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Revealing the Effectiveness of Tourism Development on Health in Asian Economies

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Most Asian economies consist of tourism attraction destinations. The traditional literature explores the cultural, social, and economic effects of tourism; thus, there exists a vacuum related to the impacts of tourism development on the human health of local people. Hence, the current study examines the impact of tourism development on health outcomes of the tourism-based selected Asian economies. The panel autoregressive distributed lag (ARDL) methodology is used to deduce the short-run and long-run impacts of tourism development on health outcomes. The results disclose that tourism activities insignificantly influence health outcomes in the short run. However, tourism development brings improvement in health outcomes in the long run. This research offers a new approach highlighting the significance of tourism development for human health and emphasizes the importance of tourism development for destination management and marketing.

Keywords: tourism development, health, Asian economies, ARDL-PMG, management and marketing

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INTRODUCTION

Tourism development plays an imperative role in several countries' cultural, social, and economic progress. UNWTO (2020) recorded ~US$1.5 trillion global tourism expenditures and 1.5 billion tourist arrivals during 2019. The economic benefits of tourism include job creation, expansion of local economies, and tax revenues generation (1, 2). Meanwhile, the negative effects of tourism mostly offset its benefits due to environmental, cultural, and social issues (3, 4). Most recently, the COVID-19 pandemic negatively impacted traveling on public health. COVID-19 pandemic led to closures of borders, cancelation of flights, and limitation of movement of people (5). There are various possibilities of the positive effects of tourism on human health through positive social and emotional interactions between residents and tourists (6). Tourism activities are inseparable from the emotions of tourists and can significantly influence longevity and human health (2, 7). Literature suggests that positive emotions lead to a lesser chance of cardiovascular issues, headaches, congestions, inflammation, and weakness (8). Positive emotions also result in following health outcomes such as good quality sleep, healthy eating, and exercise (9, 10).

Positive emotions can alleviate harmful memories of stressful events of life by producing optimism, endurance, and resilience (11). Thus, the nexus between tourism and health outcomes needs a thorough examination. Literature discloses that social interactions directly influence the health outcomes of people (12). Tourism involves connections between residents and tourists that lead to positive emotional experiences for both (13).

Additionally, tourism activities imply combined reinforcement of positive emotions and social interactions that lead to positive health outcomes (14). Prevailing literature reports positive impacts of tourism development on tourists and residents (13). Few studies have reported the effect of tourism development on the wellbeing of residents, quality of their life, and satisfaction of life through objective and subjective indicators (15).

Our research particularly focuses on the association between tourism development and health outcomes. Tourism development affects the health outcomes of a country through direct and indirect channels (16). The direct impact is described as the pragmatic tourism development, and the tourism practices are mostly described as the outcomes of tourism activities (17). Tourism activities produce positive and pleasant emotions that increase wellbeing and health outcomes (18). Various studies highlighted the importance of examining the nexus between tourism activities and positive emotions and suggested developing the tourism field to improve human health (19). Followers of tourism also stress the significance of association between residents and tourists in the context of places, self-improvement, social context, and communities (13). Some studies reported positive emotions generated from social contexts and tourism activities (13). Tourism activities positively affect the interactions between tourists and residents (20). However, the tourism-related positive impact on residents' wellbeing and health outcomes has not been explored yet (21).

A bulk of psychology literature also suggested that tourism positively influences mental health, longevity, and physical health (22). Some studies report that those positive emotions cause lesser cold complaints, reduced inflammation, and less chance of cardiovascular diseases (23). The study done by Zsarnoczky (24) argued that positive emotional episodes reduce congestion, weakness, headaches, and chest pain. Positive emotions episodes also improve sleeping quality, balancing stress hormones, and healthy eating (25). Tourism activities generate positive emotions that develop optimism, endurance, and resilience (26). In brief, tourism activities generate positive emotions that positively influence health outcomes and wellbeing (27). Salehi-Esfahani et al. (28) reported that the tourism industry increased Canada's health- spending, which indirectly improves health outcomes. The study of Dwyer (29) noted that tourism development significantly impacts resident human wellbeing by improving capital stocks and green infrastructure (30).

