantopoulos and Siguaw, 2002; Schumacker and Lomax, 2010; Byrne, 2016): the chi-square statistic, the root mean square residual (RMR), the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the normed fit index (NFI), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). Models were adjusted based on the modification indices, which provide information as to what specific relationships should be added to the model, when theoretically plausible, in order to improve the fit between the hypothesized model and the data (Byrne, 2016). Nested models were compared by means of the chi-square difference test. Finally, *t*-values were used to assess the significance of specific relationships.

RESULTS

Dropout Analyses

In order to rule out selection problems due to panel loss, we determined whether employees in the panel group (who filled out both the T0 and T1 questionnaires) and the dropouts (who only filled out the T0 survey) differed with regard to their mean scores on the research variables and demographics by means of *t*-tests and chi-square difference tests. For most research variables and demographics, the mean differences did not differ significantly between the panel group and the dropouts for both the Netherlands and Poland. More specifically, for the Netherlands though, we found a significant mean difference of 0.82 regarding age. In particular, employees in the panel group [mean (*SD*) = 38.78 (9.70)] were slightly older than the dropouts [Mean (*SD*) = 37.96 (9.74)]; the mean difference was less than one-tenth of the SD. We also found a mean difference of 0.06 regarding burnout, with the dropouts scoring slightly higher [mean (*SD*) = 1.70 (0.55)] in comparison with the panel group [mean (*SD*) = 1.64 (0.55)]; the mean difference was approximately one-tenth of the SD. Finally, the Dutch panel group contained slightly more male nurses (5.6%) than the dropouts (1.9%). For Poland, we found a mean difference of 0.05 regarding quantitative demands, with the panel group scoring slightly higher [mean (*SD*) = 3.41 (0.64)] than the dropouts [mean (*SD*) = 3.56 (0.67)]; the mean difference was less than one-tenth of the SD. With these outcomes, we can conclude that mean differences between the panel group and the dropouts were few and small, and hence that selection problems did not occur in our study.

Preliminary Analyses

Table 1 shows the demographics of both the Dutch and Polish samples and the means, standard deviations, and internal consistencies of the study variables. **Table 2** shows the correlation matrix of all study variables. The reliabilities (in Cronbach's alphas) of the study variables appeared to be adequate to good. The pattern of correlations was generally in line with Hypotheses 1 and 2 in both samples (the Netherlands and Poland), but opportunities for development tended not to correlate with institutional commitment. In addition, meaning of work was correlated with job satisfaction (as hypothesized) but also with institutional commitment. The variables quality of interpersonal relations and psychological support appeared to be correlated with both burnout (as hypothesized) and job satisfaction.

Testing the Associations Between Work Characteristics and Outcomes

In the Dutch sample, the fit of base model M1 was not optimal, so based on modification indices, the following relationships were added (one by one): psychological support to job satisfaction T0 and meaning of work to institutional commitment T0. This adjusted model M2 fitted significantly better (see **Table 3**). As shown in **Figure 2**, the hypothesized pattern of relationships was generally supported (Hypotheses 1 and 2 were largely confirmed). In particular, as regards Hypothesis 1 (impact on health), the Dutch nurses' disability was indeed predicted by physical demands, both in the synchronous and cross-lagged analyses (see **Figure 2**). The path between psychological support and burnout was significant, yet at T0 only. Contrary to our expectations, the synchronous paths between emotional demands and quality of interpersonal relations, on the one hand, and burnout, on the other hand, were not significant. As regards Hypothesis 2, both the synchronous paths between meaning of work and of influence at work, on the one hand, and job satisfaction were significant. Meaning of work was also positively related to institutional affective commitment T0 (added path) and to job satisfaction at T1 in the Dutch sample. Contrary to our expectations, opportunities for development was unrelated to institutional affective commitment at T0 (with these outcomes, Hypothesis 3 was not confirmed with our data).

Considering the cross-lagged paths, the number of significant relationships was relatively low due to the strong stabilities of the outcome variables over time. The cross-lagged path between physical demands and disability was significant for the Dutch nurses. Moreover, meaning of work was related to job satisfaction at T1 as well.

Also, in the Polish sample, the fit of base model M1 was not optimal. Based on modification indices, the following relationships were therefore added (one by one): psychological support to job satisfaction T0, psychological support to institutional commitment T0, and meaning of work to institutional affective commitment at T0. This adjusted model

TABLE 2 | Correlations between the study variables (Netherlands: left lower corner; Poland: right upper corner; N ranges from 1,150 to 4,200).

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	T0 quantitative demands	–	0.29*	0.31*	−0.23*	−0.28*	−0.12*	−0.35*	0.05*	0.27*	0.18*	−0.35*	0.21*	0.16*	0.12*	−0.17*	−0.12*
2	T0 emotional demands	0.72*	–	0.18*	−0.04*	−0.12*	−0.02	−0.10*	0.02	0.18*	0.14*	−0.21*	−0.09*	0.12*	0.11*	−0.11*	−0.04
3	T0 physical demands	0.40*	0.28*	–	−0.07*	−0.13*	−0.01	−0.15*	0.03	0.15*	0.15*	−0.19*	−0.07*	0.06*	0.07*	−0.10*	−0.04
4	T0 interpersonal relations	−0.16*	0.03	−0.06*	–	0.42*	0.27*	0.28*	0.04*	−0.21*	−0.08*	0.34*	0.38*	−0.09*	−0.05	0.18*	0.19*
5	T0 psychological support	−0.24*	−0.11*	−0.18*	0.27*	–	0.23*	0.22*	0.02	−0.26*	−0.15*	0.56*	0.37*	−0.16*	−0.12*	0.21*	0.16*
6	T0 meaning of work	0.04*	0.05*	0.01	0.19*	0.15*	–	0.22*	0.21*	−0.19*	−0.09*	0.31*	0.41*	−0.09*	−0.04	0.17*	0.21*
7	T0 influence at work	−0.36*	−0.08*	−0.21*	0.17*	0.22*	0.14*	–	0.06*	−0.18*	−0.08*	0.25*	0.27*	−0.10*	−0.04	0.15*	0.19*
8	T0 opportunities development	0.03*	0.09*	0.03	0.10*	0.07*	0.28*	0.12*	–	−0.01	0.03	0.06*	0.10*	−0.05*	−0.03	0.08*	0.15*
9	T0 burnout	0.25*	0.12*	0.15*	−0.13*	−0.18*	−0.06*	−0.15*	−0.01	–	0.37*	−0.30*	−0.20*	0.35*	0.17*	−0.15*	−0.10*
10	T0 disability	0.09*	0.05*	0.09*	−0.09*	−0.09*	0.03	0.05*	−0.02	0.23*	–	−0.20*	−0.10*	0.22*	0.34*	−0.13*	−0.05*
11	T0 job satisfaction	−0.30*	−0.15*	−0.23*	0.27*	0.43*	0.28*	0.26*	0.15*	−0.23*	−0.13*	–	0.43*	−0.16*	−0.13*	0.29*	0.19*
12	T0 institutional commitment	−0.13*	−0.10*	−0.15*	0.21*	0.26*	0.26*	0.19*	0.10*	−0.07*	−0.03*	0.36*	–	−0.10*	−0.05*	0.22*	0.34*
13	T1 Burnout	0.18*	0.07*	0.07*	−0.11*	−0.16*	−0.16*	−0.09*	−0.02	0.58*	0.15*	−0.13*	−0.07*	–	0.37*	−0.35*	−0.22*
14	T1 disability	0.10*	0.05	0.07*	−0.04	−0.09*	0.09*	−0.02	0.04	0.17*	0.33*	−0.10*	−0.03	0.21*	–	−0.21*	−0.09*
15	T1 job satisfaction	−0.20*	−0.09*	−0.17*	0.19*	0.25*	0.25*	0.13*	0.02	−0.21*	−0.13*	0.39*	0.18*	−0.26*	−0.14*	–	0.39*
16	T1 institutional commitment	−0.13*	−0.09*	−0.17*	0.19*	0.20*	0.20*	0.09*	0.05	−0.11*	−0.05	0.26*	0.57*	−0.11*	−0.04	0.32*	–

*$p < 0.05$.

TABLE 3 | Fit measures for all employees and per age group (<40 and ≥40) for the Netherlands and Poland.

	χ^2 (df)	$\Delta\chi^2$ (df)	RMR	GFI	AGFI	NFI	CFI	RMSEA
All employees NL								
M1 base model	519.493* (68)		0.030	0.948	0.868	0.815	0.830	0.083
M2 adjusted model	333.029* (66)	186.464* (2)	0.025	0.964	0.906	0.88	0.90	0.065
All employees Poland								
M1 base model	1000.836* (68)		0.062	0.935	0.835	0.786	0.794	0.101
M2 adjusted model	378.245* (65)	622.591* (3)	0.048	0.971	0.923	0.919	0.931	0.060
Young nurses NL								
M1 base model	311.041* (68)		0.026	0.947	0.867	0.806	0.832	0.080
M2 adjusted model	195.097* (66)	115.944* (2)	0.021	0.965	0.908	0.878	0.911	0.059
Old nurses NL								
M1 base model	266.856* (68)		0.037	0.937	0.841	0.805	0.836	0.086
M2 adjusted model	157.316* (65)	109.541* (3)	0.031	0.958	0.891	0.885	0.924	0.060
Young nurses Poland								
M1 base model	634.397* (68)		0.060	0.932	0.828	0.782	0.794	0.101
M2 adjusted model	268.529* (65)	365.868* (3)	0.049	0.966	0.911	0.908	0.926	0.062
Old nurses Poland								
M1 base model	417.311* (68)		0.068	0.928	0.820	0.772	0.792	0.100
M2 adjusted model	189.524* (65)	227.787 *(3)	0.055	0.962	0.901	0.896	0.926	0.061

*$p < 0.05$.

M2 fitted significantly better (see **Table 3**). As shown in **Figure 2**, also in this sample, the hypothesized pattern of relationships was generally supported (Hypotheses 1 and 2 were largely confirmed), but several paths had to be added to achieve optimal model fit. The synchronous path between emotional demands and burnout was not significant (just as in the Dutch sample). As regards Hypothesis 2, only influence at work appeared to be related to job satisfaction. In addition, meaning of work had a strong relationship with institutional commitment at T0 and was not significantly related to job satisfaction at T0. Hypothesis 3

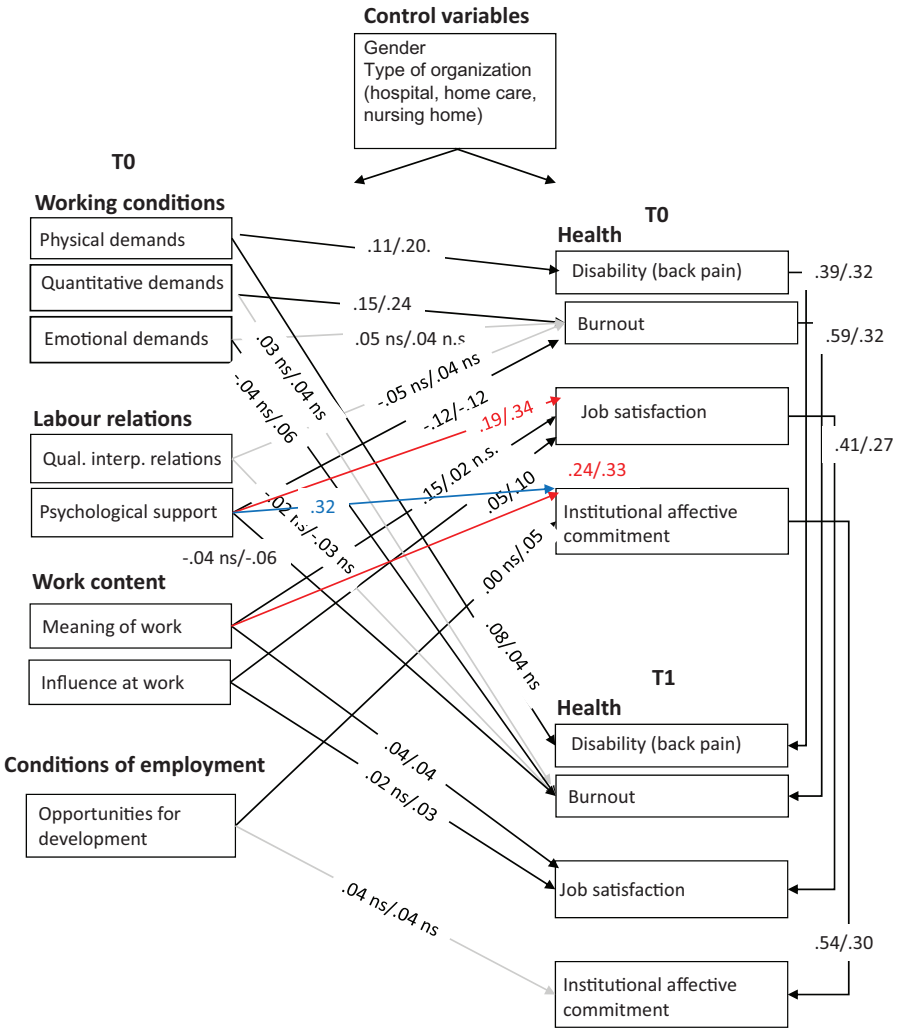

FIGURE 2 | Path coefficients M2 for NL/Poland, all nurses. Red paths have been added for both countries based upon the modification indices; blue path has been added in Poland only based upon modification index; gray paths indicate non-significance for both countries; n.s. implies non-significance for one country; model fit in NL and Poland appears to be good after having added these paths.

was only weakly confirmed when using the synchronous analysis in the Polish sample.

Considering the cross-lagged paths for the Polish sample, emotional demands and psychological support were significantly related to burnout at T1. Moreover, both meaning of work and influence at work appeared to be significantly related to job satisfaction at T1.

Testing the Impact of Age: Multi-Group Analyses

In accordance with suggestions by Byrne (2004), we tested the hypothesized models in the younger and older groups separately prior to performing MGA. **Table 3** shows the model fit of the base models (M1) and the adjusted models (M2) for younger (<40) and older (≥41) Dutch and Polish nurses. For the younger nurses in the Netherlands, we added the following paths: psychological support to job satisfaction T0 and meaning of work to institutional commitment T0. For the older Dutch nurses, we added these paths as well, plus an additional path from psychological support to institutional commitment T0.

For the younger nurses in Poland, we added paths from psychological support, on the one hand, to job satisfaction T0 and institutional commitment T0, on the other hand. In addition, we added a path from meaning of work to institutional affective commitment at T0. For the older nurses in Poland, we added paths from psychological support to job satisfaction T0 and institutional commitment T0 (similar to the younger nurses), and from quality of interpersonal relations to institutional commitment at T0. These adjusted models M2 fitted significantly better than the base models M1 for all four samples and were used as input for the MGA. In these MGAs, we compared a fully constrained invariant model M1 with two less constrained fully and partially non-invariant models M2 and M3 by means of the chi-square difference test (see **Table 4**).

For the Dutch sample, we found that M2 and M3 both had a better fit than M1 (invariant model) but that M3 was not better than M2. Hence, M2 (partially invariant) is the best model, and M2 also has the best practical fit indices. This outcome means that the pattern and strength of relations was not similar for younger and older Dutch nurses. **Figure 3** shows the path coefficients of younger and older Dutch nurses in M2. This figure shows ample differences between younger and older Dutch nurses. Physical demands relate to disability and emotional demands to burnout in the synchronous analysis for the older but not for the younger nurses (in line with Hypothesis 4). Surprisingly, the cross-lagged path between physical demands and disability is significant for younger nurses but not for the older nurses. Contradictory to Hypothesis 5, the quality of interpersonal relationships was not related to burnout, either for younger or for older nurses. In line with our expectations, psychological support appeared to be more strongly related to burnout for older nurses. Moreover, for both younger and older nurses, psychological support is related to job satisfaction, and meaning of work is related to institutional commitment (additional paths). In addition, for both younger and older nurses, psychological support is related to institutional affective commitment, but more so for older nurses. As regards Hypothesis 6, we found that influence at work was only significantly related to job satisfaction for older nurses but that meaning of work was more relevant for younger nurses. In addition, for both categories of nurses, especially for the younger ones, meaning of work was significantly and strongly related to institutional affective commitment (additional path). Hypothesis 7 could not be confirmed with our data, as opportunities for development did not relate to institutional commitment.

For the Polish sample, we found that M2 had a better fit than M1 (invariant model), but M3 did not. Hence, M2 (partially invariant) is the best model, and it also appeared to have the best practical fit indices on average (see **Table 4**). This means that the pattern and strength of relationships is not similar for younger and older Polish nurses (just as for the Dutch nurses). **Figure 4** shows the path coefficients of younger and older Polish nurses in M2. Contrary to the findings in the Dutch sample and in contradiction to Hypothesis 4, the relationships between the various types of demands, on the one hand, and disability and burnout, on the other hand, are stronger for the younger Polish nurses than for their older counterparts. In accordance with Hypothesis 5, we found the relationship between quality of interpersonal relationships and burnout to be stronger for older nurses, yet only in the synchronous paths. In case psychological support was the predictor, the cross-lagged paths indicated that older nurses benefit from more psychological support. In accordance with Hypothesis 6 (and the Dutch findings), influence at work was more important in the light of one's job satisfaction for older nurses synchronously. However, contrary to our expectations, meaning of work appeared to be more relevant for younger nurses in the prediction of job satisfaction (in line with the outcomes for their Dutch counterparts). In addition, for both young and old nurses, meaning of work was significantly and strongly related to institutional affective commitment (additional path). Hypothesis 6 was not confirmed for the cross-lagged paths. As regards Hypothesis 7, the results are a bit ambiguous: The synchronous path between opportunities for development and institutional affective commitment was stronger for older nurses (contrary to our expectations), while the cross-lagged path (over time) was stronger for younger nurses. For both younger and older Polish nurses, we found that the labor relations variables, that is, quality of interpersonal relationships and psychological support, were related to institutional commitment. So, for the Polish nurses, meaning of work and labor relations were more important in the light of institutional affective commitment than opportunities for development. **Table 5** provides a complete overview of the extent to which our hypotheses have been confirmed and the relationships that have been added.

DISCUSSION

Reflection Upon the Results

As the nursing profession comprises a highly demanding field, while at the same time suffering from a severe shortage of

TABLE 4 | Fit measures and chi-square difference tests of the nested models in the Multi-Group Analyses (young versus old) for the Netherlands and Poland.

	Chi-2 (df)	*Comparison*	*ΔChi-2 (df)*	*NFI*	*CFI*	*RMSEA*
THE NETHERLANDS						
M1 fully constrained invariant model[a]	364.583* (150)			0.876	0.917	0.040
M2 partially invariant[b]	326.647* (133)	M1-M2	37.936* (17)	0.890	0.927	0.039
M3 fully non-invariant model[c]	325.523* (130)	M2-M3	1.124 (3)	0.877	0.919	0.039
		M1-M3	39.06* (20)			
POLAND						
M1 fully constrained invariant model[a]	442.574* (148)			0.907	0.934	0.039
M2 partially invariant model[d]	414.643* (131)	M1-M2	27.931* (17)	0.912	0.936	0.040
M3 non-invariant model[c]	413.405* (128)	M2-M3	1.238 (3)	0.913	0.936	0.041
		M1-M3	29.142 (20)			

*$p < 0.05$. [a]*All hypothesized and additional paths were specified as invariant for both young and old.* [b]*All hypothesized and additional paths were set free for both young and old. The path between psychological support and job satisfaction T0 and the paths between opportunities for development and institutional commitment T0 and T1 were specified as invariant.* [c]*All hypothesized and additional paths were set free for both young and old.* [d]*All hypothesized and additional paths were set free for both young and old. The paths between psychological support and job satisfaction/institutional commitment T0 and the path between influence at work and job satisfaction T1 specified as invariant.*

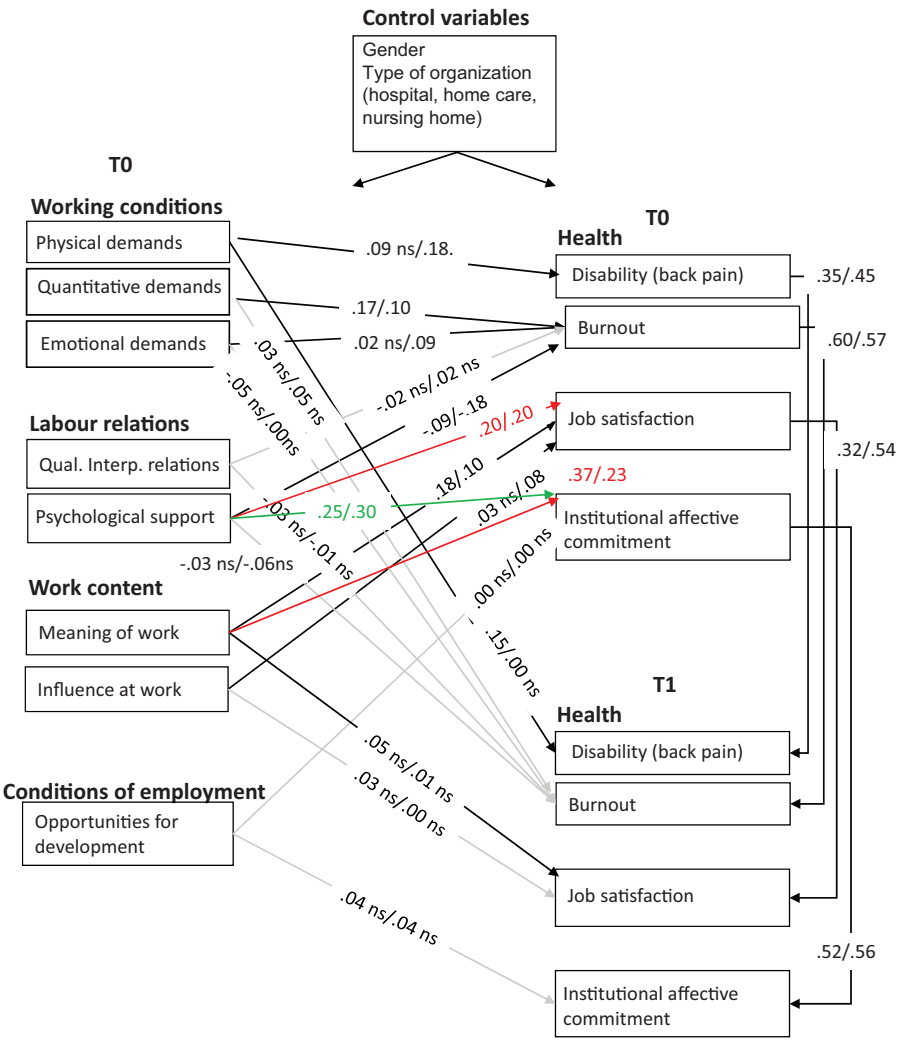

FIGURE 3 | Path coefficients young/old M2 MGA the Netherlands. Red paths were added for both younger and older nurses based on modification indices; green path was added based on modification index in older nurses' sample; gray paths indicate non-significance for both age groups; n.s. implies non-significance for one age group; model fit for younger and older nurses appears to be good after having added these paths.

workers, this study focused on the impact of work characteristics and nurses' experiences that were supposed to be of essential importance to maintain the sustainable employability of nurses throughout the life span. Four categories of work characteristics were taken into account – (1) working conditions, (2) labor relations, (3) work content, and (4) conditions of employment – and we examined their associations with nurses' health, satisfaction, and commitment.

