

ORIGINAL ARTICLE

Moderating Role of Socio-Economic Status: Health Belief Model and Preventive Measures for COVID-19 Pandemic in Pakistan

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ABSTRACT

Objective: The current study aimed at understanding the health belief model approach about the third wave of the COVID-19 pandemic in Pakistan and the assessment of preventive measures against this pandemic. Secondly, the study aimed to examine the role of socioeconomic status as a moderator between the health belief model and preventive measures.

Study Design: Cross-sectional study.

Place and Duration of Study: The study was cross-sectional and grounded on data gathered by google forms throughout Punjab province from March 2021 to May 2021.

Materials and Methods: For assessment of the health belief model World Health Organization (WHO) Cosmo protocol was adopted, and the preventive strategies questionnaire was implemented through Google Forms. It analyzed how socioeconomic status moderates the influence of the health beliefs of the Pakistani population on preventive behavior during the COVID-19 pandemic. Socio-economic status was assessed through the Federal Bureau of Statistic (FBS) data with the addition of four other dimensions (total family members, monthly income, total earning members in the family, residence personal/rent).

Results: Results revealed that constructs of the health belief model, Susceptibility ($p < .002$), Severity ($p < .026$), Self-efficacy ($p < .000$), and Knowledge about the disease ($p < .006$) revealed a statistically predictive relationship with the predictive measures taken by Pakistani population. Furthermore, moderating analysis exposed that although some constructs of the health belief model played a significant role in the use of predictive measures, but role of socioeconomic status as a moderator in their relationship was non-significant.

Conclusion: The current study's findings revealed that although different health beliefs like susceptibility, severity, self-efficacy, and knowledge predict the taking of preventive measures, socio-economic status as moderating variable played a non-significant role on the relationship between health beliefs and preventive measures taken by Pakistani population.

Keywords: COVID-19, Health Belief Model, Preventive Behavior, Socio-Economic Status.

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Introduction

Devastating COVID-19 epidemics have burdened the

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healthcare system of all countries. In this critical scenario, when developed countries are burdened, the health care system of developing countries like Pakistan already has weak healthcare systems that face devastating and long-lasting effects.

The current surge of coronavirus (COVID-19) lingers to influence the lives of the people in Pakistan; protective measures such as social distancing, wearing masks, washing hands, limited social interaction, and self-quarantining have become part of the new standards for many. Even the vaccination process has been challenging in some subclasses

because of the disbelief of science and Western medicine. Although planned policies by the government of Pakistan for the vaccination process are well organized, public doubt on science-based intervention and conspiracy theories obscure the matter.¹ In such scenario, more dependence on preventive measures seemed more operative and beneficial measures to regulate the magnitude of this pandemic. Society's acceptance of these preventive behaviors is a crucial factor in the combat against what has been mentioned as the "invisible enemy".²

Every individual in society has a crucial role in the promotion of health; preventing behaviors in this realm are inclined by the individual's beliefs, values, inclinations, and behaviors., Behavioral scientists, anthropologists, psychologists, and sociologists have planned different models to clarify all those aspects that can influence health care behavior, one of them is Health Belief Model (HBM).^{3,4} According to HBM, when someone is vulnerable to disease, and they also know the risk of disease and benefits of protective measures, and sometimes while during the application of these protective measures, they perceive different hurdles.^{5,1} To create the appropriate evidence, the present study intended to explore the impact of the health belief model on the individual's preventive actions for the prevention of COVID-19. The study also explored the role of socio-economic status as a moderator between the health Belief Model and preventive measures.

Materials and Methods

The study was cross-sectional and grounded on data gathered by google forms throughout Punjab province. The sample size was constructed on the proclamation made by Kline (2013) which specified that the proportion of the sample must be at least 3:1 for the number of the items of the scale.⁶ The approximate time to complete the questionnaire was about 10-15 minutes, and it first started with the debriefing about the research objectives.

