“Willingness of healthcare workers to treat COVID-19 patients during the pandemic: Extended theory of planned behavior”

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WILLINGNESS OF HEALTHCARE WORKERS TO TREAT COVID-19 PATIENTS DURING THE PANDEMIC: EXTENDED THEORY OF PLANNED BEHAVIOR

Abstract

During the COVID-19 pandemic, healthcare workers played a significant role in minimizing the maximum spread of the virus. This study aims to investigate the relationship between healthcare workers' attitudes, subjective norms, perceived behavioral control, perceived effectiveness of the pandemic, risk perception of the COVID-19 pandemic, and willingness to treat COVID-19 patients in Lahore, Pakistan. However, the extended theory of planned behavior was applied and included two key constructs (perceived effectiveness and risk perception of the COVID-19 pandemic). Data were collected from 253 male and female respondents working in public, private, and semi-government hospitals. Structural equation modeling (SEM) was applied to test the proposed hypotheses. Overall, the findings show that healthcare workers' attitudes, social norms, and perceived behavioral control significantly impact healthcare workers' willingness to treat COVID-19 patients. In contrast, perceived effectiveness and risk perception of the pandemic showed a negative effect. The results suggested that healthcare workers showed positive attitudes, subjective norms, and perceived behavioral control to COVID-19 patients. On the other hand, due to the virus novelty, effectiveness and risk perception of the pandemic was very high, which shows that healthcare workers feel stressed and scared to treat COVID-19 patients.

Keywords healthcare workers, willingness to treat COVID-19 patients, theory of planned behavior, Pakistan

JEL Classification I11, I12, J18, I19, H51

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INTRODUCTION

The coronavirus disease pandemic has greatly affected the lives of children and their families, with health care systems overwhelmed, borders closed, and schools and businesses suspended. The novel coronavirus (COVID-19) outbreak has become a major public health concern worldwide (Saleem et al., 2021a, 2021b; Amen et al., 2022; Das et al., 2022; Tomé et al., 2022; Maneesri, 2022). The pandemic negatively affected all kinds of events, i.e., social, religious, economic, and environmental. The virus spread in 193 countries and had an unpredictable impact on individuals' daily routines (Heymann et al., 2020). As of May 14, 2022, the total number of active cases was 39,038,580, deaths 6,286,535, and recovered cases 474,954,186 worldwide (Worldometer, n.d.). Therefore, the risk perception of the virus among healthcare workers and individuals was very high. During the initial pandemic stage, healthcare professionals were stressed. Many of them failed to reduce or stop the maximum spread of the virus, mainly in developing countries like Pakistan (Rana et al., 2020; Munawar & Choudhry, 2021). Accordingly, Irfan et al. (2021) reported that on "February 26,

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2020, the Ministry of National Health Services Regulations and Coordination, the Government of Pakistan, reported the first confirmed COVID-19 case in Karachi, and another case was confirmed in Islamabad on the same day by the Ministry of Health" (p. 1). In this regard, as of April 16, 2022, the total confirmed cases reached 1,529,167 in Pakistan.

With the alarming pandemic, the senior leadership of the country and the Ministry of National Health Services Regulations and Coordination Government of Pakistan developed a new wing called The National Command and Operation Centre (NCOC). It aims to initiate and monitor a modern isolation center, testing facilitation centers, tracing positive cases, and developing care units to treat COVID-19 patients countrywide (Bhutta et al., 2021). In addition, the National Action Plan for Preparedness and Responses to COVID-19 pandemic was also established to minimize and stop the spread of the virus and save the maximum number of people (Ahmad & Ashraf, 2021). However, prior studies concluded that healthcare professionals, i.e., doctors, nurses, medical assistants, and other hospital staff, were stressed dealing with COVID-19 patients (Rana et al., 2020; Spoorthy et al., 2020; Shreffler et al., 2020; Nguyen et al., 2021). Cheah et al. (2021) highlighted that the willingness to treat COVID-19 patients was challenging for most health workers. The fair factors among health workers were high (Spoorthy et al., 2020). In that manner, it was hard for them to develop a positive attitude toward treating COVID-19-positive patients. However, several studies highlighted that the attitude, willingness to treat COVID-19 patients, and perceived behavioral control of health workers in Pakistan are still debatable and need further investigation (Saqlain et al., 2020; Saleem et al., 2021a).