From a theoretical point of view, our study builds on and elaborates the model of Houkes et al. (2001). Despite being coined almost 20 years ago, we contend that this model has yet to receive the empirical attention it deserves. In contrast to popular models, such as the model for Work, Stress, and Health (Kompier and Marcelissen, 1990; Kompier and Di Martino, 1995), the DCS model (Johnson and Hall, 1988; Karasek and Theorell, 1990), and the ERI model (Siegrist, 1996), the model of Houkes et al. (2001) allows for a further differentiation of demanding and resourceful job characteristics and for studying their unique impact on various aspects of employee functioning. Our results confirm the earlier findings of Houkes et al. (2001, 2003) in different samples and confirm that more accurate predictions regarding the relationships between a relevant range of work characteristics and outcome variables are possible. This allows for the refinement of well-known job design models and more concrete practical recommendations tailored to the problems at hand, as will be discussed below.

In addition, building upon SOC theory and SST, we investigated whether the pattern of relationships is different for younger (<40 years) versus older (≥40 years) nurses. As in previous scholarly work (see, for instance, Kuokkanen et al., 2003; Vahey et al., 2004), age is often included as a covariate or confounder. Our findings show that such practices may mask important differences in the relationships

TABLE 5 | Overview of confirmation of hypotheses tested (cross-sectional; cl = cross-lagged confirmation as well; ns = not significant).

	Hypothesis	NL	POL	Added relationships (not hypothesized)
1	*Health is predicted by working conditions and labor relations:*	*Largely confirmed*	*Largely confirmed*	–
	- Quantitative demands = > burnout	Confirmed	Confirmed	
	- Emotional demands = > burnout	Not confirmed (ns)	Only cl	
	- Physical demands = > disability	Confirmed (cl)	Confirmed	
	- Quality of interpersonal relations = > burnout	Not confirmed (ns)	Not confirmed (ns)	
	- Psychological support = > burnout	Confirmed	Confirmed (cl)	
2	*Job satisfaction is predicted by work content:*	*Confirmed*	*Largely confirmed*	Psychological support (NL and POL)
	- Meaning of work = > satisfaction	Confirmed (cl)	Only cl	
	- Influence at work = > satisfaction	Confirmed	Confirmed (cl)	
3	*Institutional affective commitment is predicted by conditions of employment:*	*Not confirmed*	*Confirmed*	Psychological support (POL)
	- Opportunities for development = > commitment	Not confirmed (ns)	Confirmed	Meaning of work (NL and POL)
4	*Age impacts the relationship between working conditions and health such that the positive relationship between quantitative and emotional demands and nurses' burnout, and the positive relationship between physical demands and nurses' disability are stronger for older compared to younger workers:*	*Largely confirmed*	*Not confirmed*	–
	- Quantitative demands = > burnout	Not confirmed (relationship is stronger for younger nurses)	Not confirmed (relationship is stronger for younger nurses)	
	- Emotional demands = > burnout	Confirmed	Not confirmed (relationship is ns for older nurses)	
	- Physical demands = > disability	Confirmed (not cl)	Not confirmed (relationship is stronger for younger nurses)	
5	*Age impacts the relationship between labor relations and health such that the positive relationship between the quality of interpersonal relations and psychological support, on the one hand, and nurses' burnout on the other hand, is stronger for older compared to younger workers:*	*Partially confirmed*	*Partially confirmed*	–
	- Quality of interpersonal relations = > burnout	Not confirmed (relationship is ns for both young and old)	Confirmed	
	- Psychological support = > burnout	Confirmed	Not confirmed (relationship is somewhat stronger for younger nurses)	
6	*Age impacts the relationship between work content and job satisfaction such that the positive relationship between meaning of work and influence at work with nurses' job satisfaction is stronger for older compared to younger workers:*	*Partially confirmed*	*Partially confirmed*	Psychological support (NL and POL):
	- Meaning of work = > satisfaction	Not confirmed (relationship is stronger for younger nurses)	Not confirmed (relationship is stronger for younger nurses)	- Equally strong for young and old
	- Influence at work = > satisfaction	Confirmed	Confirmed	
7	*Age impacts the relationship between conditions of employment and institutional affective commitment such that the positive relationship between opportunities for development and institutional affective commitment is weaker for older workers:*	*Not confirmed*	*Not confirmed*	Psychological support (NL and POL): - NL: stronger for old - POL: equally strong for young and old
	- Opportunities for development = > commitment	Not confirmed (relationship is ns for both young and old)	Not confirmed (relationship is stronger for older nurses)	Quality of interpersonal relations (POL): - Stronger for old Meaning of work (NL and POL): - stronger for young

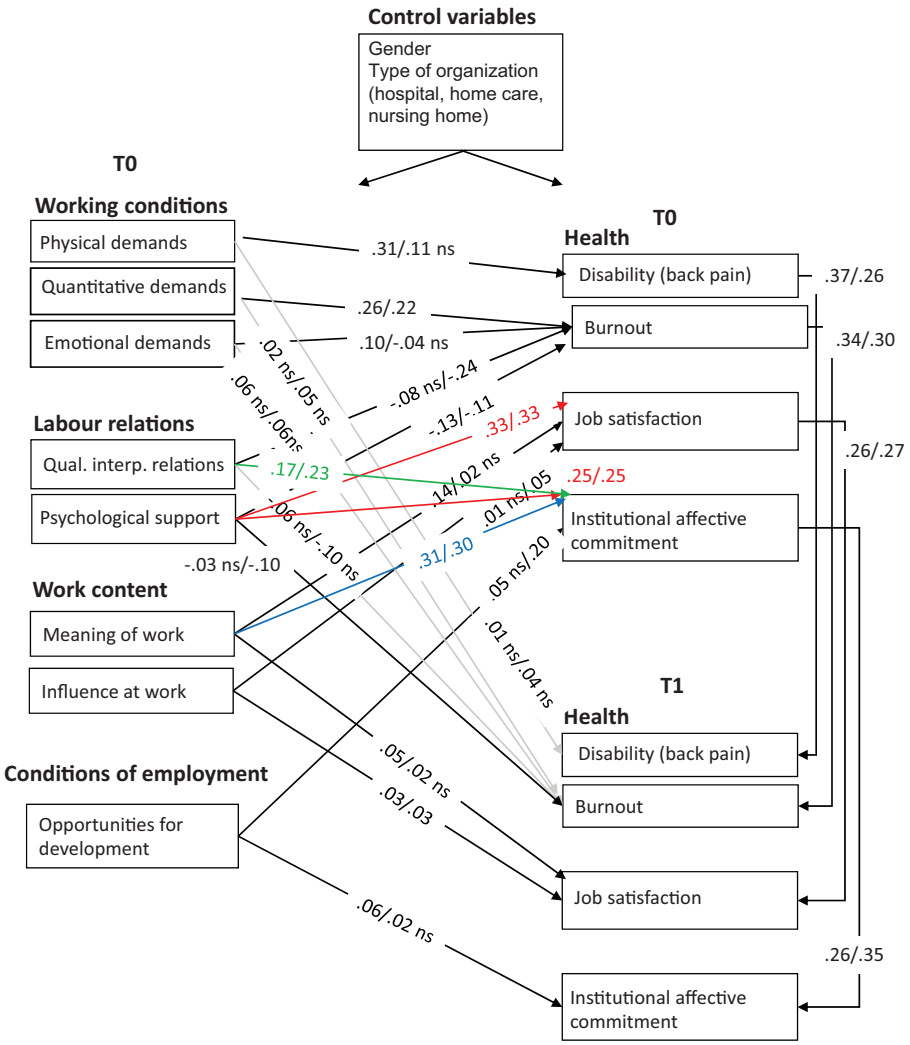

FIGURE 4 | Path coefficients young/old M2 MGA Poland. Red paths were added for both younger and older nurses based on modification indices; blue path was added based on the modification index in younger nurses' sample; green path was added based on the modification index in older nurses' sample; gray paths indicate non-significance for both age groups; n.s. implies non-significance for one age group; model fit for younger and older nurses appears to be good after having added these paths.

between work characteristics and outcomes for different age groups and, hence, may limit our theoretical understanding of the impact of work across the life span and the practical recommendations that flow from it. An important contribution of this work is thus that it moves the empirical research on aging at work forward and sheds further light on how age should be taken into account in the job design literature (Schreurs et al., 2012).

A third contribution of this research is that we add to the domain of comparative career research (Thomas and Inkson, 2007), by investigating nurses who are working in Dutch and Polish healthcare institutions. Given the differences in outcomes between the two countries, we argue that the influence of economic, legal, and political characteristics of a society, in relation to the nursing field, should not be ignored by important stakeholders, as they do have an effect on attitudes, beliefs, perceptions, and expectations that people have about work characteristics and their outcomes (Thomas and Inkson, 200).

From our empirical model testing, we may conclude that for both the Dutch and the Polish nurses, our proposed pattern of relationships between work characteristics and outcome variables was generally supported, although we had to add several paths to achieve a better model fit for both countries' samples. These study results are in line with previous empirical studies among nurses that focused on one of the three outcome variables (e.g., Estryn-Behar et al., 2007; Toode et al., 2011; Van der Heijden et al., 2017; Li et al., 2018; Lu et al., 2019).

More specifically, as regards Hypothesis 1 and in line with Houkes et al. (2001), we found health (burnout) to be primarily predicted by working conditions (i.e., quantitative job demands) and labor relations (i.e., psychological support). Emotional demands [not included in the studies by Houkes et al. (2001)]

appeared to be unrelated to burnout among both Dutch and Polish nurses. It might be that this professional group is well able to deal with the emotional demands that are an integral and probably anticipated part of their work. The significant relationship between physical demands and disability (not studied by Houkes and colleagues) shows – in line with the Demand-Induced Strain Compensation (DISC) model by De Jonge et al. (2008) – that particular types of job demands relate to matching health outcomes, which may be an important addition to the model of Houkes et al. (2001).

Pertaining to Hypothesis 2, job satisfaction appeared to be related with work content (i.e., influence at work). The relationship between the other indicator of work content (i.e., meaning of work) appeared to be less relevant for nurses' job satisfaction in both countries. This may be due to the relatively high mean score and low variance on meaning of work in both countries, leading to ceiling effects: Meaning of work may be so salient for this professional group that a further increase in meaning of work does not lead to an increase in job satisfaction. Next to work content, labor relations (i.e., psychological support) also appeared to be an important predictor of job satisfaction in the current study. Job satisfaction is a broader motivational outcome than mere intrinsic motivation, which was the focus in the study of Houkes et al. (2001), which may explain why this additional relationship was found.

Finally, as regards Hypothesis 3, the relationship between conditions of employment (i.e., opportunities for development) and institutional affective commitment was significant for the Polish nurses but not for the Dutch ones. Interestingly, however, for both the Netherlands and Poland, we found meaning of work to be related to institutional affective commitment, and this relationship was even stronger than the relationship between conditions of employment and institutional affective commitment. Apparently, nurses may be committed to their work because they can perform meaningful work, and less so because of personal development goals. This stresses the importance of this factor in the light of protecting nurses from prematurely leaving the organization or even their profession as a whole.

Comparing the younger and older nurses (Hypotheses 4–7), we found ample support for our assumption that the hypothesized relationships might be impacted by age. In particular, age seemed to moderate the relationship between working conditions and health (Hypothesis 4), yet results were different in the Dutch compared to the Polish sample. In particular, in the Netherlands, physical demands are associated with older nurses' disability (synchronous analysis). Yet, as regards the analysis over time, it appears that only for the younger nurses, the higher the amount of physical demands, the higher their disability. Emotional demands go together with more burnout for the older nurses (synchronous analysis). Surprisingly, younger nurses experienced more health issues due to poor working conditions compared to older workers in Poland, but emotional and physical demands were more problematic for older workers in the Netherlands, although the latter could not be confirmed when considering the analyses over time. Such findings could be in line with theories on aging, but it is not easy to explain why these relationships differ across countries and were not stable across cross-sectional and longitudinal analysis. We therefore suggest taking into account multi-wave approaches to better disentangle these findings.

As regards the impact of age on the relationship between labor relations and health (Hypothesis 5), we found support for a stronger negative association between quality of interpersonal relationships and burnout for older nurses, yet only in Poland. For the Dutch nurses, psychological support appeared to prevent burnout and, in line with our expectations, indeed more so for the older ones.

We also found some support that age impacts on the relationship between work content and job satisfaction (Hypothesis 6). Across samples, influence at work was more strongly related to job satisfaction for older than for younger nurses. This indicates that older employees benefit relatively more from having a voice in the work context, while this is less relevant for younger workers. As regards meaning of work, it appeared that, in particular for younger nurses, this entails more job satisfaction.

Overall, across the Dutch and Polish samples, we found no impact of age on the relationship between conditions of employment and commitment in the hypothesized direction (Hypothesis 7).

Limitations of the Study and Recommendations for Future Research

This study has some limitations. First, all data were collected using surveys, herewith opening the possibility of response set consistencies. Moreover, as we used self-report measures for both the predictor variables and the outcomes, a common-method bias may exist (Doty and Glick, 1998; Podsakoff et al., 2003). Another limitation comprises the possibility of chance capitalization, given the large amount of relationships tested. However, we have tried our utmost to prevent this by testing the model relationships simultaneously. Future research wherein data on both nurses' self-assessments and supervisors' assessments are gathered to compare their perceptions on the work characteristics might be interesting. In addition, as we focused specifically on nurses, our empirical findings are highly relevant for this particular professional group. Also, to increase generalizability across healthcare settings, nurses were sampled across hospitals, nursing homes, and home care institutions. Future research might be aimed at cross-validation at different professional settings and/or to other countries. In addition, personality characteristics may moderate the effect of work characteristics on health, job satisfaction, and organizational commitment. More scholarly work is needed, for instance, using the "Big Five" (Costa and McCrae, 1992) in order to gain more insight into possible moderating effects. It is also important to continue empirical work in this field to better understand the possible impact of age, using different cutoff points, such as 50 or 55 years of age [cf. Armstrong-Stassen and Schlosser (2008) who found that job development climate played an important role in the retention of workers older than 50 years old]. We also recommend future research incorporating different age

conceptualizations to shed more light on the possible role of age [see, for instance, the categorization by Sterns and Doverspike (1989) into chronological age, functional or performance-based age, psychosocial or subjective age, organizational age, and the concept of life span age]. Other factors that may have predictive validity in the light of nurses' health, satisfaction, and commitment, such as leadership style, work–family interference, rostering, shift work, positive and negative affectivity, effort–reward imbalance, to mention but a few appealing ones, should be taken into account in future empirical work as well.

Last but not least, we recommend expanding the impact of work characteristics on nurses' health, satisfaction, and commitment to patient-related outcome variables such as medical errors and patient experiences and satisfaction. It was the primary aim of this study to get more insight into specific determinants of employee well-being, but in the context of healthcare, it seems relevant to study the impact of these work characteristics on patient satisfaction as well.

Implications for Practice

This study has increased our insights into the impact of work characteristics on key outcomes in the nursing profession. All in all, this empirical work indicates that managers in healthcare institutions have to pay careful attention to the working conditions, labor relations, and employment conditions in order to protect nurses' health, motivation, and career decisions. First, our results point out that depending on the most prevalent problems in their particular organization (health issues, motivational problems, or commitment issues), managers could focus on particular work characteristics. In general, our results point out that in the case of burnout, managers should primarily focus on lowering quantitative demands, for example, through preventing too-high levels of demands that are increasing nurses' workload, by reorganizing work, through job crafting (Parker et al., 2017b), or by increasing psychological support, for example, through encouraging and supporting fruitful interpersonal relationships on the work floor (Jungert et al., 2018). When satisfaction is low, the focus should furthermore be on increasing employee influence, for example, by enabling nurses to participate in decision-making and governance arrangements (Uchiyama et al., 2013). In general, the results thus indicate that managers have to protect their nurses from a too-high amount of quantitative, emotional, and physical demands and have to ensure that there is enough room for nurses' influence at the workplace. This study also stresses the importance of meaningful work, not only in the light of the added value for nurses' job satisfaction but, in particular, given its unexpected impact in the light of nurses' commitment. Managers in healthcare institutions can furthermore increase nurses' job satisfaction by providing ample psychological support. Psychological support is found to be important in the light of combatting burnout symptoms but also increases one's job satisfaction. Our findings support the importance of one's direct supervisor in the light of sustainable career theory (Van der Heijden and De Vos, 2015). Overall, nurses seem to have chosen their profession mainly because they want to do meaningful work and less so because of the opportunities for further development. Therefore, we argue that managers in healthcare organizations who want to foster passion at work and who supervise nurses for whom emotional demands and helping other people can even be a challenge instead of a burden (Bakker and Sanz-Vergel, 2013) should offer employees meaningful work and promote work valuation (Vallerand and Houlfort, 2003).

Second, apart from this generic advise, our results also clearly point to the importance of generating more in-depth understanding of the relationships between work characteristics and nurses' health, job satisfaction, and commitment in one's particular context, both in terms of the age of the staff and country. This implies that within each context, managers should allow for a thorough assessment of the work characteristics and functioning of their staff and the relations between them before considering particular interventions. Hence, we stress the importance of a non-normative, tailor-made approach to aging at work, herewith doing justice to idiosyncrasy (Van der Heijden and De Vos, 2015) in order to protect and further the career sustainability of all workers across the life span.

CONCLUSION

To conclude, the results of this study can be translated into further clear recommendations for management in healthcare settings. Management should invest in the attractiveness of the profession and the quality of the practice environment aimed at the inclusion and retention of nurses across the life span. To improve nurses' health, satisfaction, and commitment, they should pay attention to the working conditions, labor relations, work content, and employment conditions.

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics committee, University of Wuppertal. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

BV, IH, and AV worked on design, modeling and analyses, and writing. KC worked on writing. All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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An Open Time Perspective and Social Support to Sustain in Healthcare Work: Results of a Two-Wave Complete Panel Study

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Based on lifespan developmental psychology and psychosocial work characteristics theory, we examined longitudinal relations between calendar age, occupational time perspective, different types of job demands and job resources in relation to sustainable employability (i.e., work ability, vitality and employability) among healthcare workers in Netherlands (N = 1478). Results of our two-wave complete panel study revealed satisfactory fit indices for the metric invariance of the included variables across the two waves (6-month time lag). Our results revealed a negative relation between calendar age and external employability of healthcare workers (limited support for hypothesis 1), and more consistent evidence for positive relations between an open future time perspective and across-time changes in vitality, work ability and external employability (supporting hypothesis 2). Few significant findings were found for relations between specific job demands or job resources and indicators of sustainable employability of healthcare workers (mixed results hypotheses 3 and 4). Our explorative tests of possible moderating effects of age or occupational time perspective in predicting relations between psychosocial work characteristics and indicators of sustainable employability revealed only a significant interaction effect of supervisor support and future time perspective in explaining across-time changes in external employability of healthcare workers (rejecting hypothesis 5 and confirming hypothesis 6). We discuss the practical as well as theoretical implications of these findings, and present recommendations for future research.

Keywords: future time perspective, longitudinal research, psychosocial work characteristics successful aging at work, sustainable employability, work ability

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INTRODUCTION

Within the healthcare sector in the Western society, various labor market trends have the potential to impact the quality of healthcare provided by available staff. One of the most important trends and developments among them are the graying, as well as dejuvenation of the available workforce, resulting in an overall decreasing number of healthcare staff (Herkes et al., 2019; Prins et al., 2019).

Furthermore, a growing number of patients with health problems make use of the healthcare sector, implying increased numbers of patients and work pressure for the aging group of healthcare staff in coming years (Van Dam et al., 2017; Teoh et al., 2019). Consequently, work in healthcare is characterized by high levels of physical, emotional and mental demands, making the work quite taxing and stressful (Tomietto et al., 2019).

As a result, an increasing percentage of healthcare workers report serious mental health problems (Nonnis et al., 2017; Herkes et al., 2019) and find it more difficult to continue working in their profession until the official retirement age. Some of these healthcare workers decide to leave their job and transfer to another sector to find less demanding work (Boumans et al., 2008). While the need for healthcare workers increases, the number of workers is therefore likely to decline owing to the increased workload and decreased work ability of healthcare workers. This situation is urgent for healthcare organizations and society at large and it is imperative to identify factors that can facilitate the sustainable employability of healthcare workers to prolong their careers within healthcare (e.g., De Lange et al., 2015; Osagie et al., 2019).

Fortunately, a growing number of studies focuses on the antecedents of successful aging at work and sustainable employability to prolong working lives of workers in different sectors (e.g., De Lange et al., 2015; Kooij, 2015). Several definitions of successful aging have been presented in earlier research. For example, Zacher et al. (2018a) state that employees age successfully at work if they sustain the same level or deviate in increasingly positive ways from average developmental trajectories in subjective and objective work outcomes (i.e., work ability) across the working lifespan and maintain a person-job fit across time (Kooij, 2015; Zacher, 2015). More recently, De Lange et al. (2020) stated that successful aging refers to the fact that employees can pro-actively recover and improve over time through self-management, skills and actions, and with support or interventions from the work environment.

Considering new research on successful aging at work, De Lange et al. (2020) emphasize that more research can include the influence of individual difference variables that are related to aging, like an open future time perspective, to better explain developments in worker outcomes across time. This is in line with suggestions of Zacher et al. (2018a), who noted that the current body of research on successful aging at work has not yet examined the influence of individual difference variables like the experienced future time perspective in predicting sustainable employability of workers across time (Weigl et al., 2013; Baltes et al., 2014; Pak et al., 2018).

Furthermore, only a few studies on sustainable employability have been conducted in healthcare settings and no longitudinal study to date has been conducted on the influence of future time perspective in relation to sustainable employability of healthcare workers (Rudolph et al., 2018; Zacher et al., 2018a). Such insights are crucial to better understand the underlying mechanisms in successful aging and sustainable employability of healthcare workers. Increased insights in the influence of individual difference variables like time perspective will enable employers to stimulate successful aging more effectively and better intervene if necessary.

The current study is the first multi-wave study that aims to overcome the aforementioned research gaps by formulating and testing new theory-based hypotheses for relations between aging, time perspective and indicators of sustainable employability in healthcare work. As a result, the results of this new two-wave complete panel study can provide new insights into the question on how to better sustain aging workers in healthcare. Before we present the hypotheses of our study, we will first pay attention to the concepts and related theories addressing the topic of sustainable employability, the factor of time perspective and the influence of psychosocial work. We will start with describing the indicators of sustainable employability.

Sustainable Employability: Vitality, Work Ability, and Employability

Sustainable Employability

Several important aspects of sustainable employability have been distinguished by social partners (SER, 2009) and researchers (De Lange et al., 2015; De Vos and Van der Heijden, 2015; Semeijn et al., 2015; Van der Klink et al., 2016; Van Dam et al., 2017). These aspects include: (i) work ability (Ilmarinen, 2007), (ii) vitality (Schaufeli et al., 2006; Bakker and Demerouti, 2017), and (iii) employability (Fugate et al., 2004; Van der Heijde and Van der Heijden, 2006). These aspects of sustainable employability relate to human strengths, health, and motivation in organizations and are considered essential for employees to sustain their performance at work (Semeijn et al., 2015; Van Dam et al., 2017).