Existing literature reveals that there exists a positive association between income and physical and mental health (31). It is argued that healthy people have greater employment opportunities and high wage rates that lead to high-income levels. Previous literature reported the positive impact of tourism on the economy (32). Tourism results in increasing income levels of residents (1). Hence, income is directly associated with residents' psychological and physical health (33). In the light of this background, the present study examines the impact of tourism development on health outcomes in Asian economies (34). The sample of the study is chosen based on the highest tourism attractions (27). This study has important empirical and theoretical contributions. This study makes a theoretical contribution by evaluating tourism's long-run and short-run outcomes (34). Previous studies focused on the short-run outcomes of tourism activities (35). However, long-term influences of tourism have not been explored in literature. Thus, our study employs panel ARDL for extracting the long-run and short-run impact of tourism development on human health outcomes (36). This study inspects the effects of tourism development on health for Asian nations over the period 1992–2019. This study also assesses the transmission channels between tourism development and health (37). The study delivers policy implications by suggesting that policymakers should distinguish the significance of tourism development with respect to the health outcomes of resident people.

MODEL AND METHODS

The tourism industry plays a vital role in many nations' social, economic, and health development. Tourism development has a direct and indirect impact on health. Tourism-health nexus is the fastest growing research debate internationally in the recent era. Following the studies of **(author?)** (38, 39), we explore the effects of tourism and other control variables on health in Asian countries; the econometric model framework in the study is as follows:

$$\begin{aligned}\text{Health}_{it} = {} & \alpha_0 + \alpha_1 \text{Tourism}_{it} + \alpha_2 \text{GDP}_{it} \\ & + \alpha_3 \text{HE}_{it} + \alpha_4 \text{Internet}_{it} + \mu_{it} \end{aligned} \tag{1}$$

Where, $Health_{it}$ is the health outcome dependent on tourism development (tourism), GDP per capita (GDP), health expenditure (HE), and internet users (Internet), and μ_{it} is the error term. While, i is the country dimension ($i = 1, 2, \ldots 5$) and t is the time periods ($t = 1992, 1991, \ldots, 2019$). Lastly, α_0 represents the constant term in the equation. Tourism development has direct and indirect potential impacts on health; thus α_1 will have a positive effect on health. Expectedly, α_2 has a positive effect on health. Similarly, both α_3 and α_4 are expected to carry positive coefficients. Estimates of Equation (1) by OLS will yield long-run impacts only of all the four exogenous variables on health outcomes (40). Short-run impacts are generally inferred by estimating an error-correction equation. Thus, we can rewrite Equation (1) in an error-correcting format for short-run estimates as follows:

$$\begin{aligned}\Delta\text{Health}_{it} = {} & \pi + \sum_{p=1}^{n1} \pi_{1p}\, \Delta\text{Health}_{2,it-p} + \sum_{P=0}^{n2} \pi_{2p}\, \Delta\text{Tourism}_{it-p} \\ & + \sum_{p=0}^{n3} \pi_{3p}\, \Delta\text{GDP}_{it-p} + \sum_{p=0}^{n4} \pi_{4p}\, \Delta\text{HE}_{it-p} \\ & + \sum_{p=0}^{n5} \pi_{5p}\, \Delta\text{Internet}_{it-p} + \beta_1 \text{Health}_{it-1} \\ & + \beta_2 \text{Tourism}_{it-1} + \beta_3 \text{GDP}_{it-1} \\ & + \beta_4 \text{HE}_{it-1} + \beta_5 \text{Internet}_{it-1} + \mu_{it} \end{aligned} \tag{2}$$