1. LITERATURE REVIEW, AIM AND HYPOTHESES

At the initial pandemic stage, the healthcare workers' behavior toward COVID-19 patients was negative, and they were not ready to treat any patients. The pandemic forced doctors and medical personnel to work for hours in a protective suit near the patient, still carrying the risk of infection (Ning et al., 2020). Thus, the risk factor, i.e., the transformation of the virus, was very high among healthcare workers in several countries worldwide (Soto-Acosta, 2020). Many scientists considered this problem in their works. In this regard, the study investigates healthcare workers' attitudes, subjective norms, perceived behavioral control, perceived effectiveness, risk perception, and willingness to treat COVID-19 patients. To obtain the research objectives, the theory of reasoned action was applied (Fishbein & Ajzen, 1976). This theory aims to predicate the individuals' behavior based on attitudes and subjective norms. Thus, to understand the actual behavior of an individual, Fishbein and Ajzen (1975) extended the theory of reasoned action by adding another dimension called "perceived behavioral control" and named it the theory of planned behavior (Irfan et al., 2021). Thus, this study applied the theory of planned behavior to predicate and understand the healthcare workers' attitudes, subjective norms, and perceived behavioral control toward treating COVID-19 patients in Lahore, Pakistan. However, the research model was extended by adding the perceived effectiveness, risk perception, and willingness to treat the COVID-19 patients in the present study. Prior studies widely applied the theory of planned behavior in the healthcare domain to forecast and describe the health workers' attitudes and perceived behavioral control toward treating COVID-19 patients (Al Maskari et al., 2021; Sin & Rochelle, 2022; Zhong et al., 2022). In this regard, Irfan et al. (2021) confirmed that the theory of planned behavior has more potential to predicate the individuals' attitudes, subjective norms, and perceived behavioral control toward a particular thing or event.

Accordingly, Irfan et al. (2021) mentioned that "a person's general feeling of favorableness or un-favorableness for a particular behavior is termed as their attitude towards the behavior" (p. 3). However, healthcare workers' attitudes are shaped by their superior outcomes and the beliefs concerned with a specific behavior (Sin & Rochelle, 2022). Hence, the total sum of outcomes and beliefs toward treating patients by prominent groups and individuals make up subjective norms, and they deliberate that an individual should or should not obtain a specific behavior (Zhong et al., 2022).

In addition, the theory of planned behavior has encouraged a significant volume of empirical health behavior research (Al Maskari et al., 2021). Previous studies highlighted several indicators that influence the acceptance or adoption of a particular situation in economic, social, and political terms (Saleem et al., 2021a; Das et al., 2022; Tomé et al., 2022). Furthermore, due to the novelty of the COVID-19 pandemic, most healthcare workers are concerned about the perceived risk and are scared to treat the affected patients. However, the structural framework of the theory of planned behavior was extended by incorporating three constructs, i.e., perceived effectiveness of the pandemic, risk perception of the pandemic, and willingness to treat COVID-19 patients. Including these three constructs, the research model supports investigating the perceived behavioral control of health workers toward COVID-19 patients in public, private, and semi-public hospitals in Lahore, Pakistan.

1.1. Constructs of the study

Attitude is a fundamental dimension of the theory of planned behavior that is explained as an individual's like or dislike assessment of a specific behavior (Conner & Sparks, 2005). Defining the healthcare professional's behavior supports describing their positive and/or negative response to treating COVID-19 patients. Zhong et al. (2022) emphasized that researchers widely studied attitudes during the COVID-19 pandemic to address the healthcare workers' and individuals' attitudes toward the pandemic. Thus, this also supports understanding and dealing with the future pandemic. Moreover, the attitude of health workers helps to predicate their willingness to treat COVID-19 patients.

Saqlain et al. (2020) concluded that due to the novelty of the pandemic, most healthcare workers were scared to treat COVID-19 patients; thus, it also shows negative attitudes willing to treat affected patients. However, prior studies identified a positive relationship between attitudes and willingness to treat COVID-19 patients (Wahed et al., 2020; Huynh et al., 2020). Limbu et al. (2020) found that health workers have a positive attitude toward treating COVID-19 patients, following all the basic prevention policies of the pandemic. In the early stage of the pandemic, it was challenging for most healthcare workers to show a positive attitude toward COVID-19 patients. In addition, Olum et al. (2020) concluded that the positive attitude of healthcare workers significantly leads to treating COVID-19 patients during the pandemic in Uganda. Further, their findings illustrated that the willingness to treat COVID-19 patients was challenging for healthcare workers because they needed to know how and which medication should provide positive patients with a first add (Nguyen et al., 2021). Thus, scarce studies were conducted in developing countries, mainly in Pakistan, to investigate the indicators that could ensure health workers' positive attitudes that lead to a willingness to treat COVID-19 patients during the pandemic.