More specifically, work ability represents the health component of sustainable employability, and is defined as the extent to which one is physically and mentally able to keep performing one's job now and in the future (Ilmarinen et al., 2005; Ilmarinen, 2006, 2007; Van Vuuren, 2012). Furthermore, vitality represents the motivational component of sustainable employability and is characterized by high levels of energy and mental resilience while working, and the willingness to invest effort in one's work, and persist even in the face of difficulties (Schaufeli et al., 2006). Within the Job Demands-Resources model (JD-R), vitality is an important component of work engagement (Bakker and Demerouti, 2017; Bakker, 2018; Bakker et al., 2019).

Employability refers to the individuals' opportunity to retain or find work inside and outside of the current organization (Van Dam et al., 2017; Van der Heijde and Van der Heijden, 2006). Although the opportunity to retain or find work might depend on labor market characteristics, it is generally noted that individuals' characteristics, such as their abilities, skills, and knowledge, contribute to employability and labor market participation (Berntson et al., 2006; Semeijn et al., 2015).

Sustainable Employability and Aging Healthcare Workers

Healthcare workers' sustainable employability is likely to decline when they age. Although individual differences may exist, the aging process of employees is generally accompanied by decreases in physical and mental capacities (Ilmarinen, 2006; Truxillo

et al., 2015; Van der Mark-Reeuwijk et al., 2019). As the work demands in healthcare will further increase in the future, healthcare workers may be faced with even more mental or physical health challenges and thus with lowered work ability. Similarly, vitality and employability may also diminish over time. Organizations are often inclined to provide older employees with fewer learning opportunities, job changes, and challenging task assignments compared to younger employees (Furunes and Mykletun, 2010; Truxillo et al., 2015). This might relate to some persistent stereotypes as well as the risk of self-stereotyping concerning older workers' learning motivation and capabilities, and their openness toward change (Kanfer and Ackerman, 2004; Ng and Feldman, 2012; Finkelstein et al., 2013). Therefore, older workers can find themselves stuck in repetitive jobs with little learning potential, which may undermine their employability and motivation (Truxillo et al., 2012; Van Dam et al., 2017). Moreover, older employees often perceive fewer labor market opportunities, which can lower their employability perceptions (Rothwell and Arnold, 2007).

Previous studies have indeed found negative relationships between calendar age and the three aspects of sustainable employability (see for example Ilmarinen, 2007; Monteiro et al., 2006; Van den Berg et al., 2009; Van Dam et al., 2017). For instance, Ilmarinen (2007) observed differences in the development of work ability in different age groups and different types of occupations. Studying workers in a public health institution, Monteiro et al. (2006) found that higher age, lower education (i.e., employability), and long work history in the organization were associated with reduced work ability. Van Dam et al. (2017) observed that older employees generally reported lower employability, while only those who had challenging and rewarding jobs reported similar employability levels as their younger colleagues. Similarly, Van Vuuren et al. (2011) found that work ability and employability generally declined with age, while this effect did not occur for those employees who were provided with ample opportunities for formal and informal learning (see also Van der Heijden et al., 2015). Based on these studies, we expect to find negative relations between calendar age and indicators of sustainable employability (i.e., vitality, work ability, and employability; *Hypothesis 1*). Another important individual difference variable is future time perspective.

Socioemotional Selectivity Theory and Future Time Perspective: Concepts and Theory

Socioemotional Selectivity Theory (SST theory; Carstensen, 2019) describes the motivational consequences of a changing "temporal horizon" as people age. According to SST theory individuals will select goals in accordance with their perceptions of the future as being limited or open-ended (Lang and Carstensen, 2002). More specifically younger people perceive time as open-ended (holding a "time since birth" perspective) and will therefore be especially motivated by growth or knowledge-related goals (new information or social interactions) that may be useful in their future. In contrast, older people perceive time as a constraint (holding a "time till death" perspective) and will be more motivated by achieving short-term emotion-related goals, such as deepening one's existing social relations. As such, future time perspective appears an important precursor of workers' goal striving and self-management at work and is therefore an important individual factor to consider in terms of successful aging and sustainable employability. Studies have found consistent negative associations between an open occupational future perspective and calendar age as well as positive associations with work outcomes like continuance work motivation (Lang and Carstensen, 2002; Schmitt et al., 2013; Rudolph et al., 2018). In short, the socioemotional selectivity theory has received empirical support in many experimental as well as field studies (Henry et al., 2017; Rudolph et al., 2018). The results of this body of research indicates that especially an open occupational time perspective is associated with indicators of sustainable employability. In this study we will test whether this hypothesis is true for healthcare workers. Moreover, we will test whether this association holds over time. That is, whether future time perspective can predict across-time changes in sustainable employability of healthcare workers (*Hypothesis 2*).

Psychosocial Work Characteristics

Zacher et al. (2018b) stress the importance of paying attention to the pivotal role of psychosocial work characteristics in explaining developments in sustainable employability of aging workers across time (see also Truxillo et al., 2015). According to the Job Demands-Resources (JD-R) model (Bakker and Demerouti, 2017; Bakker, 2018) psychosocial work characteristics can best be measured by a combination of job demands and job resources. Job demands refer to "physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs" (Bakker and Demerouti, 2017, p. 312). Examples of job demands are physical or mental demands or workload. Job resources are defined as the "physical, psychological, social, or organizational aspects of the job that are either/or functional in achieving work goals, reduce job demands and the associated physiological and psychological costs and stimulate personal growth, learning, and development" (Bakker and Demerouti, 2017, p. 312). Examples of job resources are pay, supervisor support, and autonomy. The JD-R model (Bakker and Demerouti, 2017; Vagharseyyedin, 2016; Bakker, 2018) suggests that job demands have a negative effect on employee outcomes as they trigger a health impairment process; having too much job demands deplete one's personal resources and lead to exhaustion. Job resources, on the other hand, have a positive effect on work outcomes as they trigger a motivational process (Bakker, 2018). More recently, Pak et al. (2018) also confirmed these findings in their systematic review of 110 empirical studies examining relations between job characteristics and indicators of sustainable employability. As a consequence, we expect to replicate these results in this new longitudinal study among healthcare workers, and hypothesize that job demands will have a significant negative relation with indicators of sustainable employability (*Hypothesis 3*), and job resources will have a

positive relation with indicators of sustainable employability (*Hypothesis 4*).

Interaction Effects Age-Related Variables, Job Demands, Job Resources

Previous studies suggest that individual factors and contextual factors interact in determining work behavior and outcomes (Johns, 2006; Withagen et al., 2012). Therefore, it is possible that calendar age and occupational future time perspective, in addition to their direct impact, will moderate the relationships between the psychosocial work characteristics and indicators of sustainable employability (Zacher and Schmitt, 2016). Healthcare workers' age might be especially relevant for the impact of job demands. As workers age, their psychological and physical resources may decline while their ability to recover is reduced (Kiss et al., 2008; Truxillo et al., 2015). As such, the impact of high job demands will be larger for older workers than for younger workers. This will be especially true for healthcare professionals who are faced with high emotional and physical demands. Research provides general support for an interaction effect of age with work characteristics on workers' well-being, vitality, and employability (Zacher and Schmitt, 2016; Van Dam et al., 2017). Therefore, it is expected that the negative relationships of job demands with sustainable employability are stronger for older workers than for younger workers (*Hypothesis 5*).

Similarly, future occupational time perspective might moderate the relationships of job resources with sustainable employability, such that job resources will contribute more to sustainable employability for those healthcare workers with an open future time perspective (*Hypothesis 6*). This is in line with SST's claim that future time perspective is an important precursor of workers' goal striving and self-management at work. Only a few studies have focused on a possible moderating role of future time perspective. For instance, Schmitt et al. (2013) found that future time perspective moderated the relationship of autonomy with work engagement.

Summarizing, we will test the following hypotheses in this two-wave complete panel study among healthcare workers:

- Hypothesis 1: Calendar age is negatively related to indicators of sustainable employability (i.e., vitality, employability, and work ability).
- Hypothesis 2: Future time perspective is positively related to indicators of sustainable employability (i.e., vitality, employability, and work ability).
- Hypothesis 3: Job demands (i.e., workload, physical demands, emotional demands, and mental demands) are negatively related to indicators of sustainable employability (i.e., vitality, employability, and work ability).
- Hypothesis 4: Job resources (i.e., autonomy, supervisor support, and colleague support) are positively related to indicators of sustainable employability (i.e., vitality, employability, and work ability).
- Hypothesis 5: Calendar age moderates the relations between job demands (i.e., workload, physical demands, emotional demands, and mental demands) and indicators of sustainable employability of healthcare workers (i.e., vitality, employability, and work ability).
- Hypothesis 6: Future time perspective moderates the relations between job resources (i.e., autonomy, supervisor support, and colleague support) and indicators of sustainable employability of healthcare workers (i.e., vitality, employability, and work ability).

MATERIALS AND METHODS

Design of the Study and Procedure

This study is embedded in a larger research project among 25 healthcare institutions in Netherlands, referred to as "the Healthy Healthcare project" that emphasizes a system-based understanding of the interrelation between organizational structure, workers health and quality of patient care. Within this project, data was collected longitudinally using a questionnaire at T1 and T2 with a mean time lag of 6 months (i.e., a panel design). This length of time lag is in line with the recommendations of Dormann and Griffin (2015) of a relatively short time lags in survey research focusing on psychosocial work characteristics and worker outcomes. Moreover, a time lag of 6 months was considered appropriate as previous studies have demonstrated that the outcomes included in this study can fluctuate in rather short periods (De Lange et al., 2004; Zacher et al., 2014; Akkermans et al., 2019; Rudolph and McGonagle, 2019; Rudolph and Zacher, 2020). The first questionnaire (T1) was sent to the participants between November 2017 and the end of January 2018, the second questionnaire (T2) between June 2018 and the middle of August 2018.

Sample

The 25 healthcare institutions included in this study mainly focused on elderly care, care for the disabled and home care, but also included facilities for addiction treatment, youth services, mental health care and home care. The final sample consists of the 1478 employees from these institutions who completed the questionnaire at both the first (T1; 2967 of 6866 employees, response rate = 39.3%) and the second measurement moment (T2; 2132 employees, follow-up response rate = 71,9%). M_{age} = 46.8 years (*SD* = 11.06 years), range = 18–58 years, with most respondents being female (84%, *n* = 1242), with fixed contracts (89.6%, *n* = 1325). Vocational education (37.8%, *n* = 558) and a bachelor's degree (35.7%; *n* = 527) were the most common education levels. 779 employees held a healthcare position (52.7%) with the remainder working in a leadership or support functions. Caregiver was the most common job category (15.1%), followed by leader (6.9%), nurse with a vocational degree (6.4%), and pedagogical employee (5.1%).

Measures

Work Ability

The Work Ability Index (WAI; Ilmarinen, 2006) was used to measure *work ability*. The WAI consists of seven constructs (60 items in total): i.e., (1) current work ability, (2) work ability in relation to the physical and mental demands of the job,

(3) current diseases, illnesses, and injuries, (4) limitations due to diseases, illnesses, and injuries, (5) sick leave, (6) future expectation of work ability, and (7) mental resources. Although work ability is measured as a multidimensional construct with the WAI, it is mainly employed as a unidimensional construct in most studies and in practice, and the healthcare practice in Netherlands in particular (see Osagie et al., 2019 for a review). So, for comparison and recognition reasons, we will also address it as a unidimensional construct in the current study. An example item from the WAI is "*Assume that your work ability at its best has had a value of 10. How many points would you give your current work ability*?" Scores on each dimension were summed, with a minimum score of 7 and a maximum score of 49. In our sample, work ability scores ranged from 14.5 to 49 at T1 and from 12 to 49 at T2 with a median of 42 at both time points.

Vitality

Vitality was measured with three items of the shortened Utrecht Engagement Scale (Schaufeli et al., 2006). Items were measured on a six-point Likert scale ranging from 'never' (1) to 'daily' (6). An example item is "*At my work, I feel bursting with energy.*"

Internal and External Employability

Internal and external employability were measured with the eight items scale of De Cuyper and De Witte (2008) using a five-point Likert scale ranging from 'completely disagree' (1) to 'completely agree' (5). Four items covered *internal employability* (An example item: "I am able to get different jobs with my current employer") and four items covered *external employability* (An example item: "I would be able to find a different, equivalent job").

Job Demands and Resources

Job demands were measured with four scales from the VBBA (Van Veldhoven and Meijman, 1994) at the first and second measurement moment. *Physical demands* were measured with three items (an example item: "Does your work require physical strength?") *mental demands* (an example item: "Do you have to work very precisely?") with four items, *emotional demands* with five items (an example item: "Is your work emotionally demanding?"), and *workload* with six items (an example item: "Do you need to rush at work?"). All items were measured on a four-point scale ranging from 'always' (1) to 'never' (4) and recoded in the opposite direction to facilitate interpretation.

Job Resources

Job resources were measured with three scales of the VBBA (Van Veldhoven and Meijman, 1994) at the first and second measurement moment. *Autonomy* was measured with four items (an example item: "Can you organize your work yourself?"). *Colleague support* (an example item: "If necessary, can you ask your colleagues for help?") and *supervisor support* (an example item: "If necessary, can you ask your direct guidance for help?") were each measured with six items. All items were measured on a four-point scale ranging from 'always' (1) to 'never' (4) and recoded in the opposite direction to facilitate interpretation.

Future Time Perspective

Occupational future time perspective was measured with a six item scale developed by Zacher and Frese (2009) which is an adaptation of the future time perspective scale of Carstensen and Lang (1996). An example item is 'Many opportunities await me in my occupational future.' Items were measured on a five-point Likert scale ranging from 'does not apply at all' (1) to 'applies completely' (5).

Calendar Age

Age was measured at the first measurement moment as a continuous variable.

Analyses

We conducted hierarchical regression analyses to test our hypotheses using M-Plus (version 8; see **Table 3** through 6) because we aimed to predict changes in sustainable employability through the selected individual factors and work characteristics and because our hypotheses were in part explorative (e.g., the interaction hypotheses) in nature (cf. Bollen and Pearl, 2013). In the first models the control variables (i.e., the outcome variables at the first measurement moment) were included. Next, because, as mentioned before, one's work behavior is influenced by both individual factors and contextual factors simultaneously (Johns, 2006; Withagen et al., 2012) we included both sets of variables (with workers' experiences of job demand and job resources as a proxy for contextual factors) in the second models. In the final models (the third model to be tested) the interaction terms of job demands with age, job demands with future time perspective, job resources with age and job resources with future time perspective were added. This allowed us to examine the effects of the predictors as they occur in practice, namely interrelated and simultaneously.

RESULTS

To examine whether the different variables in this study captured different constructs, confirmatory factor analyses were conducted for the variables included in this study using M-Plus (version 8). In line with the recommendations of Hu and Bentler (1999) we used multiple fit indices, including the chi-square test ($\Delta\chi^2$), comparative fit index (CFI; Bentler, 1990), Tucker-Lewis Index (TLI; Tucker and Lewis, 1973), the root mean square error of approximation (RMSEA; Steiger and Lind, 1980) and the standardized root mean square residual index (SRMR; Hu and Bentler, 1995) to determine model fit. We compared the proposed 12-factor model at T1 (i.e., internal employability, external employability, vitality, work ability, emotional demands, mental demands, physical demands, workload, autonomy, supervisor support, colleague support, and future time perspective), with a nine factor model (i.e., Factor 1 = internal employability and external employability; Factor 2 = vitality and work ability; Factor 3 = emotional demands; Factor 4 = mental demands; Factor 5 = physical demands; Factor 6 = workload; Factor 7 = autonomy; Factor 8 = supervisor support and colleague support; Factor 9 = future time perspective) and a four factor model (i.e.,

Factor 1 = internal employability, external employability, vitality and work ability; Factor 2 = emotional demands, mental demands, physical demands, and workload; Factor 3 = autonomy, supervisor support, and colleague support; Factor 4 = future time perspective) and a one factor model.

We found that the 12-factor model (χ^2 = 3789.50, df = 1519, $p < 0.001$, CFI = 0.94, TLI = 0.94, RMSEA = 0.03, SRMR = 0.06) fit the data significantly better than the nine-factor model ($\Delta\chi^2$ = 3162.16, Δdf = 30, $p < 0.001$), and the four-factor model ($\Delta\chi^2$ = 14796.52, Δdf = 62, $p < 0.001$). The one factor model could not be converged. At the second measurement moment we compared the proposed 11 factor model (i.e., internal employability, external employability, vitality, work ability, emotional demands, mental demands, physical demands, workload, autonomy, supervisor support, and colleague support), with an eight factor model (i.e., Factor 1 = internal employability and external employability; Factor 2 = vitality and work ability; Factor 3 = emotional demands; Factor 4 = mental demands; Factor 5 = physical demands; Factor 6 = workload; Factor 7 = autonomy; Factor 8 = supervisor support and colleague support) and a three factor model (i.e., Factor 1 = internal employability, external employability, vitality and work ability; Factor 2 = emotional demands, mental demands, physical demands, and workload; Factor 3 = autonomy, supervisor support, and colleague support) and a one factor model. We found that the 11-factor model (χ^2 = 3281.47, df = 1219, $p < 0.001$, CFI = 0.91, TLI = 0.90, RMSEA = 0.03, SRMR = 0.06) fit the data significantly better than the eight-factor model ($\Delta\chi^2$ = 3160.879.15, Δdf = 27, $p < 0.001$), the three-factor model ($\Delta\chi^2$ = 11377.53, Δdf = 52, $p < 0.001$), and the one-factor model ($\Delta\chi^2$ = 15662.14, Δdf = 55, $p < 0.001$). These results support the notion that our measures can be empirically distinguished.

Based on recommendations of Van de Schoot et al. (2012), the measurement invariance over time was examined for all outcome variables (**Table 1**). For vitality the requirements of configural measurement invariance were met. For employability and work ability the chi square test suggests measurement variance, however as the CFI and RMSEA test suggest invariance the requirement of configural invariance were met. The requirements for metric invariance are also met for vitality and work ability but not for employability. Next, scale scores were created for each of the variables to simplify the model. In **Table 2**, the correlations between the variables that are included in this study are shown as well as the Cronbach's alphas.

As shown in **Table 3**, work ability at the first measurement moment was positively associated with work ability measured at the second measurement moment (β = 0.733, $p < 0.01$; R^2 = 0.537). In the second step, future time perspective, age, the job demands, and job resources at T1 were added to the model. After controlling for the other variables in the model, future time perspective remained positively associated with work ability (T2; β = 0.103, $p < 0.01$), whereas age was not associated with work ability (β = −0.020, p = 0.49). None of the job demands and job resources were significantly related to work ability. Adding the job demands and job resources at T2 to this model led to a decrease in explained variation of 17.4%. Therefore, we decided to not add job demands and job resources at T2 to this model. The second model explained 3.0% additional variation. In the third model, the interaction terms of job demands with age, job demands with future time perspective, job resources with age, and job resources with future time perspective were added. None of these interactions were significant. Overall, model 3 resulted in the highest explained variance. However, chi square difference tests suggest that model 2 (the model with control variables, age, and future time perspective, job demands and job resources) reveals the best fit to our data, and that adding the interactions between age and future time perspective and job demands and job resources have no significant added value in explained variance. These results indicate that future time perspective, and not age, job demands, or job resources, is particularly important for stimulating work ability of the healthcare workers over time.

As shown in **Table 4**, vitality at the first measurement moment is positively associated with vitality measured at the second measurement moment (β = 0.675, $p < 0.01$; R^2 = 0.431). In the second step, future time perspective, age, job demands, and job resources at T1 and T2 were added as predictors of vitality at the second measurement moment. After controlling for the other variables in the model, future time perspective (β = 0.188, $p < 0.01$) is positively associated with vitality. Of all job demands and job resources only colleague support was significantly related to vitality at T1 (β = 0.172, p = 0.01) and T2 (β = 0.166, $p < 0.01$), when accounting for the other variables in the model. This second model explained 20.7% additional variation. In the third model, the interactions terms were added. None of the interactions were significant. Adding these interactions led to a decrease of 23.9% in explained variation. Overall, model 2 (the model with control variables, age, future time perspective, job demands, and job resources at T1 and T2) has the highest explained variance. Moreover, chi square difference tests suggest that model 2 has the best fit and that adding the interactions with age and future time perspective and job demands and job resources has no significant added value in explained variance. These results indicate that future time perspective and collegial support are particularly important for stimulating vitality over time.

As shown in **Table 5**, internal employability at the first measurement moment was positively associated with internal employability measured at the second measurement moment (β = 0.675, $p < 0.01$; R^2 = 0.373). In the second model, future time perspective, age, job demands, and job resources at T1 and T2 were added as predictors of internal employability at the second measurement moment. After accounting for the other variables in the model, future time perspective and age were not related to internal employability, whereas autonomy at T1 (β = 0.189, p = 0.04) was positively related to internal employability, and workload at T2 (β = −0.304, p = 0.05) and autonomy at T2 (β = −0.247, p = 0.00) were significantly negatively related to internal employability. This second model explained 21.8% additional variation. In the third model, the interactions terms were added. None of the interactions were significant. Adding these interactions led to a 4.3% increase in explained variation. Overall, model three has the highest explained variance. However, chi-square difference tests revealed that the second model (with internal employability at baseline, age, future time perspective,

TABLE 1 | Measurement invariance.

Variable	Type	χ^2	df	CFI	RMSEA	$\Delta\chi^2$	Δdf	*p*	ΔCFI	ΔRMSEA
Vitality	Configural	33.178	5	0.996	0.062	2.524	3	0.471	0	0.013
	Metric	35.702	8	0.996	0.049	4.507	2	0.105	0	0.003
	Scalar	40.209	10	0.996	0.046					
Employability	Configural	349.060	92	0.984	0.054	170.929	10	0.000	0.010	0.001
	Metric	519.989	102	0.974	0.055	1153.596	10	0.000	0.070	0.046
	Scalar	1673.585	112	0.904	0.101					
Work ability	Configural	520.490	71	0.927	0.063	14.956	6	0.021	0.001	0.005
	Metric	535.446	77	0.926	0.067	20.278	6	0.002	0.002	0.003
	Scalar	555.724	83	0.924	0.070					

job demands, and job resources at T1 and T2 as predictors) fits the data best, indicating that work characteristics are important factors for internal employability over time.

As shown in **Table 6**, external employability at the first measurement moment was positively associated with external employability measured at the second measurement moment ($\beta = 0.750$, $p < 0.01$; $R^2 = 0.562$). In the second model, future time perspective, age, job demands, and job resources at T1 were added as predictors of external employability at the second measurement moment. After controlling for the other variables in the model, future time perspective was positively associated with external employability ($\beta = 0.086$, $p = 0.00$), whereas age was negatively related to external employability ($\beta = -0.113$, $p = 0.00$). Of the job demands and job resources only emotional demands was significantly positively related to external employability ($\beta = 0.050$, $p = 0.01$) after adjusting for the other variables. However, adding job demands and job resources at T2 led to a decrease in explained variation of 10.1%. We therefore decided not to add job demands and job resources at T2 to the model. The final second model explained 2.8% more variation than the previous model. In the third model, the interactions terms were added. Only the interaction between future time perspective and supervisor support was significant ($\beta = -0.462$, $p = 0.03$). The interaction (see **Figure 1**) revealed that high levels of supervisor support and closed future time perspective was related to higher external employability (partial support hypothesis 6). Adding these interactions led to a 0.5% increase in explained variation. Overall, model 3 resulted in the highest explained variance. However, the chi square test revealed that model 1 fitted the data best, indicating future time perspective and supervisory support is important for external employability over time.