Equation (2) is driven by Pesaran et al. (41), who include the short and long-run impacts of tourism development, GDP, health expenditure, and internet users on health outcomes. The key advantage of this approach is that the long-run and short-run estimates can be measured in one step (42). The short-run impacts are reflected in the estimates attached to $\pi_{1p}, \pi_{1p}, \pi_{1p}, \pi_{1p}, and\ \pi_{1p}$ variables. While long-run impacts are inferred by the estimates of β_1, β_2, β_3, β_4, and β_5. Pesaran et al. (41) propose that two cointegration tests are applied. There is no requisite for unit-root testing in this approach because macroeconomic variables could be a mixture of I(0) and I(1), which is another key benefit of this approach. We used first- and second-generation panel unit root tests to check the unit-root process of the variables. This approach is captured the dynamic impacts of tourism development on health at different lag orders (43). ARDL-PMG extends the ARDL method (44), which is a cointegration approach of panel data. Thus, the next section is reported the short and long-run results of health outcomes.

DATA

The study explores the impact of tourism development on health outcomes of top tourism-based Asian economies. These economies include China, Thailand, Japan, Malaysia, and India. Our sample covers five Asian countries over the period 1992–2019. **Table 1** displays the information regarding symbols and definitions of variables and sources of data. The health outcome is determined by life expectancy at birth (in total years). The focused variable, tourism development, is measured by two proxy variables: tourist receipts and tourist arrivals. Tourism receipts are taken in terms of current US$ while tourist arrivals are taken in terms of the total number of arrivals. This study's control variables are GDP per capita, health expenditure, and internet users. GDP per capita is taken in terms of constant 2015 US$. Health expenditures are determined as percent of GDP. Internet uses are taken as a percent of the population. The data for all these variables have been obtained from the World Bank. TR, TA, and GDP variables are expressed in logarithm form. **Table 2** contains descriptive statistics for all of the variables.

TABLE 1 | Variables definition and sources.

Variables	Symbol	Definitions	Sources
Life expectancy	LE	Life expectancy at birth, total (years)	World bank
Tourist receipts	TR	International tourism, receipts (current US$)	World bank
Tourist arrivals	TA	International tourism, number of arrivals	World bank
GDP per capita	GDP	GDP per capita (constant 2015 US$)	World bank
Health expenditure	HE	Current health expenditure (% of GDP)	World bank
Internet users	Internet	Individuals using the Internet (% of the population)	World bank

RESULTS AND DISCUSSION

As the study is dealing with panel data, panel unit root tests have been employed to detect the integration properties of data. LLC, ADF, and IPS panel unit root test approaches have been employed for performing this task. **Table 3** reports the results of these panel unit root tests. The LLC test reports that LE, TR, and Internet are I(0) integrated variables, while TA, GDP, and HE are I(1) integrated variables. In the ADF test, it is found that LE and TA are integrated at I(0). However, TR, GDP, HE, and Internet are integrated at I(1). The results of the IPS model report that all variables are integrated at I(1) except TA, i.e., integrated at I(0). Based on the results of unit root testing, the study used the PMG-ARDL approach for empirical analysis. **Table 4** provides the human health model's long-run and short-run coefficient estimates.

In the PMG-ARDL model, the long-run findings report a positive and significant impact of tourist receipts on human health. These findings reveal that tourism development can improve the human health of the local public in selected Asian economies. The coefficient estimates disclose that a 1% rise in tourist receipts improves human health by 1.066% in the long run.

Our findings report that tourism development has long-term impacts on the human health of local people. In the long-run, tourism development improves the health outcome. However, tourism development has an insignificant impact on human health in the short-run. The insignificant impact in the short-run can be justified as the tourism development results in overcrowding traffic congestions and escalates the crime level that may negatively impact human health and increase the level of stress (39). The long-run positive association between tourism development and human health is supported by Coghlan (33), who stated that tourism development increases social interactions that influence longevity and physical health. The long-run impact of tourism on longevity is further supported by the following studies, e.g., (18). Literature also argued that social associations lead to premature mortality and lower morbidity (13). Traditional researchers estimated the impact of tourist arrivals through inbound overnight stays, new jobs, taxes, and tourism expenditures (35). However, most recent studies argued that it could be more important to examine the health effects as tourist receipts bring positive change in the income levels of local people (3). Another study justified our findings by claiming that tourism accompanied by higher income provides better health-related opportunities to local people (45). Lenhart (45) also argued that tourism improves health outcomes up to a specific level after that, the negative short-term impacts related to stress level outweigh the long-term impacts in the form of positive social interactions and emotions.