The sample was selected through the purposive non-probability sampling technique. The sample comprised of 263 participants in the age range of 20 years and above. Inclusion criteria was for general population with the education level from intermediate and above.

The study assessment included an online questionnaire developed via Google Form; the first part of which was informed consent, further comprised of three segments, demographic details and components regarding socio-economic status, questions covering features of model of health belief, and pertinent questions to preventive behaviors from COVID-19 in Pakistan.

The first section of Google Form was comprised of questions covering fundamental demographic details like participant age, gender, education, family system, total family members, monthly income, total earning members in the family, residence (personal or on rent), the city will be used. Questions relevant to the COVID-19 pandemic were also included, like if you/any family member suffered from the COVID-19 pandemic?

Structured questionnaires for Health Belief Model were developed based on grey literature relevant to attitudes, perceptions, and concerns about the COVID-19 pandemic suggested by World Health Organization (WHO).⁷ Questions relevant to health belief model paradigm, included five sections: perceived severity (likelihood of contracting the disease-2 questions), susceptibility (the seriousness/danger of catching the disease-2 questions), perceived benefits (positive results of enacting the needed behaviors-1 questions), perceived barriers (factors that make taking the required actions difficult-6 questions), self-efficacy (1 question) knowledge (information about disease-1 questions), perceived social support (perceived support of family and friends-1 question) and fatalistic beliefs (2 questions). Two questions about the fatalistic beliefs like "*catching or not catching the disease is out of my control, its Allah 's will*" and "*we are Muslims and perform wadhu, so this virus can't infect us the way it does Western people*" were based on general attitude and opinion of Pakistani society during the adaptation process. Five-point Likert scale was used to score these questions, ranging from strongly agreed to disagree strongly.

The opinions of six health education and promotion specialists were used to determine the content validity; the necessary changes and corrections were applied in the questionnaire's text based on their opinions.

In the third segment, ten questions covering preventive behaviors were included grounded on the basic preventive measures delivered by the Ministry of Health, Pakistan.⁸ Responses were scored by using a 5-point Likert scale; scoring was from 1 to 5.⁸ Socioeconomic status was determined on the basis of household income and expenditure survey conducted by the Federal Bureau of Statistics. The socio-economic class was a very significant variable of the present study and to determine it more systematically, the other four aspects like, monthly income, total family members, earning members of family, and residence (rent/personal) under the domain of socio-economic status were also included. Initially pilot study regarding questionnaires was conducted on 20 participants (after consent taking) to rule out any ambiguity about questions and to check the face validity of understanding about asked questions was checked. Google Forms was used for the collection of data. Responses were measured on

a 5-point Likert scale. Informed consent was obtained on the individual level during data collection.

Descriptive statistics were used to define and clarify the sample characteristics. To assess the predictive relevance of the constructs of the Health Belief Model to the preventive measures taken by the participant regression analysis was used. Moderator analysis assessed the moderating effect of socioeconomic status on the relationship between health beliefs and the preventive measures taken.

Results

Table 1 shows the details of the demographic characteristics of the sample. Among the 263 participants, 38.9 % were men, and 61.1% were women. Undergraduates were 25.6%, graduates were 43.5% and post-graduate were 30.9%. Other factors associated with socioeconomic status, like monthly income and earning members, are also shown in table 1.

Table 1: Descriptive Statistics for Socio-Demographic Characteristics of Study Participants

Variable Name	Variable Attributes	Frequency (n)	Percentage (%)
Gender	Male	102	38.9
	Female	106	61.1
Education	Intermediate	67	25.6
	Graduation	114	43.5
	Post-Graduation	81	30.9
Total Family Members	1-5	128	49
	6-10	122	46.7
	11-15	11	4.2
Earning Members	1-2	206	78.6
	3-4	52	19.8
	Up to 5	4	1.5
Total Monthly Income	15,000 - 30,000	23	8.8
	31,000 - 60,000	41	15.6
	61,000 - 100,000	60	22.9
	101,000 - 150,000	62	23.7
	151,000 and above	76	29.0
Suffered from COVID 19	Yes	30	11.5
	No	232	88.5
Any Family Member Suffered from COVID 19	Yes	Yes	27.9
	No	No	72.1