DISCUSSION

The current two-wave complete panel study was the first longitudinal study to examine the dynamics between age, future time perspective, specific job demands and job resources and indicators of sustainable employability in a healthcare context. Based on earlier lifespan developmental and psychosocial work theories, we formulated and tested different hypotheses in a unique complete panel of 1478 healthcare workers. We found mixed results for our hypotheses. More specifically, only a negative relation was found between calendar age and external employability, and no significant relations were found between calendar age and other indicators of sustainable employability (limited support hypothesis 1).

More consistent positive significant relations were found between an open future time perspective and across-time changes in work ability, vitality as well as external employability (supporting hypothesis 2). In contrast to our expectations, the current results did not explain more variance in sustainable employability by including and testing for specific types of job demands (like physical versus emotional demands). As only significant negative relations were found between workload and internal employability (limited support hypothesis 3), and positive relations were found between emotional demands and internal employability (in contrast with hypothesis 3). Finally, we found more consistent significant positive relations between colleague support and vitality, and a significant positive relation between job autonomy and internal employability (partial support for hypothesis 4).

Furthermore, our explorative test of possible moderating effects of age and future time perspective in predicting relations between psychosocial work characteristics and indicators of sustainable employability revealed only one significant interaction effect in line with Hypothesis 6 (rejecting Hypothesis 5). We found a significant interaction between supervisor support and future time perspective in explaining across-time changes in external employability (partial support hypothesis 6). This shows that a supportive work climate, and an open future time perspective can play an important role in sustaining the reported external employability levels of aging healthcare workers.

The negative relation between calendar age and across-time changes in external employability is consistent with earlier research in different sectors indicating the risk of labor market age stereotyping. For example, Van Vuuren et al. (2011) found in their cross-sectional survey study among teachers similar significant negative relations between calendar age and labor-market based external employability. In their longitudinal survey study among 284 low-qualified employees of 35 different companies, Raemdonck et al. (2008) also found that higher calendar age was related to reduced job mobility, vertical mobility, as well as reduced job turnover. It is important to further monitor and examine the negative relation between calendar age and external employability of healthcare workers to make sure aging workers do not suffer from less chances

TABLE 2 | Means, standard deviations, correlations, and Cronbach's alpha's (on the diagonal line).

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
(1) Work ability T1	40.70	5.07													
(2) Work ability T2	40.86	5.21	0.73**												
(3) Internal employability T1	3.18	0.71	0.20**	0.17**	(0.72)										
(4) Internal employability T2	3.20	0.71	0.19**	0.21**	0.61**	(0.73)									
(5) External employability T1	3.12	1.01	0.25**	0.22**	0.34**	0.31**	(0.94)								
(6) External employability T2	3.31	1.02	0.23**	0.24**	0.32**	0.36**	0.75**	(0.95)							
(7) Vitality T1	4.46	1.09	0.43**	0.31**	0.22**	0.19**	0.16**	0.12**	(0.91)						
(8) Vitality T2	4.43	1.09	0.35**	0.42**	0.17**	0.24**	0.12**	0.12**	0.66**	(0.91)					
(9) Physical demands T1	1.86	0.86	−0.28**	−0.28**	−0.03	0.01	0.10**	0.09**	0.04	0.03	(0.93)				
(10) Physical demands T2	1.98	0.85	−0.25**	−0.32**	−0.06	0.00	0.02	0.01	−0.05	−0.06	0.84**	(0.93)			
(11) Mental demands T1	3.32	0.54	−0.03	−0.05	0.03	0.01	0.07*	0.04	0.06*	0.05*	0.05	0.03	(0.81)		
(12) Mental demands T2	3.29	0.54	0.05	0.02	−0.05	0.02	−0.04	−0.06	0.09*	0.14**	0.05	0.06	0.60**	(0.82)	
(13) Emotional demands T1	2.27	0.45	−0.18**	−0.15**	0.01	−0.03	0.13**	0.13**	−0.15**	−0.17**	0.05	0.12**	0.16**	0.11*	(0.77)
(14) Emotional demands T2	2.23	0.41	−0.08	−0.11*	0.04	0.05	0.18**	0.16**	−0.09*	−0.11*	0.14**	0.13**	0.15**	0.15**	0.65**
(15) Workload T1	2.31	0.59	−0.34**	−0.25**	−0.14**	−0.15**	−0.00	−0.02	−0.25**	−0.18**	0.18**	0.14**	0.19**	0.11*	0.35**
(16) Workload T2	2.24	0.56	−0.22**	−0.32**	−0.13**	−0.12**	0.03	0.02	−0.18**	−0.22**	0.19**	0.23**	0.12**	0.17**	0.19**
(17) Autonomy T1	2.81	0.61	0.25**	0.22**	0.05	−0.02	−0.06*	−0.04	0.13**	0.11**	−0.37**	−0.41**	−0.04	−0.05	−0.05
(18) Autonomy T2	2.78	0.62	0.19**	0.25**	0.02	−0.00	−0.01	−0.02	0.09*	0.17**	−0.38**	−0.38**	−0.07	−0.05	−0.10*
(19) Supervisor support T1	3.16	0.78	0.12**	0.09**	0.12**	0.05	0.01	0.03	0.10**	0.06*	−0.08**	0.00	0.025	−0.06	−0.01
(20) Supervisor support T2	3.36	0.57	0.26**	0.32**	0.13**	0.20**	0.00	0.03	0.24**	0.33**	−0.28**	−0.26**	−0.01	0.03	−0.20**
(21) Colleague support T1	3.21	0.77	0.08**	0.07*	0.07**	−0.00	0.01	0.03	0.06*	0.03	−0.05	0.05	0.06*	−0.05	0.04
(22) Colleague support T2	3.41	0.48	0.22**	0.21**	0.02	0.03	0.03	−0.03	0.14**	0.21**	0.03	0.04	0.03	0.10*	−0.12**
(23) Future time perspective	3.03	0.85	0.29**	0.28**	0.43**	0.38**	0.45**	0.46**	0.14**	0.13**	−0.12**	−0.17**	0.04	0.01	0.04
(24) Age	46.79	11.06	−0.18**	−0.19**	−0.28**	−0.27**	−0.35**	−0.41**	0.09**	0.08**	0.06*	0.03	−0.01	0.02	−0.08**

(Continued)

TABLE 2 | Continued

	14	15	16	17	18	19	20	21	22	23
(14) Emotional demands T2	(0.76)									
(15) Workload T1	0.25**	(0.87)								
(16) Workload T2	0.28**	0.64**	(0.87)							
(17) Autonomy T1	−0.12**	−0.08**	−0.08	(0.86)						
(18) Autonomy T2	−0.12**	−0.02	−0.07	0.71**	(0.89)					
(19) Supervisor support T1	0.00	−0.11**	0.00	0.17**	−0.00	(0.87)				
(20) Supervisor support T2	−0.19**	−0.23**	−0.23**	0.28**	0.28**	0.08	(0.81)			
(21) Colleague support T1	0.02	−0.05	0.03.3	0.09**	−0.03	0.76**	−0.01	(0.80)		
(22) Colleague support T2	−0.11**	−0.20**	−0.16**	0.10*	0.14**	−0.01	0.32**	0.07	(0.79)	
(23) Future time perspective	0.08	−0.04	−0.02	0.11**	0.11**	0.11**	0.12**	0.07*	0.06	(0.84)
(24) Age	−0.11*	0.05	0.04	0.02	0.04	−0.05	−0.01	-/04	−0.02	−0.65**

$^{**}p < 0.01$, $^{*}p < 0.05$.

TABLE 3 | Standardized results with work ability at T2 as an outcome variable.

Model 1	Model 2	Model 3	β	p	β	p	β	p
Model 1: control variable								
Work ability T1			0.73	0.00	0.69	0.00	0.68	0.00
Model 2: control variable, age, future time perspective, job demands, and job resources								
Future time perspective					0.10	0.00	0.30	0.37
Age					−0.03	0.39	0.03	0.94
Physical demands					−0.05	0.07	0.23	0.29
Mental demands					−0.02	0.30	−0.03	0.87
Emotional demands					−0.03	0.20	−0.21	0.37
Workload					−0.00	0.89	−0.07	0.77
Autonomy					0.02	0.45	0.03	0.89
Supervisor support					0.02	0.57	0.48	0.18
Colleague support					−0.03	0.37	−0.12	0.74
Model 3: control variable, age, future time perspective, job demands, job resources, and interactions								
Future time perspective * physical demands							−0.09	0.48
Future time perspective * mental demands							−0.13	0.56
Future time perspective * emotional demands							0.08	0.69
Future time perspective * workload							0.08	0.64
Future time perspective * autonomy							−0.05	0.82
Future time perspective * supervisor support							−0.18	0.51
Future time perspective * colleague support							−0.00	0.99
Age * physical demands							−0.24	0.13
Age * mental demands							0.14	0.56
Age * emotional demands							0.21	0.34
Age * workload							0.02	0.92
Age * autonomy							0.01	0.95
Age * supervisor support							−0.47	0.12
Age * colleague support							0.12	0.68
R-square			0.537		0.567		0.572	
R-square increase					0.030		0.005	
Chi-square difference test:					63.039(9)	0.00	−10.77(14)	0.70

of vertical or horizontal external mobility to facilitate their sustainable employability across time.

Fortunately, we also found consistent positive and buffering effects of future time perspective in relation to the external employability of healthcare workers. Consequently, the current study demonstrates the importance of broadening the future time perspective in predicting across-time changes in the sustainable employability of aging healthcare workers, indicating the

TABLE 4 | Standardized results with vitality at T2 as an outcome variable.

Model 1	Model 2	Model 3	β	p	β	p	β	p
Model 1: control variable								
Vitality T1			0.66	0.00	0.71	0.00	0.71	0.00
Model 2: control variable, age, future time perspective, job demands, and job resources								
Future time perspective					0.19	0.00	1.10	0.02
Age					0.03	0.51	−0.37	0.46
Physical demands T1					−0.16	0.23	−0.17	0.40
Mental demands T1					0.24	0.18	0.15	0.47
Emotional demands T1					−0.06	0.47	0.36	0.10
Workload T1					−0.03	0.81	0.18	0.50
Autonomy T1					0.01	0.96	−0.09	0.70
Supervisor support T1					−0.11	0.22	0.01	0.95
Colleague support T1					0.34	0.01	0.05	0.81
Physical demands T2					0.03	0.81	0.01	0.85
Mental demands T2					−0.01	0.94	−0.02	0.72
Emotional demands T2					−0.04	0.60	−0.01	0.80
Workload T2					−0.02	0.91	−0.09	0.44
Autonomy T2					0.00	0.97	0.03	0.72
Supervisor support T2					−0.05	0.60	−0.04	0.57
Colleague support T2					0.17	0.01	0.17	0.01
Model 3: control variable, age, future time perspective, job demands, job resources, and interactions								
Future time perspective * physical demands							−0.11	0.73
Future time perspective * mental demands							−0.54	0.12
Future time perspective * emotional demands							−0.27	0.33
Future time perspective * workload							−0.10	0.69
Future time perspective * autonomy							−0.15	0.56
Future time perspective * supervisor support							−0.10	0.55
Future time perspective * colleague support							0.19	0.35
Age * physical demands							0.34	0.38
Age * mental demands							0.41	0.21
Age * emotional demands							−0.52	0.08
Age * workload							−0.11	0.53
Age * autonomy							0.22	0.41
Age * supervisor support							−0.05	0.83
Age * colleague support							0.06	0.81
R-square			0.431		0.603		0.364	
R-square increase					0.172		−0.239	
Chi-square difference test:					665.12(16)	0.00	−15.81(14)	0.37

importance of taking a life-span perspective in relations between aging and work ability (Pak et al., 2018; Rudolph et al., 2018; Zacher et al., 2018a). It is important to further investigate the relations between future time perspective, supervisor support and indicators of sustainable employability using different samples and investigating different professions in healthcare contexts. Future research can further examine the effects of time-broadening interventions in sustaining or positively influencing the external employability of healthcare workers.

As we found a meaningful interaction between future time perspective and high supervisor support in maintaining higher levels of external employability of healthcare workers, new studies can also examine the dynamics between supervisor support (in terms of communication and behavior) in broadening temporal horizons or perspectives of healthcare workers. For example, recent research of Nielsen and Taris (2019) points to the accumulating evidence for an association between leadership or supervisor behavior and positive mental well-being, but no study to date has examined the effects of leaders in developing time-broadening perspectives or workplans for aging healthcare workers (see also Thun and Bakker, 2018; Nikolova et al., 2019). Support from leaders and colleagues can have a positive effect on workers' well-being (Nielsen and Taris, 2019). The current study suggests that high levels of supervisor support can form a significant buffer for maintaining higher levels of external employability in the case of a low future time perspective at work. Unfortunately, older workers are often offered less opportunities for training and development by their supervisors (Furunes and

TABLE 5 | Standardized results with internal employability at T2 as an outcome variable.

Model 1	Model 2	Model 3	β	p	β	p	β	p
Model 1: control variable								
Internal employability T1			0.66	0.00	0.83	0.00	0.53	0.00
Model 2: control variable, age, future time perspective, job demands, and job resources								
Future time perspective					0.05	0.33	0.15	0.82
Age					−0.05	0.32	0.11	0.86
Physical demands T1					−0.16	0.35	0.12	0.64
Mental demands T1					−0.09	0.67	−0.23	0.34
Emotional demands T1					0.09	0.39	0.06	0.80
Workload T1					0.19	0.28	0.45	0.16
Autonomy T1					0.29	0.04	0.25	0.37
Supervisor support T1					−0.07	0.55	0.01	0.98
Colleague support T1					0.27	0.07	−0.23	0.39
Physical demands T2					0.16	0.31	0.07	0.44
Mental demands T2					−0.01	0.97	0.02	0.81
Emotional demands T2					−0.07	0.48	−0.04	0.46
Workload T2					−0.35	0.05	−0.26	0.09
Autonomy T2					−0.39	0.00	−0.23	0.01
Supervisor support T2					−0.07	0.55	−0.02	0.79
Colleague support T2					0.27	0.07	0.12	0.10
Model 3: control variable, age, future time perspective, job demands, job resources, and interactions								
Future time perspective * physical demands							0.38	0.38
Future time perspective * mental demands							−0.14	0.74
Future time perspective * emotional demands							−0.62	0.08
Future time perspective * workload							−0.53	0.09
Future time perspective * autonomy							0.15	0.60
Future time perspective * supervisor support							0.37	0.14
Future time perspective * colleague support							0.10	0.70
Age * physical demands							−0.79	0.08
Age * mental demands							0.42	0.28
Age * emotional demands							0.66	0.08
Age * workload							0.08	0.69
Age * autonomy							−0.24	0.44
Age * supervisor support							−0.31	0.23
Age * colleague support							0.08	0.78
R-square			0.373		0.591		0.634	
R-square increase					0.218		0.043	
Chi-square difference test:					521.81(16)	0.00	−14.45(14)	0.42

Mykletun, 2010; Truxillo et al., 2012, 2015). Some managers lower the demands on older workers as a way of sustaining their work ability, whereas this action from a worker perspective can also be seen as age discriminatory practices (Furunes and Mykletun, 2010; Truxillo et al., 2015), and thus limits their future time perspective (Rudolph et al., 2015, 2018). From a scientific as well as practical perspective it is therefore important to further examine the role of supervisors can play in broadening the time perspective as well as sustainable employability of aging healthcare workers.

Limitations

The current study investigated all healthcare workers as one group and did not differentiate in job functions because the institutions involved used different job function indicators and job titles. The current design only allowed for a gross categorization, dividing healthcare workers from staff personnel. Thus, we conducted *post hoc* tests to test for possible differences between support staff versus healthcare workers in the variables under study. The results indicated no significant differences in results found per hypothesis or for the outcomes under study. Nonetheless, future research may further examine potential influences of subgroup specific characteristics on healthcare workers' sustainable employability.

Second, the measurement points in this study are 6 months apart. Dormann and Griffin (2015) recommend using shorter time lags in panel studies, and we therefore think the chosen time-lag was appropriate for the concepts included in our research. Nonetheless, as relatively few effects were found for the included job demands and job resources to explain across-time changes in

TABLE 6 | Standardized results with external employability at T2 as an outcome variable.

Model 1	Model 2	Model 3	β	p	β	p	β	p
Model 1: control variable								
External employability T1			0.75	0.00	0.66	0.00	0.66	0.00
Model 2: control variable, age, future time perspective, job demands, and job resources								
Future time perspective					0.09	0.00	0.21	0.39
Age					−0.11	0.00	0.03	0.89
Physical demands					0.04	0.05	−0.06	0.74
Mental demands					−0.02	0.25	−0.05	0.78
Emotional demands					0.05	0.01	−0.14	0.45
Workload					−0.03	0.20	0.22	0.25
Autonomy					0.00	0.97	0.24	0.19
Supervisor support					−0.00	0.95	0.46	0.08
Colleague support					0.02	0.59	−0.33	0.23
Model 3: control variable, age, future time perspective, job demands, job resources, and interactions								
Future time perspective * physical demands							−0.04	0.71
Future time perspective * mental demands							0.07	0.70
Future time perspective * emotional demands							0.22	0.16
Future time perspective * workload							−0.19	0.17
Future time perspective * autonomy							−0.15	0.32
Future time perspective * supervisor support							−0.46	0.03
Future time perspective * colleague support							0.32	0.13
Age * physical demands							0.15	0.22
Age * mental demands							−0.01	0.97
Age * emotional demands							0.11	0.53
Age * workload							−0.17	0.29
Age * autonomy							−0.23	0.17
Age * supervisor support							−0.46	0.28
Age * colleague support							0.19	0.40
R-square			0.562		0.590		0.595	
R-square increase					0.028		0.005	
Chi-square difference test:					12.62(9)	0.18	−15.88(14)	0.32

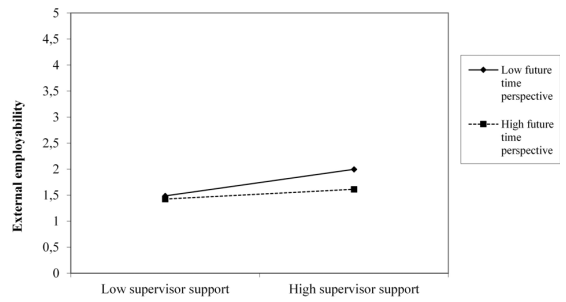

FIGURE 1 | The interaction effect between supervisor support and future time perspective on external employability.

sustainable employability, longer lengths of time-lags and 3 or more time points across time may reveal additional effects for our formulated hypotheses and variables under study (see also De Lange et al., 2004). Third, our work has been based on subjective survey measures, resulting in the risk of common-method bias (Steiger and Lind, 1980). Testing multiple competing models in a longitudinal complete panel design and controlling for autocorrelations aimed to lessen these risk of common-method bias (De Lange et al., 2009). Nonetheless, future studies can study changes in a long-term perspective using mixed method designs to further examine the causal nature of relations between age-related variables, psychosocial work characteristics and work outcomes of healthcare workers.

Finally. though the WAI measures of work ability are conceptualized as a multidimensional construct, we treated work ability as a unidimensional construct in the study in accordance with the way it is applied and interpreted in the health care sector in many countries such as Finland and Netherlands (see Osagie et al., 2019 for a review). However, it would be interesting and relevant to explore the influences of the predictors on specific indicators of work ability in future studies among healthcare workers.

Originality/Value

The current longitudinal complete panel study was the first multi-wave study to examine relations between aging, time perspective and indicators of sustainable employability in healthcare work.

Accordingly, the results of our two-wave complete panel study provide new insights into the question how to sustain aging workers in healthcare. This is imperative as an aging global workforce can present healthcare organizations with untapped opportunities. Healthcare organizations that plan, design and find management approaches to prolong working lives of older workers can reduce potential liability concerns and costs of reduced performance or disability pensions (Bakker, 2018; Herkes et al., 2019). Creating ways for healthcare workers to have meaningful, productive multi-stage and multidimensional careers is a major opportunity to proactively engage workers within healthcare (Stuer et al., 2019).

As talent markets grow more competitive, and employers in the healthcare sector have more and more difficulties in recruiting and retaining enough competent staff, healthcare organizations can find it valuable to keep aging workers in their jobs across time and facilitate their sustainable employability (Truxillo et al., 2015). Based on the results of the current longitudinal study, we can conclude that by broadening and developing meaningful time horizons at work and creating supportive work environments for aging workers, we may be better able to retain healthcare workers at work to ensure a sufficient level of quality of healthcare (Teoh et al., 2019).

DATA AVAILABILITY STATEMENT

All datasets generated for this study are included in the article/supplementary material.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethical Commision University of Tilburg, Tilburg, Netherlands. The patients/participants provided their written informed consent to participate in this study.

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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What Impact Does Accreditation Have on Workplaces? A Qualitative Study to Explore the Perceptions of Healthcare Professionals About the Process of Accreditation

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Aim: This study seeks to explore the emerging psychosocial risks of healthcare accreditation in workplaces and understand healthcare professionals' (HCPs) perceptions of work demands and the unexpected consequences such accreditation has created for them.

Methods: Twenty-seven semi-structured interviews and four focus group discussions were conducted with a variety of HCPs, including doctors, nurses, pharmacists, and allied health professionals. The study was conducted in three public hospitals and a network of primary healthcare centers in the United Arab Emirates. Interviews and focus group discussions were transcribed and analyzed using a theoretical thematic analysis approach.

Results: The results showed that a number of psychosocial risks were prevalent during the course of accreditation. HCPs faced increased work demands during such a process, including increased working hours, increased working pace, perceived time pressure, and conflicting information. Such demands were perceived to influence not only their health but also their families as well as patients' care. In contrast, teamwork and coworker support were vital to mitigate the effect of such demands.

Implications: This study identified emerging risks during the process of accreditation. The findings show that the process of accreditation increases work-related risks before the inspection visit. These findings have significant implications for understanding how accreditation processes increase psychosocial risks; they also consolidate the idea that appropriate systems and support for HCPs should be a priority when planning for accreditation.

Keywords: accreditation, healthcare professionals, psychosocial risks, workload, psychological health

Abbreviations: CQI, continuous quality improvement; HCPs, healthcare professionals; JD-R, Job Demand-Resources; REC, Research Ethical Committee; UAE, United Arab Emirates.