Social norms are considered the influence of friends, family, and peers on healthcare workers to treat COVID-19 patients. Since COVID-19 quickly transmits from one person to another, the risk of the virus spreading is very high among healthcare workers (Minuye et al., 2021). Therefore, considering the risk of infection, most healthcare workers were forced by their social groups or individuals not to treat or keep a social distance from COVID-19 patients (Sin & Rochelle, 2022). Moreover, empirical studies have shown that willingness to treat COVID-19 patients is positively influenced by subjective norms (Xia et al., 2021). In this regard, Godbersen et al. (2020) pointed out that social norms motivate healthcare workers to follow COVID-19 preventives, such as keeping social distancing, wearing face masks, and washing and sanitizing hands regularly. Furthermore, Aschwanden et al. (2021) identified that households force health workers to strictly follow all the prevention policies while treating or visiting COVID-19-affected patients.

Moreover, Minuye et al. (2021) conducted a study in Ethiopia and found that the subjective norms of most healthcare workers positively motivate them to treat COVID-19 patients. During the pandemic crisis, healthcare workers played an essential role in saving millions of lives through effective risk communication. Consequently, it is the primary responsibility of healthcare workers to treat every COVID-19 patient, even though the risk of infection is still high (Nguyen et al., 2021). However, there needs to be more empirical research con-

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ducted in developing countries to investigate the link between subjective norms and willingness to treat COVID-19 patients.

Evaluation of healthcare professionals' perceived behavioral control toward COVID-19 patients was unpredictable (Husain et al., 2021). Due to the novelty of COVID-19, several health workers needed help understanding and treating the patients adequately. Therefore, the number of positive cases instantly increased, and the pandemic worsened (Ning et al., 2020). However, previous studies highlighted that preventive and awareness behavior is fundamental to developing specific interventions, tailored, and guiding healthcare policymakers to discern pandemic challenges that need to be addressed broadly (Shubayr et al., 2020; Aschwanden et al., 2021; Yahaghi et al., 2021). In addition, Ngwewondo et al. (2020) confirmed that the awareness and prevention program of the COVID-19 pandemic leads a positive behavior among healthcare workers toward COVID-19 patients. Accordingly, the positive behavior of healthcare workers motivates them to treat COVID-19 patients (Ngwewondo et al., 2020). The willingness to treat COVID-19 patients is based on the health workers' positive or/and negative attitudes. Consequently, due to the novelty of the concept, a lack of empirical studies addressed the key indicators that motivate health workers to treat COVID-19 patients during a pandemic (Riaz et al., 2021; Alhasan et al., 2020).

Healthcare workers' awareness and understanding of the benefits of following the prevention policies could effectively keep them safe from transmitting infections or viral diseases (Maneesri, 2022). In this regard, before introducing and distributing the COVID-19 vaccination, the perceived effectiveness of the pandemic was challenging to control. Social health measures were unpredictable and stressful to minimize the effectiveness of the virus. Therefore, the World Health Organization (WHO) and government institutions of every country developed and published basic health measures for COVID-19. With the support of these measures, healthcare workers could calculate the virus's accurate effects. Therefore, every individual is forced to follow COVID-19 prevention as it can minimize the effectiveness among people. Accordingly, some basic prevention, i.e., wearing facemasks, gloves and gowns, regularly washing and sanitizing the hands, and avoiding unnecessary movements, were also developed for healthcare professionals while treating COVID-19 patients.

However, prior research studies identified that the effectiveness of COVID-19 was unpredictable and at high risk of spreading among others. Thus, considering the initial situation, healthcare workers also showed a cheerful willingness to treat COVID-19 patients. In addition, Kaye et al. (2021) investigated and confirmed the positive relationship between the perceived effectiveness of the pandemic and willingness to treat COVID-19 patients. However, even the risk factor was very high. Similarly, Saqlain et al. (2020) identified that perceived effectiveness was so stressful due to the novelty of the virus. In this regard, the fear factor among healthcare workers was also high. Accordingly, Cotrin et al. (2020) confirmed a positive association between the perceived effectiveness of the pandemic and willingness to treat COVID-19 patients.

Risk perceptions significantly contribute to shaping health workers to treat COVID-19 patients. The rising number of positive cases enhanced the risk of infection among healthcare workers (Krok & Zarzycka, 2020). Moreover, risk perception was very high and uncontrollable at the initial pandemic stage. Due to its novelty, healthcare workers could not predicate how to treat COVID-19 patients (Nguyen et al., 2021). "If the risk of infection is high, a quicker public response would be formed in adopting protective behaviors" (Irfan et al., 2021, p. 5). However, previous studies highlighted that the risk perception of the pandemic significantly educates healthcare workers on how to treat COVID-19 patients. Thus, it confirmed the critical role in shaping health workers' decision to accept COVID-19 patients and treat them accordingly (Peres et al., 2020; Simione & Gnagnarella, 2020). Several empirical studies have highlighted that willingness to treat COVID-19 patients is significantly influenced by risk perception of the pandemic (Peres et al., 2020; Paudel et al., 2021).