Results mentioned in the Table 2 and 3 revealed that constructs of the health belief model, Susceptibility ($p<.002$), Severity ($p<.026$), Self-efficacy ($p<.000$), and Knowledge about the disease ($p<.006$) have a

statistically predictive relationship with the predictive measures taken by Pakistani population. These findings confirmed previously reported similar relationships of self-efficacy, perceived severity,

perceived susceptibility, and knowledge to the greater adoption of individual behaviors, in contrast, more significant perceived barriers, perceived

benefits, social support, and fatalistic beliefs were related to lower adoption of health behaviors. Tables 4 and 5 revealed that although some

Table 2: Summary of Regression Analysis with Health belief Model as Predictor of Preventive Behaviors

Model	R	R ²	Adjusted R ²	F	p
1	.551	.303	.281	13.759	.000

Table 3: Coefficients of Linear Regression with Preventive measures as Dependent Variable and Different Health Beliefs as Predictors

Health Belief Model	Unstandardized Coefficients B	SE	Standardized Coefficients Beta	t	p
Constant	8.623	2.321		3.715	.000
Susceptibility	-.474	.153	-.176	-3.094	.002
Severity	.324	.145	.138	2.240	.026
P. barriers	.129	.113	.065	1.142	.255
P. benefits	.206	.409	.034	.505	.614
Self-efficacy	2.078	.336	.371	6.180	.000
Knowledge	.962	.348	.161	2.768	.006
PSS	.392	.362	.063	1.082	.280
Fatalistic B	.190	.162	.066	1.172	.242

Note: n=263, P. barriers (Perceived barriers); P. benefits (Perceived benefits); PSS (Perceived social support); Fatalistic B (Fatalistic Beliefs). Susceptibility, severity, self-efficacy, and knowledge from the health belief model are significant predictors of preventive behaviors.

constructs of the health belief model played a significant role in the use of predictive measures, the

role of socioeconomic status as moderators in their relationship is non-significant.

Table 4: The moderating effect of socio-economic status on health belief model and preventing measures (n=263)

Model	R	R ²	Adjusted R ²	F	p
1	.327	.107	.096	10.382	.000

Table 5: The moderating effect of socio-economic status on health belief model and preventing measures (n=263)

Health Belief Model	Unstandardized Coefficients B	SE	Standardized Coefficients Beta	t	p
Constant	18.93	.380		49.76	.000
Z score (SES)	.048	.383	.007	.126	.900
Z score (HBM)	2.093	.385	.321	5.44	.000
Moderating (SES×HBM)	.190	.373	.030	.510	.611

Discussion

The Health Belief Model has a long history of use and empirical support in predicting preventive health behaviors, but it needs to be without its purported shortcomings. The aim of this current study was to explore the moderating role of socio-economic

status on the relationship between health belief model and preventive behaviors taken by the Pakistani population.

Previous research literature mainly focused on the health beliefs of individuals and their predictive relationship with the preventive measures taken by

them in this novel pandemic. The initial section of this study assessed the predictive relationship of all aspects of the health belief model comprised of susceptibility, severity, perceived barriers, perceived benefits, self-efficacy, knowledge about the pandemic and perceived social support with preventive measures taken by the Pakistani population relevant to different socio-economic status. The findings of the current study revealed that susceptibility, severity, self-efficacy, and knowledge about the pandemic of COVID-19 significantly predicted the preventive measures people are taking. These findings are supported by the research work in Korea by Kim and Kim (2020); assessments of that Korean study highlight the significant role of susceptibility, severity, self-efficacy, and knowledge about the COVID-19 pandemic on the preventive measures taken by the Korean population.⁹