INTRODUCTION

The concept of continuous quality improvement (CQI) has inspired the growth of accreditation programs in the healthcare sector (Shortell et al., 1998), which aims to acknowledge healthcare organizations publicly and to encourage them to improve the quality of care provided to patients. While the impact and outcome of healthcare accreditation remain debatable, the growth of such programs has accelerated significantly over the past decades (Nicklin et al., 2017). In addition, over 70 countries have employed such accreditation programs in their healthcare organizations, including developing countries such as the United Arab Emirates (Greenfield and Braithwaite, 2008; Devkaran and O'Farrell, 2015; Greenfield et al., 2019). While healthcare accreditation might be appealing to managers and stakeholders, many have argued that accreditation is a demanding activity, which increases workload and stress levels among workers (Touati and Pomey, 2009; Elkins et al., 2010; El-Jardali et al., 2014; Kousgaard et al., 2019).

The nature of accreditation is to assess the performance of healthcare facilities through an external inspection process, using a defined set of standards. When comparing accredited and non-accredited ones, accreditation has been found to support the promotion of patients' health and safety (Shaw et al., 2010), improve the quality of healthcare services (Greenfield and Braithwaite, 2008; O'Beirne et al., 2013; Shaw et al., 2014; Bogh et al., 2016), encourage organizational change (Kousgaard et al., 2019), and allow professional development (Greenfield and Braithwaite, 2008). Furthermore, previous research has shown that accreditation can have positive effects on the quality of healthcare management and leadership (El-Jardali et al., 2014). However, a direct impact on clinical practices has not been explored in previous studies (Shaw et al., 2014; Brubakk et al., 2015). The process of accreditation has been found to increase workload, stress levels, and use of resources (Brubakk et al., 2015); In addition, little attention has been given to the consequences of mandatory accreditation on workers' psychological health. Touati and Pomey (2009) have compared the process of optional accreditation in Canada with that of mandatory accreditation in France. They observed differences in the philosophy of applying accreditation. These differences suggest that optional accreditation enables continuity of care, while mandatory accreditation scrutinizes the delivery of care (Touati and Pomey, 2009, pp. 156–165). Moreover, recent studies have examined the effects of workload linked to the accreditation process on reduced care of patients (Ho et al., 2014; Bogh et al., 2018). Bogh et al. (2018) described how doctors and nurses were distracted by paperwork that influenced their time with patients.

Recently, many features of contemporary work have emerged, such as demographic shift, advanced technologies, task shifting, and outsourcing, which challenge organizations and increase the progression of psychosocial hazards (Zadow and Dollard, 2016). Changes in healthcare organizations can introduce new psychosocial risks, and the process of accreditation can be one of these changes. Since psychosocial risks are common in healthcare services, these risks may include work-related stress, role conflict, inadequate social support, staff shortages, work shifts, and attacks from patients (Lipscomb, 2017). Although psychosocial risks are frequently changing, such risks could put workers' health in danger, varying from mental, social, to physical health problems. Psychosocial risks are the interactions between work and management features on the one hand, and employees' skills and competencies on the other (ILO, 1986). Such interactions have the potential to cause physiological and psychological harm to employees (WHO, 2010). Therefore, the importance and originality of this study is that it explores whether such risks arise during the course of accreditation. While previous research on accreditation has tended to focus on promoting change and developing safety skills, such research fails to identify the emerging psychosocial risks of healthcare accreditation in workplaces and its impact on HCPs' health as well as patients' care. Therefore, this study aimed to investigate occupational hazards, which include increased work demands that could put workers' health in danger, and cause mental, social, and physical health problems.

Bakker and Demerouti (2007) introduced Job Demands-Recourses (JD-R) as a contemporary model of work-related stress. They suggest that high job demand causes distress related to persistent physical, psychological, and social efforts, which are in turn linked to both psychological and physiological harm. Job resources, on the other hand, motivate workers to achieve work objectives, lower the effects of job demand, and enhance employees' learning and development of work-related skills (Bakker et al., 2003a,b). The JD-R model links psychosocial risks, including workload, role ambiguity, and role conflict to health-related outcomes such as burnout and stress. So far, very little attention has been paid to the emerging job demands in the process of accreditation; hence, qualitative research can play a significant role in identifying the types of risks that are specific to this process. Healthcare organizations are changing regularly, and many developed countries have recognized psychosocial risks in the workplace; however, such risks can be found in developing countries as well due to globalization and changes in work aspects (Kortum et al., 2011).

While some published qualitative studies have focused on staff views on accreditation as an improvement process, to our knowledge, far too little attention has been paid to the emerging psychosocial risks during the course of the accreditation. For this reason, this study adopted a qualitative design using a theoretical thematic analysis (TA) approach to explore these risks (Gale et al., 2013). The study aims to capture the unique demands of accreditation and to develop a clear understanding of the psychosocial risks that are associated with the accreditation process. In addition, the study uses the JD-R model to ensure a better understanding of the themes developed in the study. Although a TA method does not follow a particular epistemological position (Braun and Clarke, 2006), the study attempts to identify apparent psychosocial risks and to highlight the importance of resources that mitigate the impact of these risks. Therefore, a theoretical framework offers an effective way to categorize and develop themes that explain common outcomes related to the accreditation process.

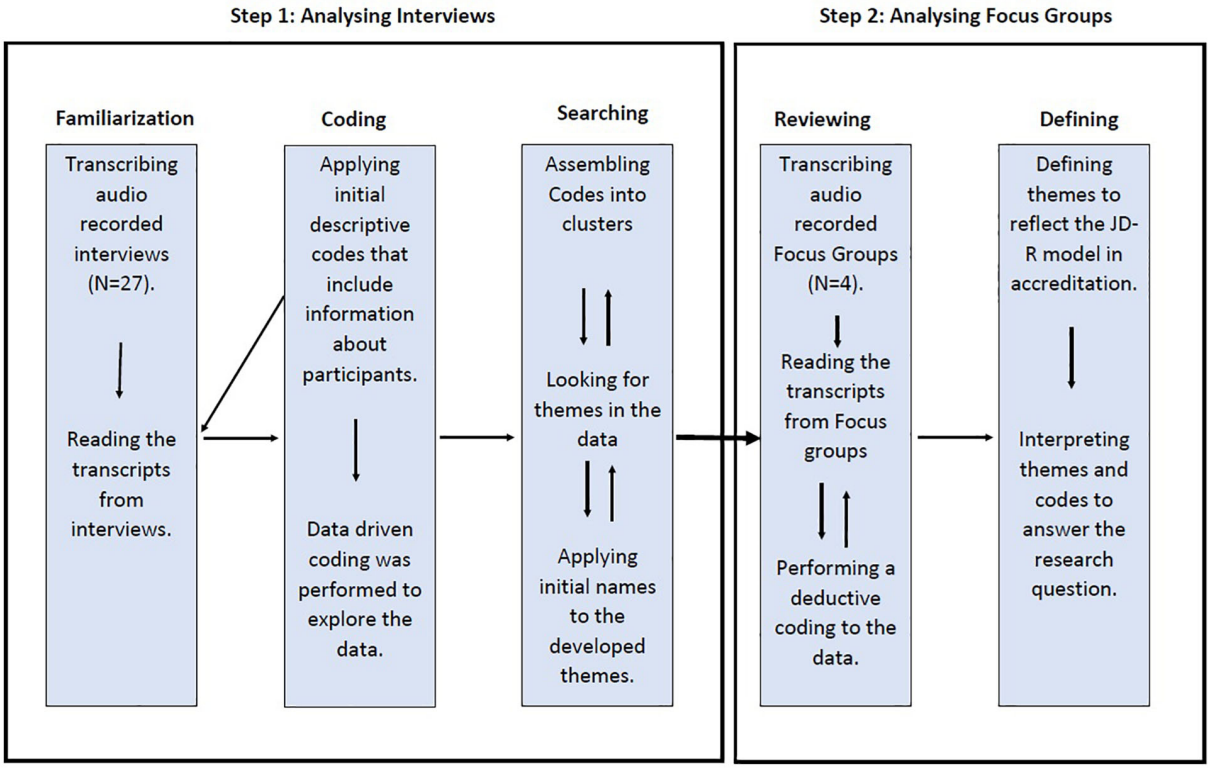

FIGURE 1 | The process of analyzing interviews and focus group discussions.

AIMS

The main purpose of this investigation is to explore how the requirements of accreditation influence the work environment in healthcare organizations. In particular, it aims to answer the following research questions:

(1) What are the psychosocial risks perceived by healthcare professionals (HCPs) during the course of accreditation?
(2) What type of resources were available to mitigate the negative impact of accreditation and support HCPs through the accreditation process?

MATERIALS AND METHODS

Design/Methodology

The United Arab Emirates (UAE) is a rapidly growing country consisting of seven emirates: Abu Dhabi, Dubai, Ajman, Ras Al Khaimah, Umm Al Quwain, Fujairah, and Sharjah. The rapid growth of the country has been observed in its population and economy, which has influenced the healthcare system positively. The Ministry of Health and Prevention is a government-funded healthcare system that oversees more than 17 hospitals and 72 primary healthcare centers distributed across the country. These facilities provide comprehensive and sustainable health services for individuals and society. A qualitative research design was employed to provide an in-depth understanding of the psychosocial work environment during the accreditation process. Hence, the study interviewed 27 HCPs from three hospitals and conducted four focus group discussions with HCPs from sixteen primary healthcare centers after they had achieved their accreditation certificates.

The study used interviews and focus group discussions to understand the perceptions of HCPs from different working environments. Interviews aimed to explore the variation of work aspects in hospital settings, while focus groups attempted to expand the knowledge developed from interviews through discussions with HCPs from primary healthcare settings. Interviews and focus groups were conducted in two different locations, the findings, however, were similar and provided comprehensive interpretations of the data. By applying both methods, the study attempted to address the limitations often discussed in quantitative research, which ignore participants' experiences and fail to provide a clear picture of their views (Carr, 1994). Although quantitative tools are available to test various types of psychosocial risks and their association with the experienced demands at work, these assessment tools are generic and fail to explore the unique risks associated with the process of accreditation in healthcare facilities. Furthermore, such tools fail to provide detailed reflection of the shared perceptions of HCPs regarding the increased risks during the course of accreditation. Therefore, the contribution of applying a qualitative study is to highlight the authentic descriptions of

HCPs during the process of accreditation in different healthcare settings and to explore the psychosocial risks that emerged during this process. Thereby, the study aimed to convey HCPs' perceptions and experiences regarding accreditation by adding rich and diverse quotes that enable readers to understand their experience (Smith, 2018).

Ethical Approval

Prior to commencing the study, ethical permissions were obtained from the Division of Psychiatry and Applied Psychology Research Ethics Sub-Committee at the University of Nottingham (i.e., Reference Number - 0236) and the Ethical Committee of the Ministry of Health and Prevention in the United Arab Emirates (MOHP/REC-40/2018).

Selecting Participants

To understand healthcare workers' perceptions about the process of accreditation, the study deliberately selected three hospitals and a network of primary healthcare centers, which had gone through the process of accreditation three to twelve weeks prior to data collection. Although the approach of selecting facilities could increase the reliability of the developed findings, the study could not prevent selection bias of participants. Participants were initially approached by emails sent to the directors of the selected facilities describing the nature and purpose of the study and requesting that invitation emails be sent to HCPs. Emails were sent to all workers in both English and Arabic. To maximize the number of participants in the study, the researcher approached HCPs in two ways. First, the first author waited for participants to reply to the invitation emails. HCPs who had replied to the invitation emails were not enough to achieve data saturation; therefore, the interviewer also invited HCPs at their facilities because of her approved access to the selected hospitals. It was made clear to all participants that they were under no pressure to participate in the study; hence, only HCPs who volunteered were interviewed. The primary inclusion criteria were opened to HCPs who provide services to patients to capture broad perceptions and to understand the changes that influenced the delivery of these services. Physicians, nurses, nurse assistants, pharmacists, laboratory technicians, and radiologists were recruited. Twenty-seven semi-structured interviews and four focus group discussions were conducted with a variety of HCPs, including 16 doctors, 20 nurses, 3 pharmacists, 5 allied health professionals, and 5 administrative workers. **Supplementary Table 1** presents a descriptive number of participants in interviews and focus group discussions. A wide variety of HCPs was chosen to obtain a representative sample considering the resources available to conduct this research. The study attempted to select a representative sample at healthcare organizations level, hence, a homogeneous sample was achieved by recruiting participants who have never experienced accreditation. None of the healthcare organizations in this study have ever experienced accreditation. Therefore, experiencing accreditation for the first time was expected to change the working environment and to influence the psychological health of HCPs working in these organizations.

DATA COLLECTION

Twenty-seven participants were interviewed, and four focus group discussions were conducted. Participants from interviews and focus groups were given information sheets that described the purpose of the study. After reading the information sheets, participants were asked to sign a consent form prior to commencing the interviews and discussions. Interviews and focus group discussions were recorded using a digital recorder and were uploaded to a password-protected database and erased from the recorder. Interviews were conducted first in hospitals within three to six weeks after achieving accreditation. The time was selected to reduce the effect of errors related to the recall period (Warner et al., 2005) and to increase the reliability of the study data. In addition, the study selected hospitals that had achieved accreditation for the first time to increase the strength of the data and avoid bias related to recalling the psychosocial risks influenced by the process of accreditation. The study used 12 semi-structured questions focusing on the emotional, managerial, and professional impacts of the accreditation process before, during, and after the inspection visit. These questions are presented in **Supplementary Table 2**. The questions were structured according to the job demands-resources (JD-R) model (Demerouti et al., 2001) to identify aspects of job demands and job resources during the course of accreditation. Furthermore, questions probed work-related risks associated with such processes, including increased work demands and work pace, in addition to the ways in which these facilities recognized and managed such risks. The time taken for the interviews ranged between 20 and 60 min.

Focus group discussions, which followed a confirmatory approach to support findings, were conducted after the interviews. The nature of applying such data collection methods allowed participants to debate and expand the discussion on the process of accreditation (Smith, 2015). Therefore, four focus group discussions consisting of 22 participants (**Supplementary Table 2**) were delivered in a different setting, that is, primary healthcare centers, to understand and broaden the response rates from a different perspective. Group discussions allowed for a dynamic debate between members and enhanced the interpretation of findings developed from interviews. The discussions were stratified according to participants' occupations: the first focus group was open to nurses and nurse assistants only, the second group targeted physicians and dentists, the third group aimed to talk to allied professionals, including pharmacists, radiologists, and laboratory technicians, and the fourth group was open to managers and administrators. By stratifying the focus groups, the study provided a safe space to allow participants to share their knowledge and to feel comfortable when providing their honest views in front of others. The time taken for focus group discussions ranged from 23 to 50 min. **Figure 1** illustrates the analytic trail of coding for both interviews and focus group discussions.

Data Analysis

Themes were developed through a systematic search for similarities in the transcripts that could explain patterns of

changes in the work environment during the accreditation process. The TA approach of Braun and Clarke (2006) was employed to analyze and capture the uniqueness of demands and resources perceived during the process of accreditation. Considering its wide and flexible approach, TA was used to develop a better understanding of the psychosocial risks that go hand-in-hand with the accreditation process. While such an approach is not guided by a theoretical framework, TA can follow both realist and relativist assumptions, and can range from a simple descriptive approach to a more complex approach that reflects deeper meaning in the data (Smith, 2015). Although TA does not follow a particular epistemological approach (Gale et al., 2013), it is essential to understand the rationale behind applying such an approach to analyze data. This study followed a theoretical approach because it seeks to develop a thorough understanding of different aspects perceived by HCPs with regard to the JD-R model. Since the research questions were created based on a well-known model, that is, JD-R, a deductive TA approach was used to analyze the data. Smith and McGannon (2018) addressed the difficulty of analyzing data without prior knowledge of a theory. Therefore, themes were established through a systematic search for similarities in the transcripts that could explain patterns of changes in the work environment during the accreditation process and link them to the JD-R model.

The study followed a deductive TA approach that used the JD-R model to develop codes and themes that appeared in the data (Braun and Clarke, 2013). Such approach was used to present the relationship between codes and to create a conclusion that reflects the JD-R model. Although the study used a deductive approach to code data, the analysis of interviews and focus group discussions moved beyond the exact meaning of codes to explain changes in work aspects with the process of accreditation. In addition, the homogeneity of the sample size provided more focused codes and themes with regard to participants' views in accreditation. Because the study used a large sample size, interviews were first recorded and transcribed to develop an initial understanding of HCP perceptions about the process of accreditation. Focus group discussions were then conducted for further elaborations on such perceptions. Interviews and focus group discussions were transcribed and checked for accuracy. Identification numbers were used to recognize participants, for example, P001 for the first participant in interviews and FG001 for the first focus group session. The qualitative software NVivo 12 was used to manage the data and facilitate the coding process.

Braun and Clarke (2006) used six steps to thematically analyze qualitative data. Themes were developed through a systematic search for similarities in the transcripts that could explain patterns of changes in the work environment during the accreditation process. Once interviews and focus groups were transcribed, it was necessary for the first author to be familiar with the transcripts. Familiarization involved frequent readings of the transcripts to engage in in-depth knowledge of the data set. Then, initial codes were developed using a descriptive coding technique (Saldaña, 2016). The first authors coded the interviews' transcripts to look for similar patterns in participants' perceptions with the accreditation process. Initial codes were descriptive and classified participants regarding their information such as gender, location of their workplace, previous experience with accreditation, and years of experience. Then, the study adopted a deductive coding technique to code responses that could answer research questions (Smith, 2015). Codes were then reviewed and categorized into clusters where similar codes were grouped into two distinctive segments that include demands and resources. To assess the reliability of the analysis, the second author reviewed and agreed on the validity of the developed codes. Although using a team member to check the codes is widely used, such inspection cannot produce codes or themes without linking them to a prior theory (Smith and McGannon, 2018). Initial themes were created by clustering codes with similar concepts that reflect the JD-R model.

Themes were then created to reflect the relationship between the different research questions. Weaker themes were grouped together to form sub-themes. Themes were then reviewed by the rest of the authors to refine and distinguish different themes from sub-themes. The review process consisted of reading the entire codes and checking the coherency and relevance of the developed themes. Sub-themes were named and identified according to the scope of psychosocial risks in healthcare accreditation and their influence on HCPs. Themes, however, were named to reflect the JD-R model in accreditation. These themes were then supported by data gathered from focus group discussions to confirm findings from interviews. Despite the differences in the working context, focus group discussions reinforced the elaboration of themes constructed from the interviews. Furthermore, focus group findings confirmed the similarity of changes in the working environments influenced by the process of accreditation despite the differences in contexts. A deductive TA generated two key themes that described different work experiences and outcomes of the accreditation process.

Validity and Credibility of Codes

Considering the open approach of qualitative studies, it is vital to develop sets of standards to check the validity of such research. Therefore, this study used the same terms used by participants to maintain the credibility of codes and to reflect the experience of accreditation as recommended by Whittemore et al. (2001). Furthermore, a valid and grounded interpretation of participants' own words was necessary to maintain the integrity and representation of the results (Smith, 2018). To assess the robustness of the themes, the first author, who conducted the interviews and focus group discussions, coded the transcribed data. The second and third authors then reviewed and checked these codes to assess the accuracy and credibility of the developed themes.

RESULTS

The TA generated two main themes to describe the accreditation process that could pose psychosocial risks in healthcare facilities and considered participants' perceptions of the experience.

Supplementary Table 3 summarizes themes and codes of the theoretical TA. These themes reflected the two main constructs of the JD-R model and included the following:

(1) Challenging factors in the process of accreditation.
(2) Enablers to achieve accreditation.

Themes are further explained in sub-themes and quotes to describe key findings in interviews and focus group discussions. To preserve the meaning of participants' responses, the researcher corrected grammatical errors in participants' quotes where necessary and removed speech fillers, such as "you know" and "okay." In addition, words were added in square brackets to clarify meanings in quotes and maintain anonymity of names disclosed by participants.

Theme 1: Challenging Factors in the Process of Accreditation

This theme focused on the preparation phase and challenges that participants faced while preparing for accreditation. The experienced work demands described in this theme extended from the beginning of the preparation phase, which varied from 6 months to 3 years, depending on the size and complexity of hospitals and primary healthcare centers, until the visit of the external inspectors. Although the preparation phase was extended from 6 months to 3 years, the majority of the participants felt the pressure of the accreditation process predominantly 1 month prior to the arrival of the inspectors. Four sub-themes were identified in this theme, and included focused efforts on administrative work, observed work-related risks, managements' role during accreditation, and perceived pressure from accreditation demands.

Focused Efforts on Administrative "Work"

To understand and prepare for the newly adopted process, HCPs were involved in different administrative activities. These activities involved attending training sessions, reading policies, and participating in frequent meetings. At first, HCPs were eager and willing to participate in such activities, and they looked forward to the change accreditation would bring to their facilities. In all cases, participants stated that they went through a series of training sessions, which aimed to clarify the newly developed policies, procedures, and practices, for example, surgical safety procedures, infection control protocols, and fire safety practices. Although training programs were frequent, participants argued that they had to attend either before or after their working hours because of their busy work schedules.

> *P004: For us it is not,[that] we cannot leave the department, and we have to adapt ourselves to do the courses, after our duty, or before our duty [hours]. If the course is at 10 am and my duty at 7 pm, I will come at 10 to finish the course by 1 pm, then I will go back home, then I will come back at 7 pm.*

In addition, some of the HCPs were involved in improvement projects aimed at enhancing the quality of services in their departments. Such projects are called quality improvement projects and are measured by performance indicators. Due to their involvement in such projects, HCPs had to respond to frequent calls and attend different meetings to clarify and update the management on the status of their projects. Therefore, such activities were found to be time-consuming and to take away valuable time that could have been devoted on patients:

> *P012: A lot of time had been consumed because every week there would be one hour or two [hours] I had to shell out either from my clinic or from the operating room. So I had to be on my toes knowing that, yes, today I might be called many times for a particular meeting to clarify things.*

An apparent focus during the preparation phase was the emphasis on documenting patients' medical records as well as monitoring the improvement of the documents to a predefined goal. A common view among participants was that they focused mainly on completing patients' medical records. Hence, HCPs concentrated their efforts on improving these records before the inspection process. While all agreed that documentation was a safety practice for both patients and workers, some HCPs argued that they were engaged in the documentation task, which, as they perceived, reduced the actual care of patients. One individual stated that the process of documentation put them in front of computers, which could indicate less engagement with patients and more focus on producing perfect records.

> *P013: So with this accreditation system, it focuses on documentation, timing of staff and putting orders in the system, and all this stuff. Thus, it pulled us away from patients and put us in front of the computer. This is what had happened for nurses, for lab technicians, for doctors, for [emergency] physicians, for everyone.*

Not only had focusing on documentation influenced patient care, but attending meetings with direct managers or other staff to discuss the status of the preparations, was also perceived to have influenced the delivery of care. One participant stated:

> *P017: So appointments were canceled and appointments were postponed. Delays in inpatient services. It was seen and provided, but it was delayed more than usual or at the time that it was supposed to be given.*

Observed Work-Related Risks

One of the risks identified during the preparation for accreditation was the additional working hours that HCPs had to spend at work. A possible explanation for spending additional hours at work could be that HCPs felt responsible for achieving such accreditation. The majority of participants felt the need to sacrifice their leisure time to achieve the accreditation certificate. It was not possible for them to finish work demands within the official working hours, and spending additional hours at work was seen as essential in order to receive the accreditation. For others, they decided to work additional hours because they could not compromise on mixing patients' care with accreditation demands:

> *P009: We worked hard. We used to leave the hospital so late, after finishing our duty, we used to leave late from work.*

In addition, the staff shortage was a vital reason why participants felt overloaded with work. Due to the staff shortage,

workers were challenged to finish the requirements and take care of their patients at the same time.