In addition, Dymecka et al. (2021) examined the key indicators affecting the willingness of health workers to treat COVID-19 patients in Poland. They reported a positive link between risk perception and treating COVID-19 patients. Accordingly,

Yin et al. (2021) investigated the perceived behavior of health workers concerning the treatment of COVID-19 patients to minimize the risk factor of the pandemic. Their findings described that the risk perception of treating COVID-19 patients was reduced promptly, and things came under control by properly following the basic prevention policies of pandemics. However, limited research shed light on the relationship between risk perception of the pandemic and willingness to treat COVID-19 patients in Pakistan.

1.2. Aim and hypotheses

The study aims to investigate the relationships between healthcare workers' attitudes, subjective norms, perceived behavioral control, perceived effectiveness of the pandemic, risk perception of the COVID-19 pandemic, and willingness to treat COVID-19 patients. To reach the research objectives, the study applied the theory of planned behavior.

Considering these empirical arguments, the paper composed the following hypotheses:

H1: Attitude significantly and positively affects willingness to treat COVID-19 patients.

H2: Subjective norms significantly and positively affect willingness to treat COVID-19 patients.

H3: Perceived behavioral control significantly and positively affects willingness to treat COVID-19 patients.

H4: Perceived effectiveness of the pandemic significantly and positively affects willingness to treat COVID-19 patients.

H5: Risk perception of the pandemic significantly and positively affects willingness to treat COVID-19 patients.

2. METHODOLOGY

A close-ended questionnaire was administered in public, private, and semi-government hospitals in Lahore, the capital of Punjab province, Pakistan, from June 2021 to February 2022. The ultimate motivation for choosing Lahore as a survey site is that several healthcare professionals were affected in Lahore while treating COVID-19 patients during the pandemic. In this regard, Ngwewondo et al. (2020) investigated and concluded that the attitude and behavior of healthcare professionals toward treating COVID-19 patients were not positive. Furthermore, the number of positive cases of COVID-19 was higher in Lahore than in other cities in the Punjab province (Raza et al., 2020; Shoaib et al., 2021). However, before steering this survey, the highlighted hospitals and COVID-19 facilities centers were visited to identify the distinctive features of participants working in these hospitals. Then, the top management was reached, and the permission was requested to conduct this survey from the targeted respondents.

Moreover, several criteria were applied to select the respondents. However, a convenience sampling method was applied to gather the data (Etikan et al., 2016). Due to the ongoing epidemic, the sampling process for this study was not purely randomized. According to Irfan et al. (2021), the convenience sampling technique is more accessible and valuable to survey specific situations, i.e., experimental behavioral research.

3. RESULTS

A total of 270 questionnaires were distributed, 258 responses were returned, and five were not considered because they were repeating the same answer for all the items. Finally, 253 valid responses were considered for the final data analysis process. Three main criteria were set to consider a response valid and considered for the final data process:

(i.) all questions in the questionnaire were thoroughly ticked;

(ii.) the questionnaire had no incomplete or missing questions or demographic information; and

(iii.) the exact answers were not ticked for all questions.

Demographically, 62.8% of respondents were male, and 37.2% were female; the majority of the age

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group was 36-45 years old, 43.9%. Furthermore, the demographic information of the respondents is presented in Table 1.

Table 1. Demographic information

Item	Indicator	Frequency	Percentage
Gender	Male	159	62.8
	Female	94	37.2
Age	18-25	13	5.1
	26-35	73	28.9
	36-45	111	43.9
	45 years and above	56	22.1
Education	MBBS	100	39.5
	PG Diploma	28	11.1
	Certification in Nursing	125	49.4
Job Position	Physician	40	15.8
	Surgeon	52	20.6
	Nurse	80	31.6
	Medical assistance	41	16.2
	Medical technologist	40	15.8
Working sector	Public	84	33.2
	Private	77	30.4
	Semi-public	92	36.4
Working experience	Less than three years	28	11.1
	3-8 years	39	15.4
	9-14 years	75	29.6
	More than 14 years	111	43.9
How many COVID-19 patients are you treating every day?	Less than 20	17	6.7
	21-40	64	25.3
	41-60	114	45.1
	More than 60 patients	–	–
Have you ever tested positive for COVID-19?	Yes	42	16.6
	No	211	83.4

The frequency and percentage of demographic questions were calculated using SPSS software. Structural Equation Modelling (SEM) through SmartPLS software was applied to investigate the relationship between constructs used for this study. SEM evaluates the study model and the structural coefficient path estimation (Crockett, 2012). According to Saleem et al. (2021b), the social and management sciences researchers widely applied SEM approaches to assess the research model's reliability and validity. Moreover, the most appropriate approaches, i.e., "covariance-based" (CB-SEM) and "partial least squares," are broadly applied to evaluate the structural model of the study. Therefore, PLS-SEM test approaches were applied to investigate the complicated relationship between constructs, present path coefficient values, and justify the study's theoretical approaches (Hair et al., 2017).