Susceptibility in the current study refers to the level of risk for the COVID-19 pandemic, especially relevant to high-risk environments. Perception of susceptibility is directly relevant to engagement to health-related behaviors. Research conducted in Hong Kong by Kwok and colleagues (2020) supported that assessment of the level of risk of COVID-19 was directly correlated to compliance with precautions and health related recommendations.⁵ Similarly, perception of the severity of the consequences of the pandemic is directly linked to compliance for preventive behaviors to reduce the chances of the negative impact of a pandemic on person's health and life. These findings are supported by the studies in Iran and China in 2020.^{4,3}

Perception about self-efficacy refers to person's perception about his/her capability to take actions and preventive behaviors against COVID-19. Self-confidence in one's ability to effect consequences is a crucial constituent of health behavioral change. Studies by Zhong and colleagues (2020) in China during COVID-19 highlight the positive role of information and knowledge about the disease in taking of preventive measures by Chinese. Park and colleagues in Hong Kong (2010) in Korea regarding the pandemic of influenza supported the crucial role of self-efficacy in preventive measures.^{10,11,12}

Findings revealed that individuals with knowledge

about the risks or causes of the COVID-19 pandemic most likely took more preventive measures. Jose and colleagues found that information about pandemic directly effects behavioral change. Other study by Kwak and colleagues (2020) showed that those people having sufficient information about COVID-19 most likely follow the precaution of social distancing.^{9,13}

The findings of the current study regarding moderating effect of the variable of socio-economic status on the relationship of the health belief model and preventive measures was not statistically significant. Although relevant literature supported this fact that socio-economic status is correlated to preventive measures. As studies conducted in China, America, and Georgia revealed that the socio-economic condition of the population has crucial effect on the use of preventive measures in these countries.^{14,15,16} The study by Kim and Kim in Korea (2020) also explored and highlighted the significant moderated role of resources in the use of preventive measures during COVID-19.⁹ In the scenario of relevant literature, the different findings of the current study might be because of the education level of participants. In the current study participants were mostly graduate and post graduate and relevant literature support that higher education levels are associated with greater knowledge and information about COVID-19 risk and increased awareness of preventive measures. As Leung et al. in 2003 conducted a study during the SARS outbreak in Hong Kong, found out that individuals with an educational background of college or higher have very high probabilities of engaging in preventive behaviors relative to individuals with less education level.^{10,17} Park and colleagues (2010) study in Korea during influenza revealed that public education is effective in changing individual hygiene habits.⁹ In addition, Duan et al. (2020) confirmed that, in the case of COVID-19, a longer education period is associated with more engagement in government-recommended preventive measures. Similar findings were revealed by study by Kim and Kim in 2020 in Korea during COVID-19.^{4, 9,10,18,19} In the current study education might be the factor that neutralizes the moderating effect of socioeconomic status on the relationship between the health belief model and

preventive measures. It is recommended for future research, the data must be collected from illiterate and educated participants, so that it will give a clearer picture of the scenario.

Conclusion

The current study provides a comprehensive assessment of the moderating role of socio-economic status on the predictive role of the health belief model in taking preventive measures during the COVID-19 pandemic. Research findings revealed that although different health beliefs like susceptibility, severity, self-efficacy and knowledge predict about the preventive measures taken by the Pakistani population, but socio-economic status as moderating variable played a non-significant role on the relationship between health beliefs and preventive measures. It is recommended that for the future research the data must be collected from the participants both illiterate and educated to give a clearer picture of the scenario. Our results can contribute to explaining the continued progression of COVID-19 in South Asia and provide a basis for developing more effective, equitable and sustainable public health interventions for COVID-19 in the region.

Limitations

The current study has some limitations: firstly, data was collected through google forms due to specific conditions caused by the limitation due to the COVID-19 pandemic. This digital collection of data did not allow for random sampling for selection of participants. Secondly, some people, especially the elderly population, might not have access to electronic gadgets.

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