GDP is significantly and positively associated with human health in the long-run. It is reported that a 1% upsurge in GDP tends to improve human health by 0.397% in the long-run. The impact of health expenditure is found significant and positive on health outcomes in the long-run. The results show that a 1% escalation in health expenditure improves health outcomes by 0.560% in the long-run. The use of the internet reports a

TABLE 2 | Data description.

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
LE	73.25	73.22	84.35	58.85	5.976	−0.183	2.800	1.013	0.603
TR	23.28	23.32	24.89	20.72	0.892	−0.426	2.710	4.716	0.095
TA	16.46	16.39	18.90	14.11	1.237	0.340	2.290	5.629	0.060
GDP	8.561	8.629	10.50	6.302	1.197	0.043	2.190	3.873	0.144
HE	4.478	3.781	10.75	2.017	2.124	1.801	5.496	112.0	0.000
Internet	28.45	16.83	93.18	0.000	29.56	0.732	2.173	16.48	0.000

TABLE 3 | Panel unit root testing.

	LLC			ADF			IPS		
	I(0)	I(1)	Decision	I(0)	I(1)	Decision	I(0)	I(1)	Decision
Le	−9.067***		I(0)	−1.516*		I(0)	−1.186	−2.471***	I(1)
TR	−3.411***		I(0)	1.023	−9.342***	I(1)	−1.062	−5.141***	I(1)
TA	−0.813	−3.502***	I(1)	−1.483*		I(0)	−2.097*		I(0)
GDP	−0.301	−3.657***	I(1)	1.953	−6.717***	I(1)	−0.682	−4.066***	I(1)
HE	−1.076	−5.590***	I(1)	1.032	−10.83***	I(1)	−0.8	−5.801***	I(1)
Internet	−3.411***		I(0)	1.023	−9.342***	I(1)	−1.062	−5.141***	I(1)

*** $p < 0.01$.
* $p < 0.1$.

TABLE 4 | Long and short-run estimates of human health.

	Basic model		Variable based-robustness		Method based-robustness	
	PMG-ARDL		PMG-ARDL		CS-ARDL	
	Coefficient	*t*-Stat	Coefficient	*t*-Stat	Coefficient	*z*-Stat
Long-run						
TR	1.066***	9.544			1.448***	6.606
TA			0.903**	2.011		
GDP	0.397***	2.894	0.354***	4.789	0.537***	2.979
HE	0.560***	6.644	0.386***	5.443	0.447**	1.979
Internet	0.102*	2.312	0.125**	1.985	0.187**	2.017
Short-run						
D(TR)	0.223	0.750			0.088	0.598
D(TR(-1))	0.095	0.519				
D(TA)			0.014	0.146		
D(TA(-1))			0.156	1.550		
D(GDP)	0.688**	2.204	1.002*	1.918	0.845*	1.875
D(GDP(-1))	0.472	0.844	0.878*	1.690		
D(HE)	0.026**	2.326	0.012**	2.228	0.025***	3.320
D(HE(-1))	0.138	1.522	0.014	0.512		
D(Internet)	0.012	0.288	0.054	1.021	0.065	0.987
C	0.173	0.528	0.687	1.155	0.351	0.622
ECM(-1)	−0.451**	2.404	−0.454**	2.256	−0.379***	2.712

*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$.

significant and positive impact on health outcomes in the long-run. The findings disclose that 1% intensification in internet use improves health outcomes by 0.102% in the long-run. The findings report a statistically insignificant association between tourism development and human health in the short-run. The impact of GDP is significant and positive on human health in the short-run depicting that improvement in GDP tends to improve health outcomes. In the short-run, an increase in health expenditure significantly and positively increases human health. Lastly, the use of the internet also exerts a significant and positive impact on human health in the short-run.