For the current study, a research model was developed based on the six constructs, i.e., attitudes, subjective norms, perceived behavioral control, perceived effectiveness of the pandemic, risk perception of the pandemic, and willingness to treat COVID-19 patients. Thus, the theory of planned behavior was applied and extended to develop the research model for the current study. Moreover, the measurement items for the attitudes, subjective norms, perceived effectiveness of the pandemic, and risk perception of the pandemic were adapted from Irfan et al. (2021), and behavioral control items were adapted from Seong and Hong (2021). Thus, the paper also modified some items based on the study context.

Furthermore, a five-point Likert scale was applied to measure the items (1 – strongly disagree to 5 – strongly agree) (Johns, 2010). Thus, item factor loadings were recorded as > 0.06 (Bremner et al., 2007). Therefore, the loading value of two items of perceived effectiveness of the pandemic ranged < 0.06; as a result, these items were not considered for the final statistical analysis of the study (Verbeke & Vackier, 2005). However, the reliability and validity test of the constructs was calculated through Cronbach's Alpha ranging from 0.735 to 0.778, composite reliability (CR) ranging from 0.824 to 0.871, and average variance extracted (AVE) ranging from 0.515 to 0.558, though referring to the statistical results all the constructs was fit in the study context (Wong, 2013). Thereby, the factor loading and reliability and validity of the model are presented in Table 2. The discriminant validity of the model is shown in Table 3.

The present study applied the PLS-SEM approach to testing the hypothetical relationship between all the constructs. First, all the statistical test was performed through SmartPLS software. Then, bootstrapping procedure with 5000 subsamples and t-statistic was used to determine the direct relationships between all the constructs. Finally, path coefficients and coefficients of determination (R^2) are presented in the structural model (Figure 1 and Table 4).

Table 2. Measurement items

Measurement items	Loading	α	CR	AVE
Attitude		**0.776**	**0.841**	**0.515**
I possess a positive attitude toward COVID-19 patients	0.753	–	–	–
I possess a positive attitude that following the preventive protocols would save me from	0.755	–	–	–
I follow the preventive protocols while meeting with COVID-19 patients and other people	0.661	–	–	–
It is wise to follow the preventive protocols while visiting COVID-19 patients' wards	0.734	–	–	–
I possess a favorable attitude toward following the preventive protocols during the pandemic	0.681	–	–	–
Subjective norms		**0.774**	**0.851**	**0.588**
Most people I know are following the preventive protocols given by the government	0.735	–	–	–
Most people I know stay at home and work from home	0.831	–	–	–
Most people I know are using hand sanitizer and wearing a face mask regularly	0.708	–	–	–
Most people I know are doing physical distancing	0.788	–	–	–
Perceived behavioral control		**0.735**	**0.834**	**0.558**
The preventive protocols are entirely up to me	0.727	–	–	–
I think preventive protocols are easy to be implemented	0.726	–	–	–
I am confident that I can prevent getting infected by COVID-19	0.824	–	–	–
I am confident that I have enough knowledge about COVID-19	0.706	–	–	–
Perceived effectiveness of the pandemic		**0.771**	**0.845**	**0.523**
I think the preventive protocols for the COVID-19 outbreak in my country are effective	0.645	–	–	–
I think the preventive protocols for the COVID-19 outbreak in my community are	0.713	–	–	–
I think social distancing can prevent the transmission of COVID-19	0.781	–	–	–
I think a face mask can prevent the transmission of COVID-19	0.759	–	–	–
I think proper hygiene can prevent the transmission of COVID-19	0.710	–	–	–
Risk perception of the pandemic		**0.778**	**0.871**	**0.693**
People not following preventive protocols are susceptible to getting infected by COVID-19	0.825	–	–	–
It is risky to go out without wearing a face mask	0.833	–	–	–
I feel safe after following all the preventive protocols inside and outside the hospital	0.839	–	–	–
Willingness to treat COVID-19 patients		**0.717**	**0.824**	**0.543**
The pandemic situation encourages me to treat COVID-19 patients	0.794	–	–	–
I am willing to spend extra time treating COVID-19 patients	0.809	–	–	–
Overall, I am willing to follow preventive protocols	0.722	–	–	–
I strongly recommend others to follow preventive protocols	0.605	–	–	–