P024: . . .if they [would] provide us [with] more staff, it would be fine. We [could have done] the documentation and patients' care all together, but because of the shortage of staff we [were] really having a hard time doing this.

While some HCPs worked for additional hours to finish their work, others had to complete their work from home. In contrast, few interviewees were able to manage the requirements without the need to spend extra hours working.

P012: I never had to stretch beyond my limits to stay back [at the hospital] two or three hours just for this work.

Participants explained as well how their work pace had increased to complete and meet the standards of accreditation before the inspectors' visits. HCPs might have worked faster because of the late implementation of new adopted standards and policies. There are two possible explanations for the late execution of these standards. First, accreditation is a change process, and change requires sufficient time from workers to accept and adapt to the new standards. It is possible that resistance to change lead to the delay, as participants were accustomed to previous practices and found it difficult to adapt to the new ones:

FG003: For me, I faced difficulties. Some of the staff did not accept these changes; there was some sort of negligence from the staff. Therefore, when we released the new [policies], we used to chase them. So, we used to teach them and inform them what to do. . . and for me, it was a challenge to come and ask them to work in a certain manner in a few months. Until now, I face the same challenge to change their mentality, [to ask them] to read and be updated about the policies. Yeah, there were difficulties.

The second explanation for the late execution of standards could be the late arrival of resources, such as equipment and staff. Although resources were provided, these resources arrived late and challenged workers to complete the required demands within a limited time and with limited resources:

FG001: They have to give [us] the resources and the staff, whatever it is; staff are also resources. All the things to be in [our] hands, then [we can] start working. Therefore, it will not be tense and will go smoothly. This will not waste our time. Therefore, we can reach the goal very fast instead of wasting [our] time.

Due to limited resources, HCPs felt uncomfortable and overwhelmed by the requirements of accreditation, including increased work demands prior to the arrival of inspectors. Although work requirements were manageable, the time needed to fulfill the requirements created a sense of discomfort among HCPs.

P010: I mean, squeezing us in this small period [of time] to do all the things. This was the worst thing at that time.

A common view among participants was the stressful feelings that went hand-in-hand with the preparation process, which was caused by the increased pace of work. Work pace describes the speed of work, and the pace HCPs maintained to organize their workplace before the arrival of inspectors. Participants felt they were pushed in a limited time to complete the required tasks before accreditation. Increased work pace was expressed through different statements about the speed of work. Many participants used the phrase "*we were running*" or "*we have to run*" to describe the pace of work prior to the arrival of inspectors.

P017: things were just announced at the last moment. And [we] had to rush through it to finish and [we] were not sure if it was right or wrong. There were things that had to be rushed and finished in the morning that [inspectors] were here. Therefore, [we] had to run from one office to another.

Furthermore, conflicting information and frequent changes in tasks requested from HCPs during the accreditation process were found to be wasteful. HCPs were obligated to repeat or update certain tasks before the inspection date. Such conflict was created confusion and uncertainty about fulfilling certain requirements. Information that was perceived as conflicting was said to be given at the last minute and was a source of considerable frustration.

FG002: if things were clear from the beginning, it would not be easier, but better for the preparation. I mean, our time was wasted because we were repeating things. Because everyone was saying something different.

Perceived Pressure From Accreditation Demands

This sub-theme refers to the pressure felt by HCPs to manage the demands of accreditation. It describes the impact of additional challenges placed upon HCPs during the preparation phase, which influenced participants' health and personal lives. A number of participants indicated that they had health problems during the preparation process for accreditation. HCPs reported high levels of stress due to their limited knowledge and skills related to the requirements of the process. Furthermore, HCPs faced additional work demands, such as working on files and paperwork, which intensified their work-related stress. One of the participants said:

P020: At first nervous. Overly stressed – I can say – and a lot of work, a lot of paperwork, we [had] to read, we [had] to understand what [we were] reading, [we had] to apply it. I mean before accreditation

While the majority agreed that preparing for accreditation was a stressful experience, a minority noticed changes in their health. These problems included behavioral, psychological, and medical problems. Due to the increased workload and time pressure, HCPs noticed a change in their eating habits, such as increased consumption of carbohydrates. Some of the participants reported weight loss, while others reported weight gain. Altered eating behavior could have contributed to weight fluctuations during the process of accreditation. Anger issues were observed by participants during this process. One of the HCPs said that she would prefer to have enough time to prepare instead of being angry and snapping at others, which could indicate problems induced by increased work demands. Other health problems such as musculoskeletal problems, digestive problems, and sleep disturbances were observed before the inspection process.

Psychological consequences, other than stress and anxiety, were recognized during the preparation process. A few HCPs

stated that they had to seek psychological consultation and had taken prescription medication during the preparation phase. Although participants were aware of their psychological health prior to accreditation, the increased psychosocial risks during such processes had worsened their mental health.

P028: To be honest, I experienced a lot of stress. I have anxiety issues and, unfortunately, I had some, to a lesser extent, anger problems, and anger issues. So I had to go and see a psychologist for that. . . honestly, it started with. It started before, but when I felt that I could not handle it anymore it was like, just to say, one month prior to the actual arrival of the [inspectors].

Furthermore, preparation for accreditation had a clear impact on HCPs' families and social lives. Participants felt that work tension had transferred to their homes as they continued working from home to manage the workload and additional tasks. HCPs faced difficulties in balancing work demands related to the accreditation process and their family time. Participants often mentioned that working additional hours took away valuable time that could have been devoted to their families, and they faced problems adjusting their working schedules to their family needs:

FG002: During the [accreditation] preparation, it was really stressful for us as physicians, for our patients, and even [for] our families.

Managements' Role During Accreditation

Participants had mixed views about the role of management in handling psychosocial risks during the preparation phase. Therefore, this sub-theme identified the way managers recognized and reacted to work demands during preparation. Some participants expressed the need to have policies and systems in place to support their psychological health when meeting such demands and when experiencing time pressure. In addition, participants perceived that their managers would listen to their problems or suggestions, but they would not react to them. Hence, one of the HCPs explained why she avoided reporting work-related injuries.

P016: Actually, I feel bad that I am giving a lot of effort and I am not taking care [of] myself,. . ., also, on the other hand, no one will respond to that, no one will take care [of us].

Surprisingly, participants felt that their managers were stressed as well during the preparation time; therefore, they were not able to show support.

P001: I think because [my supervisor] was already busy, she was [conducting] meetings with us, trying to revise the policies with us, but nobody actually concentrated or thought about [the] psychological effect or the stress [placed]on the staff,. . ..because we [felt] she was already stressed.

Participants were uncertain about the psychological support provided during increased work demands, and they were uncertain when asked about the support or activities that were planned to reduce their perceived pressure. Interestingly, few participants expressed their need to have a strong and firm style of management that engaged workers during the preparation phase. The HCPs felt that they would not have achieved accreditation without the pressure exerted by their managers. It was common for managers and supervisors to remind HCPs frequently about inspection visits and to get HCPs to achieve accreditation:

P004: You cannot blame anyone if you are in this stressful situation because it is something mandatory to keep the hospital working, it is required from the Ministry of Health. They have to get it, they have to push all the people in the same way, they cannot push you in different ways like they are dealing with me because we have different mentalities and different attitudes. If they will treat each one according to their mentality and attitude, it will be difficult for the higher management to finish it, so they have to be like this, but, it is on the other side, [workers] who are receiving, it will be stressful [for them].

Another challenging risk observed during the accreditation process was the lack of control over HCPs' leave. It was mentioned by a number of participants that the management had strict rules for permitting leave prior to the arrival of the inspectors. Participants felt uneasy about not having control over their leave. In addition, HCPs felt that they were asked to work on their holidays, although they were allowed to take their leave due once they had achieved accreditation.

P012: [staff] were stressed, and a couple of them could not get their leave until the last minute. That is surprising because of the accreditation process [managers] wanted every individual to be around.

Although a fair number of participants commented on the general fear and anxiety they felt due to the uncertainty of the accreditation process, participants felt that they might be blamed if they failed to achieve the accreditation. HCPs echoed the blame culture at their facilities, and they were afraid to be held responsible if they failed to answer questions asked by inspectors. As a result, they used to spend additional hours on the requirements for accreditation. Moreover, HCPs did not want to disappoint their coworkers or supervisors during the inspection visits. Managers explicitly reminded HCPs of the blame culture to engage workers in the preparation phase.

P012: I think the one single thing that I have noticed very prominently is the anxiety and the fear that was instilled, maybe coming from top down, from management level, coming down all the way to clinicians, to everybody. "We have to get the accreditation and if we did not get an accreditation, the owners would be in this particular department."

Theme 2: Enablers to Achieve Accreditation

The HCPs mentioned possible factors that eased the effect of increased risks during the process of accreditation. The analysis in this study considered these factors as enablers or resources that were highlighted during the accreditation process. These resources were based on interpersonal relationships, and perceived support from coworkers and managers. This theme has two main sub-themes that include supportive approaches in accreditation and perceiving meaningful work after accreditation.

Supportive Approaches in Accreditation

A common view among HCPs was observed teamwork and collaboration between HCPs. Participants acknowledged group efforts while working on the requirements, and the majority felt responsible for achieving such accreditation. The HCPs felt comfortable working in teams, and their work was perceived to be easier due to the teamwork. While some participants suggested that the presence of procedural policies and full documentation of patients' records granted them the needed support, others received strong support from coworkers during the increased workload to achieve accreditation, which eased the effect of the process and was found to create memorable moments.

P023: I sometimes mean [we] feel that [it] is too much. But the team was good. I mean there were quite a few people, you know, who were really dedicated and we worked out of fast. So, whenever you have teamwork, you feel good. I mean, sometimes even if [we] are stressed [we] just sit and have coffee together, [we] laugh and feel good about those things.

Some participants felt that their managers supported them during the increased workload to achieve accreditation. Managers were close to their subordinates during the final phase of the preparations, and a sense of collaborative teamwork was clear during this phase. The type of support managers provided was through simple words of encouragement. Support expressed by participants included open access to supervisors and managers during accreditation. Many HCPs were pleased to work directly with their managers:

P027: It is very rare to have the director and the medical director in this office here, but [during the accreditation] period we had them [here], they discussed with us the policies and highlighted certain areas. I felt like they [were] closer to us. Usually, they have the administrative part of work, and we have our clinical work. Therefore, we do not come to meet each other. Therefore, in the [accreditation] period we [worked] together. I felt that they were supportive.

The majority of participants agreed on the approach their manager took to recognize their hard work during the preparation period, by allowing the HCPs to take leave and permissions as a compensation for their additional working hours directly after achieving accreditation:

P028: Also, I would say that they have provided us later on with the public holidays because the accreditation came at the time of our national day. Therefore, we were asked to come to work on these days, which was a public holiday; thus, they compensated us with a day off.

Despite the fact that the majority agreed on the compensation of working days, some HCPs argued that their additional working hours were not fully rewarded, as the process of such compensation was not clear. Although interviewees took their time off after attaining accreditation, it was also likely that managers had requested employees to work additional hours during the preparation phase before inspectors' visit. The reported facts seem to support the assumption that managers preferred a positive inspection process to avoid criticism (Ehlers et al., 2017). HCPs were asked to work additional hours, although they would be rewarded after accreditation with equivalent days off. In addition, participants felt close to their managers in social events that followed the announcement of their accreditation status. HCPs felt recognized when their managers thanked them for their contributions to such an achievement.

Meaningful Work After Accreditation

This sub-theme suggests that getting an international accreditation motivates HCPs throughout the process of accreditation. When asked about their feelings afterward, the majority of participants felt proud to achieve an international accreditation. The HCPs felt that they were part of an international community, wherein all accredited healthcare facilities speak the same language of quality and patient safety. A possible explanation for such feelings is that HCPs valued accreditation outcomes due to the effort they had put in order to achieve the accreditation, which is known as the IKEA effect (Marsh et al., 2018). Moreover, having policies and good documentation in place gave them a sense of confidence that work was more accurate and safer for both patients and staff. Others felt that due to the knowledge that they had gained, they were confident in working in any organization. HCPs noticed an increased sense of work engagement after attaining accreditation. A possible explanation for this may be that HCPs were involved and committed in the preparation process.

P020: I mean before it is just like I will come and go for [my] duty, I do something only [for the] patient's care, I do not need to do this one, and I do not want to do this. " It is just like [to] come and go, but now, um, during the accreditation, I have to do something meaningful. I mean something meaningful in my life that I am doing because not only [it's] for me but [also] for my colleagues [and] for the patients.

Accreditation may have contributed to an increase in the sense of confidence and work engagement among workers. However, some participants would not like to repeat the process again or be part of the preparation:

P028: I feel relieved and I do not want to go through that again.

FG001: Those [staff] that were like in a [state of] tension [during] that time, I think they do not want to do it again. They do not want to repeat that on the next [accreditation].

The analysis shows that accreditation has a positive impact on organizing aspects of work and promoting change in healthcare facilities, particularly in safety practices. The data describes the structured working environment and the way accredited facilities are operating after such achievement. HCPs' opinions about the working environment after attaining accreditation were positive. They became aware of a more organized work environment and safety procedures when dealing with patients. In addition, unnecessary processes were removed from certain professions. For instance, nurses reported that they used to perform certain tasks that were not part of their job description, that is, storing and managing medications. HCPs perceived that accreditation accentuated their tasks and responsibilities, and they observed that accreditation created a common patient-safety language among them. It seems that having clear policies and procedures

introduced a safer working environment for HCPs. Participants took note of standardized work in their workplaces, which increased their level of confidence.

> *P010: It is now organized. I feel it is organized, I mean, now everything in its place, and dealing even with patients, we have specific [procedures] like, right and wrong, and all these things. We have many things changed and removed from the departments, which were not needed, and not to be used.*

DISCUSSION

Although the impact and outcome of accreditation in healthcare organizations remain debatable, many countries, including the United Arab of Emirates, mandate such assessments for a better delivery of healthcare services. This study provided a rich understanding of potential psychosocial risks associated with the accreditation processes taking place in healthcare organizations. Accreditation programs have been found to promote change, standardize work, and limit potential errors caused by different practices (Greenfield et al., 2012). Further, HCPs are motivated to work in accredited organizations, which enhance their engagement in the workplace. This study aimed to explore the emerging psychosocial risks during the course of healthcare accreditation. By using a qualitative paradigm, the study was designed to understand the emerging psychosocial demands faced by HCPs in the context of accreditation, the unexpected pressure it had placed upon them, and the resources needed to manage such increased demands.

The study used interviews and focus group discussions to understand the perceptions of HCPs from different working environments on the accreditation process. The analysis of such interviews and focus group discussions generated two main themes: *challenging factors in the process of accreditation* and *enablers to achieve accreditation*. The process of accreditation started when facilities adopted and generated new policies and procedures to promote a safer environment for patients. After this, workers received sufficient training to work in line with such policies. Initially, HCPs were excited to be part of the process; however, such excitement declined as workers approached the inspection date. With respect to the research questions, it was found that preparing for accreditation went hand-in-hand with increased psychosocial risks, such as increased job demands and work pace, conflicting information, and perceived strain. Such findings support evidence from previous observations regarding the negative impacts of accreditation, which include increased workload (Touati and Pomey, 2009; El-Jardali et al., 2014), increased stress levels (Kousgaard et al., 2019), and use of resources (Brubakk et al., 2015).

In line with the literature, this research found that HCPs who went through the accreditation process were proud and confident. HCPs felt they were knowledgeable and engaged in their workplace because accreditation focused on overlooked training areas such as managing organizational safety and emergency codes. Accreditation standardized the delivery of services to patients by creating a shared patient-safety language among HCPs (Bogh et al., 2018). Although the preparation phase extended from six months to three years, the majority of HCPs felt the pressure of achieving accreditation one month before the arrival of the inspectors. This pressure was due to the additional demands placed on HCPs and the late start to implement standards required to achieve such accreditation. A possible explanation for this delay could be the time needed from workers to adapt to such change. Accreditation is a change process that adds new job demands for individuals working in healthcare organizations. Previous research has suggested that organizational change is perceived as a traumatic event causing distress and disturbance among workers (Houdmont and Leka, 2010). Organizational change can create ambiguity about the role of individuals and the future of organizations.

With respect to the first research question, preparing for accreditation seems to increase work demands and workload; therefore, HCPs' attitudes toward the process of accreditation were negative. HCPs had different responsibilities prior to the inspection visit. For example, participants defined their roles during such process as taking care of patients, familiarizing themselves with the new standards, attending different training courses, and completing patients' records and paperwork. Such an increased workload led HCPs to work additional hours. Furthermore, HCPs observed an increased pace of work to manage such requirements. HCPs often described working during the preparation as running to complete accreditation requirements. Therefore, increased work pace is one of the most obvious findings to emerge from the analysis.

While documentation, the process of recording patient's medical status, is an essential requirement to assess the quality and safety of healthcare services, the current study found that such requirements compromised the time spent with patients, as HCPs focused on enhancing the quality of such records. Furthermore, attending frequent meetings related to the accreditation process was found to delay the delivery of services to patients, such as canceling or rescheduling appointments. These results seem to be consistent with recent studies indicating that efforts made in preparing for accreditation are found to compromise patients' care (Ho et al., 2014; Bogh et al., 2018). In addition, HCPs exhibited a range of health issues before the inspectors' visits, which were attributed to the preparation process. While some had medical issues, such as musculoskeletal and digestive problems, others had behavioral problems such as sleep disturbances and anger issues. In addition, a number of HCPs noticed changes in their psychological health and the need to take medication before the assessment.

The study revealed a shared sense of fear and anxiety among HCPs during the inspection process. At first, HCPs were anxious about the uncertainty of the process of accreditation and the type of questions the inspectors might ask them. Therefore, HCPs tried to avoid such encounter by changing their shift duties or taking permissions, although taking leaves were not allowed before the inspectors' visit. Unexpectedly, management restricted any kind of leave or permissions during the visit of the inspectors. Additionally, HCPs felt that they would bear the responsibility for not achieving accreditation as managers explicitly reminded workers to be prepared; otherwise, HCPs would be held accountable for not achieving accreditation. Due

to the blame culture, HCPs worked additional hours to avoid such responsibility. In contrast, when healthcare workers met the inspectors, they felt comfortable and relaxed. They sensed that the purpose of the visit was to ensure a safe environment for patients.

The second question in this study sought to identify the type of support provided to HCPs to mitigate the negative impact of accreditation. It was difficult to define the measures adopted by managers to support HCPs during the accreditation process. However, many participants referred to teamwork and coworkers' support to ease the effect of work demands during the preparation phase. While managers supported their employees during the preparation for accreditation, others experienced elevated stress. Therefore, HCPs could not seek psychological support from senior personnel. Ehlers et al. (2017) demonstrated that managers value positive external evaluations during accreditation, which might explain the level of tension in order to achieve such a positive assessment. Furthermore, strict features of management during the preparation phase were essential to engage workers in the preparation process as perceived by some HCPs.

This study did not intend to denounce healthcare accreditation; instead, it aimed to raise awareness of the consequences of psychosocial risks in healthcare accreditation. Findings showed that the process of accreditation increases work-related risks before the inspection visit. Some of the findings related to how accreditation processes increase psychosocial risks. These findings also consolidated the idea that appropriate systems and support for HCPs should be a priority when planning for accreditation. Furthermore, organizations should plan and inform HCPs for what to expect from the process of accreditation. While many healthcare organizations experience the challenging demands of accreditation, these organizations are required to prepare in advance for such inspection. Further, organizations need to develop a structured process for HCPs to balance between patients care and requirements of accreditation. According to this study, we can infer that the accreditation process has a clear impact on the psychosocial risks in healthcare facilities before the inspection visit. These findings raise intriguing questions about the nature and extent of accreditation regarding high job demands, inconsistent job resources, and unclear management practices to prioritize HCPs' psychological health during the assessment. Future studies should consider a longitudinal design to investigate the job demands-resources model and highlight the role of healthcare facilities in improving the safety climate as a supportive measure for workers during the accreditation process.

LIMITATIONS

Within the context of the current study, data were collected in participants' workplaces hoping that they would feel comfortable and have control over the data collection process. The interviewer was a postgraduate researcher with prior assumptions regarding the process of accreditation. It is essential to note that the interviewer's professional background and knowledge of accreditation could have impacted the findings and shaped conclusions drawn from this study. Since the study was limited to healthcare organizations in the United Arab Emirates, the results might not be relevant to other settings because of the cultural differences. The study, however, aimed to capture HCPs' perceptions and experiences regarding accreditation, thereby adding to the existing literature. Another limitation is that the study relied on different recruitment methods that could have led to biased responses from participants. Therefore, the study could not rule out nonrandomized bias in the selected sample. However, the data provided rich information about the process of accreditation, which was consistent with the literature (Ho et al., 2014; Brubakk et al., 2015; Bogh et al., 2018). While the data collected in this study was comprehensive, a possible limitation of the interviews and focus groups might be the participants' overreporting of negative perceptions about management support. Such perceptions could be due to the unclear relationship between HCPs and their managers, which underestimated the role of managers during accreditation. However, during interviews and focus group discussions, participants acknowledged the support provided by managers by means of simple words of encouragement, suggesting unclear support during the accreditation process.

CONCLUSION

The impact of healthcare accreditation has been investigated widely over the past decades; however, there have been few published qualitative studies that focus on the apparent psychosocial risks in the context of healthcare accreditation processes. Most studies in this field have only focused on the outcome of accreditation as an opportunity to structure and organize the working environment. So far, however, there has been little discussion about the psychosocial risks that go hand-in-hand with the process of accreditation. This study mainly focused on emerging psychosocial risks during the implementation of healthcare accreditation. This study showed that the process of accreditation increases work-related risks before the inspection visit. Such risks were identified as increased job demands and work pace, conflicting information, and perceived strain. Furthermore, the supportive role of management was not clear or standardized during this process. These findings have significant implications for understanding how accreditation processes increase psychosocial risks; they also consolidate the idea that appropriate systems and support for HCPs should be a priority when planning for accreditation. A key policy priority should therefore be to plan for the long-term impact of psychosocial risks that may be associated with accreditation. Despite its limitations, this study adds to our understanding of the challenges and supports experienced by HCPs throughout the process of accreditation. These findings provide the following insights for future research. Further research using both qualitative and quantitative methods is needed to strengthen the findings related to the opportunities and threats accreditation poses to HCPs. Therefore, a greater focus on increasing the awareness of policy makers about the

consequences of psychosocial risks could be useful in sustaining improvement initiatives in the healthcare sector.

DATA AVAILABILITY STATEMENT

All datasets generated for this study are included in the article/**Supplementary Material**.

ETHICS STATEMENT

Ethical permissions were obtained from the Division of Psychiatry and Applied Psychology Research Ethics Sub-Committee at the University of Nottingham (i.e., Reference Number – 0236) and the Ethical Committee at the Ministry of Health and Prevention in the United Arab Emirates (MOHP/REC-40/2018). Participants were given information sheets that described the purpose of the study. After reading the information sheets, participants were asked to sign a consent form prior to commencing the talk. Written, informed consent was obtained from the individual for the publication of any potentially identifiable images or data included in this article.