In the variable-based robustness testing, the long-run findings disclose that tourist arrivals are positively and significantly linked with human health. It demonstrates that a 1% rise in tourist arrivals increases human health by 0.903% in the long-run. The study also tests the robustness of said association by employing the CS-ARDL technique. In the CS-ARDL model, long-run findings display a significant and positive association between tourism development and human health. It is found that a 1% escalation in tourist receipts tends to improve human health by 1.448% in selected economies. Thus, it is concluded that tourism development significantly promotes human health in selected economies. There exists no association between tourism development and health outcome as depicted by statistically insignificant coefficient estimates in both variable-based and technique-based robustness models. The findings of control variables are consistent in terms of sign and magnitude in both variable-based and technique-based robustness models. The findings of the error correction model confirm the existence of a long-run cointegration association among variables. The statistically significant and negative coefficient estimate of the ECM term is 0.451 in a basic model, which reveals that almost 45% convergence will be achieved in 1 year.

CONCLUSION AND IMPLICATIONS

According to World Health Organization (WHO), health is not just the absence of illness but is a complete physical, mental, and social wellbeing of the people. Previous literature on the determinants of health quality has highlighted various socio-economic factors (e.g., per capita income, health expenditures, environment, etc.) that can affect people's mental and physical wellbeing. However, not many have considered the role of tourism as a determinant of health status. Literature suggests that a rise in tourism directly or indirectly improves health status. For instance, the rise in tourism increases the income of the local people and gives them more employment opportunities which improves their health status. According to some evidence, tourism can also directly and positively affect tourists' physical and mental health. Hence, we aim to analyze the relationship between tourism and health status in Asian economies.

Results from the Panel-ARDL model confirm the positive impact of tourism receipts and tourism arrival on life expectancy in the long run. Similarly, the estimated coefficient of tourism arrival is positive and significant in the robust model as well. In general, our findings imply that a positive change in tourism development promotes the health status in polluted economies. Among the control variables, the estimated coefficients of GDP, HE, and the Internet are positively significant in all three models confirming the positive impact of affluence, health expenditures, and internet on life expectancy. In the short run, the results are unconvincing and mixed.

Based on these outcomes, we can provide some important policy implications for the concerned stakeholders. For instance, tourism can improve the health status of the people living in Asian economies; therefore, policymakers can use tourism as a tool to enhance the life expectancy of the people. Development of tourism facilities such as hotels, restaurants, roads, and infrastructure around the tourist spot can attract more tourism which will upgrade the health status of the people. Tourism development brings earnings and employment opportunities for the residents of the area. As a result, a rise in income of the local people allows them to enjoy more modern health care facilities, which will improve the health status of the people. Further, the policymakers should focus on building healthcare facilities near the important tourist spot that not only improves the local people's health status but also attracts more tourists to the area, which will further improve the life expectancy of the people. Integrating tourism development policy into health policy can bring improvement in both the health and tourism sectors.

Even though the contribution of the study to the existing literature is significant. However, a few of the shortcomings of the study are also there. For instance, the number of countries chosen for the analysis is few, which can be enhanced for more comprehensive inference in future studies. The analysis has only used one proxy of health status, i.e., life expectancy; however, there are other health status indicators such as infant mortality rate, mother's mortality rate, etc. Future studies should focus on other proxies of health status while analyzing the tourism-health status.

DATA AVAILABILITY STATEMENT

Publicly available datasets were analyzed in this study. This data can be found here: https://data.worldbank.org/.

AUTHOR CONTRIBUTIONS

YS and Z-WS: conceptualization, software, data curation, and writing-original draft preparation. RT: methodology, writing-reviewing, and editing. AU: visualization and investigation. All authors contributed to the article and approved the submitted version.

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