Table 3. Discriminant validity

No.	Constructs	1	2	3	4	5	6
1	Attitude	0.718	–	–	–	–	–
2	Perceived behavioral control	0.426	0.747	–	–	–	–
3	Perceived effectiveness of the pandemic	0.453	0.560	0.723	–	–	–
4	Risk perception of the pandemic	0.502	0.367	0.621	0.832	–	–
5	Subjective norms	0.267	0.380	0.358	0.290	0.767	–
6	Willingness to treat COVID-19 patients	0.414	0.656	0.616	0.440	0.357	0.737

Table 4. Path coefficient

Hypothesis	Path	β	T-statistics	P-values
H1	Attitude → Willingness to treat COVID-19 patients	0.444	0.420	0.020
H2	Subjective norms → Willingness to treat COVID-19 patients	0.538	0.487	0.032
H3	Perceived behavioral control → Willingness to treat COVID-19 patients	0.423	6.585	0.000
H4	Perceived effectiveness of the pandemic → Willingness to treat COVID-19 patients	0.056	0.780	0.366
H5	Risk perception of the pandemic → Willingness to treat COVID-19 patients	0.054	0.889	0.374

The values extracted from the SmartPLS analysis representing the relationship, variance explained (R^2) for the model, and significance level (Saleem et al., 2021b, p. 7). Table 4 presents the direct effects of attitude, subjective norms, perceived behavioral control, perceived effectiveness of the pandemic, and risk perception of the pandemic on willingness to treat COVID-19 patients in

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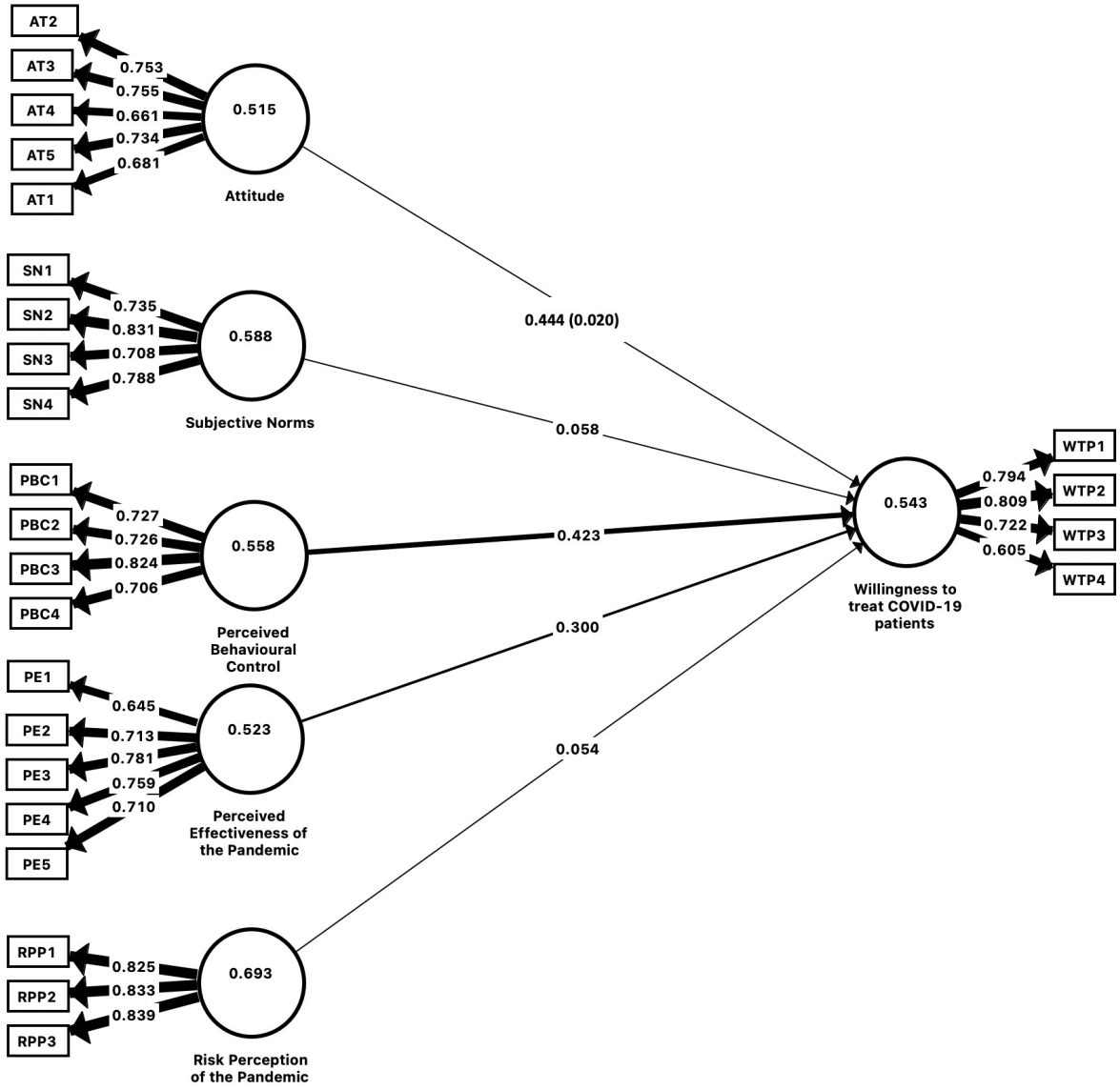