AUTHOR CONTRIBUTIONS

AA contributed to the design of the study, the collection of the data, the development of the outcomes, and drafting of the manuscript. LT contributed to the design of the study, analysis of the data, and preparation of the manuscript. AS read and critically revised the outcomes. All the authors have read and approved the final manuscript.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2020.01614/full#supplementary-material

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Self-Leadership Among Healthcare Workers: A Mediator for the Effects of Job Autonomy on Work Engagement and Health

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Due to the high workload, working within the healthcare industry can be quite demanding. This often results in high rates of absenteeism, unfulfilled vacancies, and voluntary turnover among healthcare workers. We expect that job autonomy is an important resource for work engagement and health of healthcare workers because it satisfies the basic need for autonomy. However, we propose that this relationship between job autonomy and work engagement and health can be explained by self-leadership. Self-leading individuals take initiative and responsibility and are assumed to use self-influencing strategies (e.g., goal setting, self-observation, creating natural rewards) as a way to improve motivation and general well-being. Employees from two healthcare organizations (N = 224 and N = 113) completed a questionnaire containing measures of job autonomy, work engagement, general health, and self-leadership. The hypothesized model was tested using a series of regressions, and the results confirmed the indirect relationships between job autonomy and work engagement and general health, respectively, through natural rewards strategies. The behavior-focused and cognitive self-leadership strategies were, as mediator, marginally significant: positively for work engagement and negatively for general health. Self-leadership behavior was not related with work engagement and general health. Implications of the findings for theory and practice on healthy healthcare workers are discussed.

Keywords: job autonomy, self-leadership, work engagement, health, healthcare workers

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INTRODUCTION

Working within healthcare is often valued as meaningful, energizing, and engaging as this type of work is expected to generate feelings of meaningfulness and joy throughout a career (De Cooman et al., 2008; Toode et al., 2011). However, healthcare workers around the world also report that their work is demanding, stressful, and dissatisfying, resulting in high rates of absenteeism and premature exit from this specific labor market (Garrosa et al., 2008; Estryn-Behar et al., 2010; Hayes et al., 2012).

Drawing on the job demand control model (Karasek, 1979), it has been repeatedly suggested that reduced well-being among healthcare workers is a result of the interaction between the high workload and low job control of the jobs within the healthcare industry (e.g., Laschinger et al., 2001). Therefore, scholars suggest that increasing job autonomy is one of the job design measures

that should be taken in order to improve the motivation and health of healthcare workers (Widerszal-Bazyl et al., 2003; Cicolini et al., 2014). Job autonomy refers to the amount of freedom and independence within a job as well as the discretion of the individual in scheduling the work and determining the procedures (Hackman and Oldman, 1976). Self-determination theory (SDT, Deci et al., 2017) explains that people have a basic psychological need for autonomy, which they want to satisfy. Through satisfaction of this need, people are allowed to make their own choices and bring activities in line with their own values and interests, leading to intrinsic motivation, vitality, personal growth, and general health (Ryan and Deci, 2000, 2008). According to Hall (1968), job autonomy enables dedicated professionals, such as nurses and social workers, to self-regulate their job tasks in a responsible way (Hall, 1968). The basic assumption is that, if employees are well educated for their profession, they are assumed to be willing and able to autonomously regulate their own job tasks responsibly. They are able to solve daily problems and proactively ask feedback from colleagues if necessary. Therefore, the facilitation of job autonomy is needed for being able to professionally do one's job as healthcare professional (Hall, 1968).

However, despite the growing support for job autonomy as an important job design measure for healthcare professionals, employees seem to differ in the effectiveness of the interaction between job control and job demands (Presseau et al., 2014). If healthcare workers are confronted with high job demands while being facilitated with job autonomy, they need to possess competencies for self-control and self-determination (Wagner et al., 2010). In other words, we propose that they need to have competencies for self-leadership.

Self-leadership theory assumes that people can autonomously direct and motivate themselves (Manz, 1986, 2015). Self-leadership refers to "a comprehensive self-influence perspective that concerns leading oneself toward performance of naturally motivating tasks as well as managing oneself to do work that must be done but is not naturally motivating" (Manz, 1986, p. 589). It is assumed that self-leadership can play a distinctive role for healthcare professionals working in high-strain jobs (Lovelace et al., 2007). Through practicing self-leadership, people might be able to positively influence their motivation and health even if their job autonomy is low (Lovelace et al., 2007; Stewart et al., 2019). Within the healthcare literature, there is growing evidence for the potential benefits of self-leadership for the well-being and performance of healthcare professionals (e.g., Jooste and Cairns, 2014; Kayral and Dülger, 2019; Kim and Kim, 2019). Still, self-leadership theory assumes that an autonomy-supportive work context is beneficial for the self-leadership of employees as they are encouraged to actually take up responsibility for their job and increasingly use cognitive and behavioral self-influencing strategies in order to optimize their own motivation and performance (Stewart et al., 2019).

In the present study, we draw on SDT (Deci et al., 2017; Ryan and Deci, 2017) to explain why self-leadership is a critical mediator in the relationships between job autonomy and work engagement and the health of healthcare professionals. We propose that, if healthcare professionals are facilitated with job autonomy, this directly associates with work engagement and health and also indirectly through the practice of self-leadership (Lovelace et al., 2007; Stewart et al., 2011; **Figure 1**). The assumptions are tested with a sample of healthcare professionals from two different Dutch organizations: a nursing home and an organization for disability- and psychiatric care.

With this study, we aim to contribute to the existing literature in several ways. First, we integrate insights from SDT in the motivational process (Gagné and Deci, 2005; Deci et al., 2017) with self-leadership theory (Manz, 2015; Stewart et al., 2019). SDT proposes that people are inherently intrinsically motivated, which can be thwarted if the basic psychological need for autonomy is not satisfied, for instance, by a controlling work context. However, self-leadership theory assumes that people are not merely a result of controlling external regulation as they can self-influence their motivation and behavior, including their health (Lovelace et al., 2007). In the present study, we test whether self-leadership explains the proposed relationship between job autonomy and work engagement and health, respectively.

Second, we contribute to the self-leadership literature as we have separated three different aspects of the self-leadership process: actual self-leadership behavior, natural rewards strategies, and the use of behavioral and cognitive strategies. Self-leadership studies often focus on one dimension of self-leadership (e.g., Yun et al., 2006; Zeijen et al., 2018), resulting in limited insight into the self-leadership process. The present study includes both the self-influencing strategies (i.e., natural rewards strategies and cognitive and behavioral strategies) and the actual self-leadership behavior as these might have different relationships with job autonomy and the outcomes on work engagement and health.

Third, the present study is specifically focused on healthcare professionals. Healthcare literature assumes that both organizational interventions and individual coping strategies (McVicar, 2003) are important considerations to investigate optimal work conditions for these professionals. The present study is among the first to test the influence of both job autonomy and self-leadership on the work engagement and health of healthcare professionals.

THEORETICAL BACKGROUND

The Role of Autonomy in Work Engagement and Health

According to SDT, autonomy plays an important role in the motivational process of employees. Autonomy refers to the regulation by the self (Ryan and Deci, 2006). It involves acting with a sense of volition and having the experience of choice (Gagné and Deci, 2005, p. 333). By referring to the philosopher Dworkin (1988), SDT theorizes that autonomy is represented by the full endorsement of one's actions at the highest level of reflection (Gagné and Deci, 2005).

SDT assumes that people have a basic psychological need for autonomy, which they want to satisfy (Deci and Ryan, 2000). The psychological experience of autonomy allows people to freely choose their activities. If motivation is based on autonomy, it is more integrated with personal goals, values, and interests and ultimately based on intrinsic motivation (Gagné and Deci, 2005).

FIGURE 1 | Conceptual model.

Intrinsic motivation is recognized by the implicit interest and enjoyment for a task or activity itself. Intrinsic motivation is fully volitional and is associated with increased levels of vitality, energy, health, and personal growth (Ryan and Deci, 2008; Deci et al., 2017).

In contrast, if activities are not based on autonomous choices, they require external behavior regulation. The enactment depends upon the perception of the contingency between the behavior and another desired consequence. For instance, one acts to avoid negative feedback or to receive specific tangible rewards. If motivation is externally regulated, it is based on control (Ryan and Deci, 2000; Gagné and Deci, 2005). Activities are done because they *must* be done, which triggers a sense of pressure and strain. Therefore, extrinsic or controlled motivation is associated with increased levels of stress and with the impairment of health (Ryan and Deci, 2008; Van den Broeck et al., 2011; Weinstein and Ryan, 2011).

SDT assumes that, if the job context is highly controlling, meaning that the level of freedom and independence in a job is low, this can reduce the intrinsic motivation and health because the basic need for autonomy is thwarted (Deci et al., 1999; Gagné and Deci, 2005). If professions, such as healthcare workers, are not free to responsibly determine their own way of working, their behavioral intentions are regulated by external control. For instance, if healthcare institutions try to regulate employees' behaviors through an abundance of procedures and feedback systems, employees might be more motivated to achieve these external goals than to deliver the care they want to deliver to their clients. More specifically, employees might act in order to prevent themselves from negative feedback from the manager or in order to receive compliments by managers as a way to boost their self-esteem. Work behavior tends to be based on what one *must* do (controlled motivation) instead of what one is *willing* to do (autonomous motivation). It is assumed that, even if nurses are originally intrinsically motivated for a job task, the implementation of external control can easily distract them, leading to an increased strain and reduced intrinsic motivation (Gagné and Deci, 2005). In contrast, if employees can define their own way of working more freely, they are assumed to value the work more for its inherent joy and meaningfulness.

Intrinsic work motivation is theorized to be represented by the concept of work engagement (Salanova and Schaufeli, 2008). Work engagement refers to a positive, fulfilling, work-related state of mind, which is characterized by dedication (i.e., strong involvement, enthusiasm, pride, and experience of significance), vigor (i.e., high levels of energy and mental resilience), and absorption (full concentration and difficulties with detaching oneself from work) (Schaufeli et al., 2006). Work engagement is assumed to be an indicator of the general autonomous and intrinsic motivation at work (Salanova and Schaufeli, 2008; Van Beek et al., 2012). Where intrinsic motivation can be specifically focused on one job task, work engagement is not specifically focused on a momentary state, object, event, individual, or behavior. It reflects a more persistent and pervasive affective-cognitive state (Schaufeli et al., 2006). Engaged workers work because they genuinely *want* to work (Salanova and Schaufeli, 2008). It is assumed that work engagement predicts positive organizational outcomes, such as customer satisfaction, because engaged workers are willing to go the extra mile (Bakker et al., 2014).

There is abundant evidence available to support that job autonomy is an important resource for work engagement and health (Bakker and Demerouti, 2007; Van den Broeck et al., 2008; Bakker et al., 2014). Within healthcare, job autonomy seems to be a predicting factor for work engagement and mental and physical health of healthcare workers (Toode et al., 2011). For instance, evidence is found that home care nurses report significantly more work engagement and lower levels of burnout when facilitated with autonomy (Vander Elst et al., 2016). Furthermore, it was proven that job autonomy is an important resource for nurses working within the hospital setting as it contributes to their work engagement (Vera et al., 2015). And Madathil et al. (2014) found in a sample of psychiatric nurses that they report lower levels of burnout if they are facilitated with job autonomy (Madathil et al., 2014).

Therefore, we hypothesize the following:

Hypothesis 1: Job autonomy is positively associated with (a) work engagement and (b) general health of healthcare workers.

Self-Leadership: The Actual Autonomous Functioning

Although SDT has the premise that satisfaction of the need for autonomy plays an important role in work engagement and health (Ryan and Deci, 2008; Van den Broeck et al., 2008; Deci et al., 2017), it does not describe strategies on *how* people can autonomously control the motivational process (Bakker and Van Woerkom, 2017). In fact, SDT assumes that the satisfaction of the need for autonomy inherently leads to autonomous functioning and intrinsic motivation (Ryan and Deci, 2017).

However, self-leadership theory describes the process of self-influence with the aim to optimize motivation and general performance (Neck and Houghton, 2006). Self-leaders strive to regulate their cognition and behavior in such a way that work and life become more aligned with personal goals, needs, and interests and, therefore, become more valuable, meaningful, and enjoyable (Manz, 1986, 2015). People who take the lead act on the basis of authentic or autonomous choices (Yun et al., 2006; Manz, 2015; Stewart et al., 2019). A self-leader is assumed to autonomously define *what* to do (standards and objectives), *why* to do things (strategy), and *how* to do things (methodology) while being less dependent on contextual control systems (Manz, 1986; Stewart et al., 2011). True self-leadership represents autonomous functioning as one can fully endorse personal activities and act on a basis of higher order reflections (Manz, 2015).

So as to effectively function in an autonomous way, self-leaders are assumed to use specific behavioral and cognitive self-influencing strategies with the aim to optimize motivation, well-being, and performance (Manz, 1986, 2015; Neck and Houghton, 2006). These strategies are classified in three basic categories, which are behavior-focused strategies, constructive thought pattern strategies, and natural reward strategies. *Behavior-focused strategies* (e.g., self-observation, self-goal setting) can be used for self-motivation and self-direction in case tasks are difficult, boring, or otherwise challenging but still need to be done. They are especially helpful in tasks and goals that are based on extrinsic motivation (Manz, 1986; Houghton and Neck, 2002; Neck and Houghton, 2006). *Constructive thought pattern strategies* (e.g., mental imagery, positive self-talk, and evaluation of thoughts, and assumptions) aim to mentally motivate oneself to achieve job tasks and manage functional patterns of habitual thinking (Neck and Manz, 1992, 1996). They generally focus on opportunities rather than threats and can help to reduce negative thoughts about a job task or situation and to construct more positive and helpful thoughts (Neck and Houghton, 2006). And finally, *natural reward strategies* refer to both behavioral and cognitive strategies, aimed at fostering positive affect and intrinsic motivation (Neck and Houghton, 2006). Natural rewards can be achieved by actively creating more attractive job conditions. Aside from that, one can also cognitively increase natural rewards by changing the mental focus from unpleasant aspects within a task to pleasant, naturally rewarding aspects of the task (Neck and Houghton, 2006).

Job Autonomy and Self-Leadership

Several scholars have theorized that self-leadership can be facilitated by highly autonomous job contexts (Alves et al., 2006; Stewart et al., 2019). It is assumed that, if employees are given substantial freedom in their jobs, employees tend to more autonomously define what to do, why to do things, and how to do things while being less dependent on instructions by external leaders (Manz, 1986; Stewart et al., 2011). Moreover, as a result of job autonomy, employees are more dependent on their own cognitive and behavioral self-influencing strategies as the external directions and cues are missing (Alves et al., 2006; Müller and Niessen, 2019). Indeed, Müller and Niessen (2019), in a study among teleworkers, found that on days when employees work from home, they make significantly more use of self-leadership strategies (self-reward, self-goal setting, visualization of successful performance, and evaluation of beliefs and assumptions), which was explained by the perceived job autonomy. Furthermore, some studies found evidence for the moderating influence of job autonomy on the association between self-leadership and job satisfaction (Roberts and Foti, 1998; Ho and Nesbit, 2014) and performance, respectively (Ho and Nesbit, 2014). Moreover, Hornung and Rousseau (2007) found that job autonomy can have long-term effects on personal initiative of hospital workers over a time period of 18 months while the reverse effect measured in the same period was not significant.

The Effects of Self-Leadership on Work Engagement and Health

Self-leadership theory is based on the early work by Deci (1975) as it acknowledges the difference between extrinsic and intrinsic motivation for behavioral outcomes and well-being. True self-leadership is based on autonomous choices and intrinsic motivation (Manz, 1986, 2015). However, self-leadership theory recognizes that a job always has tasks that are not naturally motivating but simply need to be done. For these types of tasks, self-leaders can use the self-management strategies (Manz, 1986; Stewart et al., 2011, 2019). Self-management refers to the self-influencing process aiming to meet externally set standards and objectives. For instance, when an employee needs to follow strict regulations within a job task, this procedure is not autonomously chosen and, hence, externally determined. Still, the individual can self-manage motivation and behavior by using cognitive and behavioral self-influencing strategies. The use of behavior-focused strategies, such as self-observation, goal-setting, and tangible self-rewards can function as powerful motivators for actual performance. And constructive thought pattern strategies and natural rewards strategies are helpful for making boring, difficult, or otherwise challenging job tasks more naturally rewarding or, at least, more meaningful (Neck and Houghton, 2006).

Indeed, evidence is growing for the influence of self-leadership on outcomes related to work engagement. Breevaart et al. (2016) find support for the idea that actual autonomous self-leadership behavior (i.e., taking responsibility and initiative in an independent way) is associated with work engagement. In a weekly diary study, it was found that, in weeks in which employees show more self-leadership, they also report higher rates of work engagement (Breevaart et al., 2016). Furthermore, Breevaart et al. (2014) find, in a daily diary study among

maternity nurses, that behavior-focused self-leadership strategies (self-goal setting, self-observation, and self-cueing) had positive effects on work engagement through the mediating effect of the specific job resources "feedback" and "developmental opportunities" (Breevaart et al., 2014). There is also evidence for the influence of cognitive self-leadership strategies on outcomes related to well-being and job satisfaction as it was confirmed that this relationship is negatively mediated by dysfunctional thought processes (Houghton and Jinkerson, 2007). Furthermore, natural rewards strategies are assumed to play a central role in the motivational process as they are specifically aimed to improve intrinsic motivation (Furtner et al., 2015). Furtner et al. (2012) investigated, with an intervention study among a group of psychology students, which self-leadership strategies were perceived as most beneficial for improving their motivation and performance for their studies. It was found that the students most appreciated the natural rewards strategies as these were helpful to increase their intrinsic motivation during their studies (Furtner et al., 2012). Furthermore, evidence finds that natural rewards strategies are negatively associated with fear of failure (Furtner and Rauthmann, 2011) and these strategies have a unique and strong relationship with job performance (Furtner et al., 2015).

Besides the positive effects of self-leadership on work engagement, there is also some evidence for the positive effects of self-leadership on outcomes related to mental and physical health. Lucke and Furtner (2015) find that training of self-leadership for soldiers contributed to their physical and mental performance. And Unsworth and Mason (2012) find that a self-leadership intervention helps to reduce work related strain while self-efficacy and positive affect increased (Unsworth and Mason, 2012).

The Mediating Role of Self-Leadership

We assume that self-leadership mediates the relationship between job autonomy and work engagement and health, respectively, in three different ways. First, job autonomy encourages healthcare workers to take up responsibility and act on the basis of their own professional insights (Hall, 1968; Hackman and Oldman, 1976). SDT explains that the experience of freedom within a job changes the motivation from controlled to autonomous motivation (Gagné and Deci, 2005). The reduction of external control and, thus, the improvement of job autonomy stimulate actual self-leadership behavior. The actual autonomous functioning satisfies the basic need for autonomy and, therefore, contributes to work engagement and health. Second, job autonomy facilitates employees to determine their own way of working and to bring this in line with personal preferences (Deci and Ryan, 2000). The absence of external control allows healthcare workers to complete their tasks in their own favorite way and also to concentrate their mental focus on the naturally rewarding aspects of the job rather than on the things that must be done. Because natural rewards strategies aim to improve intrinsic motivation and reduce the focus on external behavior regulations, we expect an increase in work engagement and health (Ryan and Deci, 2008).

Third, job autonomy enables healthcare workers to take charge of job demands and the achievement of work-related goals (Bakker and Demerouti, 2007). The job demands of healthcare workers can sometimes be challenging, difficult, or boring though the work still needs to be done. Experiencing job autonomy encourages employees to take charge of organizing job demands by using behavioral and cognitive self-leadership strategies (Müller and Niessen, 2019). By using these strategies, healthcare workers experience more control in their work, leading to more work engagement and health even in a highly demanding work environment (Lovelace et al., 2007).

Based on the arguments above, we propose that the facilitation of job autonomy encourages healthcare professionals to take the lead, which explains the positive effects of job autonomy on work engagement and health. We hypothesize the following:

Hypothesis 2: Self-leadership behavior mediates the relationship between job autonomy and (a) work engagement and (b) general health of healthcare workers.

Hypothesis 3: Self-leadership natural rewards strategies mediate the relationship between job autonomy and (a) work engagement and (b) general health of healthcare workers.

Hypothesis 4: Self-leadership cognitive and behavioral strategies mediate the relationship between job autonomy and (a) work engagement and (b) general health of healthcare workers.

METHODS

Sample and Procedure

Data was collected from two samples from organizations within the Dutch healthcare industry. The Dutch healthcare industry (including the welfare sector) is one of the largest employers in the Netherlands. Almost one in six working people (more than 1.2 million people) work in healthcare, including hospitals, nursing homes, disability care, psychiatric care, home care, and youth care. The majority (more than 70%) of these employees are women. Employees in this sector are, on average, slightly older than in the rest of the Dutch labor market (CBS, 2019).

The first sample (Organization A) was collected within three divisions (N = 722) of an organization for disabled and/or psychiatric clients. The second sample was collected among the full working population of a nursing home (N = 377) (Organization B). The first organization uses a management strategy that stimulates self-leadership. Employees work in self-management teams although managers are still responsible. Within this organization employees are strongly encouraged to take ownership of work-related problems and solve these problems independently. The second organization is a more traditionally organized nursing home in which every team has its own manager, and self-leadership is not actively stimulated.

Employees were invited by email to fill in an online questionnaire, and a paper version of the questionnaire was also available. Respondents were ensured of anonymity, and as an incentive, they could fill in their email address if they appreciated individual feedback on their score. Data collection resulted in a response-rate of 31% (N = 224) in Organization A and 30%

(N = 113) in Organization B. Respondents were social workers, nurses, and paramedical staff members. Only 1.5% (N = 5) had a management role. In Organization A, 69% (N = 155) of the respondents were female, and in Organization B, this percentage was about 86% (N = 93). The uneven distribution of males and females in our sample is in line with the overall distribution of gender across healthcare organizations in the Netherlands. The average age of respondents was similar across both organizations (Organization A: 41.5 and Organization B: 40.1). Finally, 9% of the respondents in Organization A completed primary/secondary school, 36% completed vocational training, and 52% completed a college degree. In Organization B, 26% completed primary/secondary school, 54% completed vocational training, and 20% completed a college degree. The average age of the merged sample was 41 years (SD = 12.8) and 75% was female. And 15% completed primary/secondary school, 42% completed vocational training, and 41% completed a college degree.

Measurement Instruments

Job Autonomy

In line with suggestions from self-leadership theory (Stewart et al., 2011), job autonomy was measured with the nine-item scale for job autonomy developed by Morgeson and Humphrey (2006). This scale captures a broad range of aspects concerning job autonomy, which is within self-leadership theory theorized to be representative of the degree to which employees experience autonomy within their job. Three dimensions of job autonomy are included, which are decision-making autonomy, work-scheduling autonomy, and work-method autonomy. These items refer to decision-making autonomy (three items, e.g., "The job allows me to make a lot of decisions on my own"), work-scheduling autonomy (three items, e.g., "The job allows me to decide on the order in which things are done on the job"), and work-method autonomy (three items, e.g., "The job allows me to make decisions about what methods I use to complete my work"). The full nine-item scale shows sufficient reliability (α = 0.95). Employees responded on a five-point response scale ranging from strongly disagree (1) to strongly agree (5).