Figure 1. Structural model

Lahore, Pakistan. The variance explained by R^2 of willingness to treat COVID-19 patients was 54.3%, predicated by attitude, subjective norms, perceived behavioral control, perceived effectiveness of pandemic, and risk perception of the pandemic.

4. DISCUSSION

This study aimed to investigate the willingness of healthcare workers to treat COVID-19 patients during the COVID-19 pandemic in Lahore, Pakistan. Thus, the extended theory of planned behavior was applied. Five hypotheses were developed to investigate and conclude the study objectives. Therefore, the paper obtained hypothetical results through PLS-SEM, which indicated that three hypotheses, i.e., *H1*, *H2*, and *H3*, were accepted, and *H4* and *H5* were rejected.

Hypothesis 1 indicates that attitudes positively affect willingness to treat COVID-19 patients; the statistical results are $\beta = 0.444$, t-value = 0.420, p-value = 0.020. Overall, the findings suggested that the healthcare workers showed positive attitudes toward treating COVID-19 patients during the pandemic. Previous studies also concluded that healthcare workers play a broad role in treating and managing COVID-19 patients who exhibit a significant attitude that could probably motivate them to treat COVID-19 patients and minimize the infection of the virus among other individu-

als (Wahed et al., 2020; Huynh et al., 2020; Limbu et al., 2020). Moreover, they highlighted that healthcare workers played a broad role in minimizing the virus's spread and saving millions of lives worldwide. Accordingly, Olum et al. (2020) concluded that the attitude has a significant and positive attitude on the healthcare workers treating COVID-19 patients in Uganda.

Hypothesis 2 presented that the subjective norms positively impact willingness to treat COVID-19 patients (β = 0.438, t-value = 0.487, p-value = 0.032). The study findings demonstrated that the healthcare workers' positive willingness to treat COVID-19 patients was significantly affected by social norms. This finding is linked to the previous studies. For example, Minuye et al. (2021) pointed out that the positive willingness of healthcare workers to treat COVID-19 patients is positively affected by social norms. According to Irfan et al. (2021, p. 14), "Pakistani society is well integrated, and inputs from neighbors, family, and friends have a strong and lasting impact on people's minds." In this regard, subjective norms play a broader role in making decisions. Therefore, treating COVID-19 patients may affect individuals, i.e., family or friends, behavior in such norms that encourages and motivate healthcare workers to treat COVID-19 patients.

Hypothesis 3 shows that perceived behavioral control positively influences willingness to treat COVID-19 patients (β = 0.423, t-value = 6.585, p-value = 0.000). Empirical studies also found that the positive behavioral control of healthcare workers leads to treating COVID-19 patients, even those at high risk of the virus spreading from one person to another (Zakianis et al., 2021). In addition, positive behavior encourages the individual to show a stronger intention to perform a job. Consequently, perceived behavioral control is a crucial dimension of the theory of planned behavior that predicts an individual's perception to participate or not participate in a particular situation.

Hypothesis 4 shows that the perceived effectiveness of the pandemic negatively affects willingness to treat COVID-19 patients, while the path coefficient values are β = 0.056, t-value = 0.780, p-value = 0.366. Previous studies investigated and concluded that the efficacy of the pandemic was very high among healthcare workers in most countries, which negatively affects the healthcare workers' willingness to treat COVID-19 patients. Initially, the risk during the pandemic was very high, mainly among healthcare workers (Simione & Gnagnarella, 2020). Concerning that factor, most healthcare workers were not ready to treat any COVID-19 patients. Bennett et al. (2020) confirmed that healthcare workers were scared to treat or interact with COVID-19 patients, mainly in developing countries. In this regard, Munawar and Choudhry (2021) pointed out that healthcare workers in most developing countries are not getting the maximum facilities to treat COVID-19 patients. Thus, due to the novelty of the virus, most healthcare workers were unable to predict its effect, which led to a negative intention to treat COVID-19 patients.

Hypothesis 5 illustrates that the risk perception of the pandemic negatively impacts willingness to treat COVID-19 patients; thereby, the PLS-SEM values are β = 0.054, t-value = 0.889, p-value = 0.374. This hypothesis confirmed that the risk perception of the pandemic among healthcare workers was very high, and they were not ready to treat COVID-19 patients (Simione & Gnagnarella, 2020). This was also confirmed by Puci et al. (2020), who found that in Italy, the risk perception of COVID-19 was high among the individuals, more likely the healthcare professionals who understood the virus is easy to spread from one person to another. Wahed et al. (2020) examined the influence of risk perception in shaping healthcare workers' behavior during the COVID-19 pandemic. Zhong et al. (2021) confirmed that risk perception in China has a negative impact on healthcare workers' intentions to treat and monitor COVID-19 patients. The risk perception of healthcare workers toward the pandemic is still a significant challenge to understand and develop modern strategies to treat COVID-19 patients.

By discussing the overall findings, this paper contributes in several terms. First, the sustainable contribution of this study is to understand the attitudes, subjective norms, and perceived behavioral control of healthcare workers to show a cheerful willingness to treat COVID-19 patients during the pandemic. Thus, the perceived effectiveness and risk perception of the pandemic among

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healthcare workers was high, and they were not ready to treat COVID-19 patients; the risk perception could lead to a contradictory willingness to treat patients; thus, this was the weakest contribution of this study. In contrast, the findings indicated that healthcare workers' willingness to treat COVID-19 patients was high, which led to their positive attitudes, subjective norms, and perceived behavioral control. Thereby, due to the novelty of COVID-19, healthcare workers could not predicate its risk factor from spreading from patient to patient, which could cause severe illness or death. The findings show that perceived effectiveness and risk perception lead to healthcare workers' negative perception of treating COVID-19 patients.

CONCLUSION

This study aimed to investigate the willingness of healthcare workers to treat COVID-19 patients during the COVID-19 pandemic. Thereby, in this paper, the structural model was expanded based on the theory of planned behavior by incorporating three constructs (perceived effectiveness of the pandemic, risk perception of the pandemic, and willingness to treat COVID-19 patients) to lengthily test all the possible indicators that may inspire the healthcare workers to treat the COVID-19 patients during the pandemic. A survey was conducted in Lahore, Pakistan, and PLS-SEM techniques were employed to test the hypotheses. Overall findings show that attitudes, subjective norms, and perceived behavioral control positively impact healthcare workers' willingness to treat COVID-19 patients. In contrast, the perceived effectiveness of the pandemic and risk perception of the pandemic shows a negative impact.

In this regard, the Ministry of National Health Services Regulations and Coordination, the Government of Pakistan, and The National Command and Operation Centre for Coronavirus should pay more attention to these indicators to successfully shape the cheerful willingness of healthcare workers to treat COVID-19 patients in Pakistan. Additionally, it should be underlined that it is essential to reform and arrange training programs for healthcare workers to educate them on how to follow and minimize the perceived effectiveness and risk perception of the pandemic. Thus, these practices can later lead to a willingness to treat patients in any outbreak in the country. Furthermore, educating people on how to practice basic prevention policies to avoid the virus is essential as it can minimize the burden on healthcare workers.

This study also identified that healthcare workers carry a positive attitude, subjective norms, and perceived behavioral control to treat COVID-19 patients. Still, the pandemic's high-risk perception and effectiveness demotivate them from treating an affected patient. On the one hand, the provincial and federal government agencies should also educate and monitor the people on how to follow the essential COVID-19 prevention policies. As a result, the risk perception of the virus among healthcare workers can be reduced, and they will feel safer and motivated to treat COVID-19 patients.

Like other empirical studies, the present study also carries certain limitations that future research should consider. First, data were collected during the pandemic and employed a convenience sampling technique, which possibly caused sampling bias. Second, this setting limits the perfect summarization of the empirical findings to the country's population. Thus, future researchers should conduct more empirical studies to generalize the attitude and behavior of healthcare workers toward treating COVID-19 patients in other cities in Pakistan, i.e., Karachi, Quetta, or Islamabad. Third, data were collected only from 253 healthcare workers from Lahore, which is not enough to generalize the overall population of Lahore. However, this investigation was conducted during the pandemic, and the study could not reach more respondents. Future researchers can tackle this limitation by expanding the overall sample size in the same study context. Finally, the paper extended and employed the theory of planned behavior to obtain the study objectives broadly. Therefore, future studies suggest developing the structural model by adding the other key constructs, i.e., job satisfaction.

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