Self-Leadership

For getting insight into the self-leadership process, we chose three different perspectives on self-leadership. Self-leadership behavior (SLB) is assumed to represent the actual autonomous behavior of employees (Yun et al., 2006). Following the suggestions by Houghton et al. (2012), we used both the abbreviated self-leadership questionnaire (ASLQ) (Houghton et al., 2012) for getting insight into the cognitive and behavioral strategies (SLS) and the natural rewards subscale (Houghton and Neck, 2002) as these might separately influence outcomes related to motivation.

SLB was measured by the six-item self-leadership measure as used by Yun et al. (2006). Example items of this scale are "I solve problems when they pop up, without always getting my supervisor's stamp of approval," "I take initiatives on my own," and "I assume responsibilities on my own." The reliability of the self-leadership behavior scale was good (α = 0.90). Employees responded on a five-point response scale ranging from strongly disagree (1) to strongly agree (5).

Self-leadership natural rewards strategies were measured with the five-item natural self-rewards strategies scale (Houghton and Neck, 2002). Sample items are "I seek out activities in my work that I enjoy doing" and "I focus my thinking on the pleasant rather than the unpleasant aspects of my job activities." The measure showed sufficient reliability (α = 0.85). Employees responded on a five-point response scale ranging from strongly disagree (1) to strongly agree (5).

SLS were measured by the ASLQ (Houghton et al., 2012), which represents three subfactors: "behavior awareness and volition" (goal setting and self-observation), "task motivation" (mental imagery and self-reward), and "constructive cognition" (positive self-talk and evaluation of beliefs and assumptions). A sample item for behavioral awareness and volition is "I establish specific goals for my own performance." A sample item for task motivation is "I visualize myself successfully performing a task before I do it." A sample item for constructive cognition is "I try to mentally evaluate the accuracy of my own beliefs about situations I am having problems with." The ASLQ showed good reliability (α = 0.88). Employees responded on a five-point response scale ranging from strongly disagree (1) to strongly agree (5).

Work engagement was measured using the nine-item Utrecht Work Engagement Scale (Schaufeli et al., 2006), which consists of three subscales: vigor, dedication, and absorption. A sample item is "At my work, I feel strong and vigorous." Employees responded on a seven-point response scale ranging from never (1) to always (7). The measure showed good reliability (α = 0.93).

General health was measured with a single item "How would you rate your general health at this moment?" (Hooftman et al., 2017). Respondents answered on a six-point Likert scale ranging from very bad (1) to very well (6).

Control Variables

We controlled for age, gender, organization, and educational level because prior research pointed out that these influence self-leadership (Ugurluoglu et al., 2015).

Analyses

We tested our hypotheses using a series of regressions in Mplus (Muthén and Muthén, 2017). First, we tested Hypothesis 1 by regressing the two dependent variables, work engagement and health, on job autonomy, including our control variables. To test Hypotheses 2, 3, and 4, we first regressed our mediators (self-leadership behavior, self-leadership cognitive and behavioral strategies, and self-leadership natural rewards strategies) on job autonomy. In the second step, we regressed the dependent variables, work engagement and health, on the mediators and job autonomy. To assess the significance of the indirect effects proposed on Hypotheses 2, 3, and 4, we used bootstrapping with 5000 resamples. Because we are not interested in comparing effect sizes, we report the unstandardized beta weights.

RESULTS

Measurement Model

Before we tested our hypotheses, we examined the discriminant validity of our measurement model. We used a CFA to test different models using different combinations of our main study variables. Because our measures of job autonomy (decision-making autonomy, work-scheduling autonomy, and work-method autonomy), self-leadership strategies (behavior awareness and volition, task motivation, and constructive cognition), and work engagement (vigor, dedication, and absorption) consist of multiple dimensions, we model these constructs as second order factors with underlying first order factors. First, we tested a model in which all variables (job autonomy, self-leadership behavior, self-leadership cognitive and behavioral strategies, natural rewards, and work engagement) load on one single factor [$\chi^2(665) = 5710.37$, $p < 0.001$, RMSEA = 0.15, CFI = 0.38, TLI = 0.34]. Second, we tested a three-factor model in which all self-leadership-variables load on one factor [$\chi^2(662) = 3300.44$, $p < 0.001$, RMSEA = 0.11, CFI = 0.67, TLI = 0.67]. Next, we tested a five-factor model in which all variables load on five separate factors with the underlying dimensions of job autonomy, self-leadership strategies, and work engagement loading on second order factors [$\chi^2(646) = 1321.83$, $p < 0.001$, RMSEA = 0.056, CFI = 0.92, TLI = 0.91]. Finally, we also tested an 11-factor model without second-order factors in which each subdimension was considered a separate construct [$\chi^2(610) = 1227.18$, $p < 0.001$, RMSEA = 0.055, CFI = 0.92, TLI = 0.91]. The 11-factor model shows a better fit compared to the five-factor model with second order factors [$\Delta\chi^2 = 95(36)$, $p < 0.001$]. However, we chose the more parsimonious five-factor model when testing the hypotheses because the second order constructs each show a high level of reliability and because the other fit indices are highly equal across both models.

Hypotheses Testing

Table 1 shows the means, standard deviations, and correlations of the variables used in this study. **Table 2** shows the results of the regressions used to test the hypotheses.

Hypothesis 1 predicted that job autonomy is positively associated with (a) work engagement and (b) general health of healthcare workers.

The results show that job autonomy is positively associated with both work engagement [$B = 0.39(0.09)$, $p < 0.001$] and general health [$B = 0.20(0.09)$, $p < 0.05$], which confirms Hypothesis 1.

Hypothesis 2 predicts that self-leadership behavior mediates the relationship between job autonomy and (a) work engagement and (b) general health. The results in **Table 2** show that job autonomy is positively related to self-leadership behavior [$B = 0.32(0.06)$, $p < 0.001$], but self-leadership behavior is not associated with work engagement [$B = -0.02(0.12)$, p = ns] and general health [$B = 0.10(0.11)$, p = ns], which rejects Hypothesis 2. Hypothesis 3 proposes that natural rewards strategies mediate between job autonomy and work engagement and health, respectively. We found that job autonomy is positively related to natural rewards [$B = 0.30(0.05)$, $p < 0.001$], and natural rewards is also associated with work engagement [$B = 0.86(0.11)$, $p < 0.001$] and general health [$B = 0.56(0.12)$, $p < 0.001$]. An analysis of the indirect effect shows that the associations between job autonomy and work engagement [$B = 0.26(0.05)$, $p < 0.001$, CI95% = 0.17;0.37] and general health [$B = 0.17(0.05)$, $p < 0.001$, CI95% = 0.09;0.28] via natural rewards is significant, which accepts Hypothesis 3. Finally, Hypothesis 4 proposed that cognitive and behavioral self-leadership strategies mediate between job autonomy and work engagement and health, respectively. The results in **Table 2** show that job autonomy is positively related to self-leadership strategies [$B = 0.14(0.05)$, $p < 0.01$], and self-leadership strategies are also positively associated with work engagement [$B = 0.27(0.12)$, $p < 0.05$] and negatively with general health [$B = -0.27(0.12)$, $p < 0.05$]. An analysis of the indirect effect of cognitive and behavioral self-leadership strategies shows that the associations between job autonomy and work engagement [$B = 0.04(0.02)$, $p < 0.10$, CI95% = 0.01;0.09] and general health [$B = -0.04(0.02)$, $p < 0.10$, CI 95% = -0.09; -0.01] are marginally significant with small effect sizes. To summarize, the results from testing the mediating role of self-leadership behavior (H2), self-leadership natural rewards strategies (H3), and self-leadership cognitive and

TABLE 1 | Correlations, Means, and *SD*s of main variables ($N = 337$).

		Mean	*SD*	1	2	3	4	5	6	7	8	9
1	Work engagement	3.87	1.06	1								
2	General health	4.16	1.13	0.25***	1							
3	Job autonomy	3.29	0.75	0.26***	0.16**	1						
4	SLB	3.89	0.67	0.19**	0.12*	0.44***	1					
5	NR	3.67	0.59	0.54***	0.28***	0.36***	0.33***	1				
6	SLS	3.21	0.64	0.32***	0.04	0.21***	0.29***	0.41***	1			
7	Organization[a]	0.34	0.47	−0.03	0.02	−0.24***	−0.21***	−0.06	−0.12*	1		
8	Age	40.9	12.8	0.15*	−0.08	0.09	0.06	0.13*	0.05	−0.05	1	
9	Gender[b]	0.25	0.43	−0.09	0.03	0.04	−0.09	−0.05	−0.09	−0.18**	0.16**	1
10	Educational level[c]	6.90	1.66	−0.01	0.14**	0.15**	0.23***	0.02	0.07	−0.27***	−0.19**	0.12*

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; SLB, Self-leadership behavior; NR, Natural rewards strategies; SLS, Self-leadership cognitive and behavioral strategies. [a]0 = Organization A. [b]0 = female. [c]1–5 = primary/secondary school, 6–7 = vocational training, 8–9 = college degree.

TABLE 2 | Regressions (N = 337).

	SLB	NR	SLS	Work engagement		Health	
				Step 1	Step 2	Step 1	Step 2
Intercept	2.46 (0.35)***	2.52 (0.31)***	2.60 (0.30)***	2.48 (0.64)***	2.49 (0.64)***	2.70 (0.55)***	1.77 (0.68)**
Control variables							
Organization[a]	−0.10 (0.09)	0.06 (0.08)	−0.11 (0.08)	0.01 (0.02)	0.01 (0.13)	0.12 (0.14)	0.07 (0.13)
Age	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.01 (0.00)*	0.01 (0.01)	0.00 (0.01)	−0.01 (0.01)
Gender[b]	−0.21 (0.08)*	−0.04 (0.08)	−0.14 (0.08)†	−0.23 (0.16)	−0.17 (0.13)	0.08 (0.14)	0.09 (0.14)
Educational level[c]	0.09 (0.03)**	−0.01 (0.03)	0.03 (0.02)	−0.02 (0.05)	−0.02 (0.04)	0.09 (0.04)*	0.09 (0.04)*
Independent variables							
Job autonomy	0.32 (0.06)***	0.30 (0.05)***	0.14 (0.05)**	0.39 (0.09)***	0.09 (0.09)	0.20 (0.09)*	0.04 (0.09)
SLB					−0.02 (0.12)		0.10 (0.11)
NR					0.86 (0.11)***		0.56 (0.12)***
SLS					0.27 (0.12)*		−0.27 (0.12)*
R^2	0.25	0.16	0.08	0.10	0.32	0.05	0.16

†$p < 0.10$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; SLB, Self-leadership behavior; NR, Natural rewards strategies; SLS, Self-leadership cognitive and behavioral strategies; Step 1, direct effect; Step 2, mediation effect. [a]0 = Organization A. [b]0 = female. [c]1–5 = primary/secondary school, 6–7 = vocational training, 8–9 = college degree.

behavioral strategies (H4), we conclude that only Hypothesis 3 was fully confirmed. Furthermore, there is marginal support for Hypothesis 4 regarding the mediation effect of behavior and cognitive strategies although the effect size is small.

DISCUSSION

Job autonomy is broadly recognized to be one of the important job design measures for improving the willingness and ability of healthcare professionals to continue working within their industry (Cicolini et al., 2014). Building on the job demand control model by Karasek (1979), it is assumed that, if healthcare workers are facilitated with more autonomy in their work, they will be able to handle the high job demands better (Laschinger et al., 2001). According to SDT, this might be explained by the facilitation of autonomy in the social context as this is assumed to satisfy the basic psychological need for autonomy (Van den Broeck et al., 2008; Deci et al., 2017). Indeed, the present study confirms that job autonomy is positively associated with work engagement and general health. However, we also find that self-leadership (Stewart et al., 2011) explained the relationship between job autonomy and work engagement and health, respectively. Specifically, the use of natural rewards strategies fully mediates both relationships. Besides, the mediating effect of cognitive and behavioral self-influencing strategies is marginally significant though with a small effect size. Surprisingly, the cognitive and behavioral strategies are positively associated with work engagement but negatively with general health. Actual autonomous self-leadership behavior has no role in the relationship between job autonomy and work engagement and health.

Implications for Theory

Job Autonomy, Self-Leadership, Work Engagement, and Health

SDT assumes that the facilitation of autonomy in this context allows employees to fully endorse what they do and, therefore, positively contributes to motivation and health. Interestingly, in the present study, autonomous self-leadership behavior, which explicitly represents the actual autonomous work behavior, does not explain the relationship between job autonomy and work engagement and health. On the basis of the present study, we propose that the theorized impact of job autonomy on the motivational process (Gagné and Deci, 2005) requires competencies in self-leadership. Specifically, natural rewards strategies and, marginally, cognitive and behavioral strategies explain the relationship between job autonomy and work engagement and health, respectively.

However, many job types, such as those of nurses and social workers, are not facilitated with full autonomy as there are numerous procedures and instructions that need to be followed. Therefore, the original intrinsic motivation can easily be thwarted by job tasks that simply must be done, resulting in controlled regulations for motivation (Gagné and Deci, 2005). Self-leadership theory assumes that people can still self-influence their motivation and performance (Stewart et al., 2019). Indeed, the present study shows that people can influence their own motivation and health by using natural rewards strategies. Natural rewards strategies represent changing both the mental focus toward positive, naturally rewarding aspects of a job and also the behaviors with the aim to make a job more intrinsically motivating. By practicing natural rewards strategies, healthcare professionals might alter the motivation from what must be done to what one is willing to do. Moreover, it is confirmed that behavioral and cognitive strategies influence work engagement although they also have a negative association with general health. This trend is in line with Zeijen et al. (2018), who find that, specifically, goal setting and self-punishment thoughts are associated with workaholism, and self-observation and goal setting are also positively associated with work engagement. Workaholism reflects the tendency to work excessively hard and being obsessed with work (Schaufeli et al., 2008). Within SDT, it is found that workaholism has a negative influence on health, which is explained by the controlled regulation of motivation (Van den Broeck et al., 2011). SDT assumes that goals are only beneficial for intrinsic motivation if these are aligned with personal values

(Sheldon and Elliot, 1999; Deci and Ryan, 2000). It is proposed that goal striving only has long-term and positive effects on well-being if the goals are in concordance with personal values and needs. Although self-leadership theory also theorizes that behavior intentions that are based on autonomy give high-quality outcomes related to general functioning (Manz, 2015), it does not explicate goal-setting strategies into intrinsic and extrinsic goals. By referring to Latham and Locke (1991) as well as to Bandura (1977), self-leadership theory assumes that goal setting in general contributes to self-motivation for the actual goal achievement (Neck and Houghton, 2006). However, on the basis of the present study and on insights by SDT (Ryan and Deci, 2017), we propose to make a difference between extrinsically and intrinsically regulated self-leadership strategies. If the self-leadership strategies are fully endorsed by the individual, they are based on autonomy. As a result, they might contribute to both work engagement and health. However, if behavioral or cognitive strategies are based on controlled regulations for behavior, this might negatively influence the health of the employees (Weinstein and Ryan, 2011). For instance, Zeijen et al. (2018) includes self-punishment within the study. Self-punishment thoughts are highly critical and self-controlling and, therefore, are assumed to reflect introjected motivation as theorized by SDT (Gagné and Deci, 2005). Introjected regulation refers to intrapersonal processes with the aim to control personal behavior in order to build better self-esteem. Self-leadership scholars argue that these types of strategies can be detrimental for motivation and performance and, therefore, should be avoided (Neck and Houghton, 2006). In contrast, the cognitive natural rewards strategies seem to be better strategies as the present study confirms their positive impact on both work engagement and health.

Notably, both SDT (Gagné and Deci, 2005) and self-leadership theory (Stewart et al., 2011) use a continuum for explaining the regulation of motivation. SDT explains the motivational process along a continuum from controlled to autonomously regulated motivation. Self-leadership theory explains the self-influencing process from low control to high control over the what, why, and how of the job. We propose that the self-leadership continuum might be extended by more explicitly using insights from SDT. Future research should include the full-range motivational continuum as explained by SDT (Gagné and Deci, 2005) and subsequently test how the different self-leadership strategies can influence the motivational process in such a way that motivation becomes more autonomously regulated while controlled motivation reduces.

The Contribution of Self-Leadership for Healthcare Workers

The present study found evidence for the relevance of self-leadership regarding work engagement and health of healthcare professionals. Although the healthcare literature assumes that increasing job autonomy is important for the well-being of employees, the present study shows that an individual's self-leadership should be taken into account. If healthcare workers are able to take the lead, they are able to make better use of job autonomy. Whereas the two organizations within our sample differed in their management strategy concerning the level of autonomy, this did not influence our results. This is in line with findings by Presseau et al. (2014). It seems that, specifically, the individual's self-leadership explains the outcomes of job autonomy on work engagement and health. We propose that, if healthcare workers experience job autonomy, they still might have the idea that they do their activities on a basis of what *must* be done. Kubicek et al. (2014) even find that too much job autonomy can have detrimental effects on the health and work engagement of healthcare workers. Probably, the increased responsibility that comes along with the increased job autonomy might feed the controlled motivation as one is insecure concerning the actual autonomous functioning. However, the self-leadership literature assumes that, through self-leadership, people will increase the self-efficacy concerning their performance (Prussia et al., 1998), and moreover, self-efficacy will buffer the negative effects of high-strain work environments (Lovelace et al., 2007; Unsworth and Mason, 2012). If we follow that line, in order to increase the job autonomy of healthcare professionals, attention needs to be paid to the training of self-leadership, especially if they are not sufficiently able to take the lead.

Limitations

This study has several strengths, including the single focus on healthcare organizations and the multidimensional measurement of self-leadership. However, this study also has a number of limitations. First, causality cannot be unequivocally determined given the cross-sectional nature of the data. However, theoretical justification and logical arguments have been provided in support of the proposed directionality of the relationships examined. Nevertheless, it is also theorized that engaged employees are more proactive (Bakker et al., 2014), which might result in more initiative concerning the achievement of personal goals and the satisfaction of psychological needs. The job crafting literature (e.g., Demerouti et al., 2015) has already shown that people can also proactively organize more job resources, such as job autonomy for themselves, which consequently functions as nutriment for the work engagement. Furthermore, the broaden-and-build theory proposes a positive gain spiral between thought, actions, and emotions (Fredrickson, 2001). If self-leadership leads to positive affect this functions as positive feedback and, as such, further encourages the use of self-leadership. This might also explain the high correlation between natural rewards strategies and the work engagement in our study. The actual strategies might directly result in work engagement, which, in turn, leads to even more use of natural rewards strategies. Future research should test our hypotheses and potential reciprocal relationships by using longitudinal designs or by using interventions that aim at increasing job autonomy and/or self-leadership.

Second, we assessed health using a self-reported single item measure. Although this measure is well established and used in a broad range of studies, future research should aim to assess health on several dimensions or use more objective measures, such as sickness or absenteeism.

A third limitation is that we did not include other job characteristics. For example, it is expected that job autonomy

and self-leadership are both specifically worthwhile in the condition of high job demands (Lovelace et al., 2007). In other words, employees are less prone to use self-leadership as they might be less challenged to achieve their work-related goals. Future research should include job demands, such as workload, as moderators to the association between job autonomy and self-leadership to further understand the conditions under which self-leadership mediates the associations between job autonomy and employee outcomes.

Fourth, the response rate was, at 30 and 31%, respectively, rather low, presumably caused by the survey participation being voluntary, which might have led to non-response bias (Groves and Peytcheva, 2008). Smith (2009) was able to test this assumption with a double sample among nurses and finds that, except for some demographic characteristics (sex, race, and national origin), there are no significant differences in the evaluations concerning job satisfaction and burnout. Moreover, Rindfuss et al. (2015) find that a low response rate might bias univariate relationships on the basis of differences in demographics, attitudes, and behaviors with the non-respondents, but not multivariate relationships (Rindfuss et al., 2015). Therefore, we assume that the potential bias caused by a low response rate in our sample is insignificant.

Last, the present research is focused on self-leadership and specifically on self-leadership behavior, cognitive and behavioral self-leadership strategies, and natural rewards strategies. Although these are theorized to be the basic constructs for self-leadership (Neck and Houghton, 2006), it is recognized that other self-regulation strategies also might be relevant to include in self-leadership research (Manz, 2015). For instance, Weigl et al. (2014) investigated the mediating role of the action self-regulation strategies as theorized by the selection optimization compensation model (SOC, Moghimi et al., 2017). It was confirmed that the relation between job autonomy and work engagement is mediated by the SOC strategies (Weigl et al., 2014). This might be explained by the autonomous character of the goal selection. Furthermore, both within SDT and self-leadership theory, the role of mindfulness is considered as a worthwhile cognitive strategy (e.g., Weinstein and Ryan, 2011; Sampl et al., 2017). Weinstein and Ryan (2011) assume that mindfulness encourages autonomous motivation and facilitates stress resilience. Therefore, we suggest extending the research focus on other self-regulating strategies, in which we specifically recommend considering the role of autonomous motivation in the self-regulating process.

Implications for Practice

The workload in the healthcare sector is high, and this leads to high rates of absenteeism, unfulfilled vacancies, and voluntary turnover with the effect of a further increasing workload. This has put the healthcare sector in a vicious circle of problems. Only when healthcare institutions manage to keep the back door closed and retain their staff for healthcare can the vicious circle be broken. Current research shows that there is a way for healthcare institutions to close the back door and keep their staff happy and healthy. This study finds that, when employees experience job autonomy and use naturally rewarding self-leadership strategies, they increase their work engagement and health. In the end, the patients benefit from effective self-leading healthcare professionals. Engaged and healthy employees do all they can to deliver the best possible service to their clients. Kayral and Dülger (2019) find that, if healthcare professionals are capable of taking the lead, this is associated with positive outcomes related to organizational goals, such as patient safety and efficiency. Besides, healthcare workers who are able to take the lead might inspire their clients to take the lead in their health as well. Recent research shows that patients, such as those recovering from cancer surgery, benefit from self-leadership skills for continuing their rehabilitation exercises (Lee et al., 2020).

We, therefore, advise healthcare organizations to give more job autonomy to their employees and to encourage employees to work in an autonomous and self-responsible way and use natural rewards strategies. Natural rewards strategies stand for the strategy to surround oneself with objects and people that uncover your own desirable behaviors. It is specifically this ability for natural rewards strategies that will help healthcare workers to self-influence both their work engagement and health.

Employers can learn from the results of our study that both job design measures, initiated by the employer, and self-influencing strategies of the employees can improve health and work engagement. Although practicing self-leadership is a specifically personal resource to self-influence the motivation and ability to work, employers can help to improve skills for self-leadership by offering self-leadership training. It appears that healthcare professionals can develop self-leadership and that training self-leadership contributes to work engagement and performance (Van Dorssen-Boog et al., submitted) and to proactive stress coping and increasing self-efficacy (Unsworth and Mason, 2012).

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

PD-B was main author of the article and collected the data. JJ specifically focused on the analysis of the data and on reviewing

the manuscript. MV contributed to the study design. TV contributed as reviewer to the manuscript as a whole. All authors contributed to the article and approved the submitted version.

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