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Role of COVID-19 Knowledge and Health Belief in COVID-19 Risk Perception

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The present study examined the level of COVID-19 Knowledge, Health Belief and COVID-19 Risk Perception in urban and rural Indians and investigated the relationship among these variables. To materialize this aim, an online survey was conducted on N = 270 participants from different socio-cultural background across the country. The participants filled online questionnaires on a) knowledge of corona virus (COVID-19) disease b) Risk Perception of COVID-19 and c) Health Belief questionnaire which assessed 6 components of Health Belief Model (HBM) – perceived susceptibility, perceived severity, perceived barriers, perceived self-efficacy, perceived benefits and cues to action. Items in Health belief questionnaire were specifically designed in context of corona virus disease. Findings of the study indicated a positive relationship between the knowledge of the disease and perceived susceptibility (r=.239) and negatively correlated with perceived barriers (r= -.320). Risk perception was also positively associated with perceived susceptibility (r=.502) and cues to action (r=.238). Perceived benefit was linked with cues to action (r=.443). The strength of relationship remained low to moderate. Disease knowledge and risk perception was found to be slightly higher in urban population compared to rural background but the difference was statistically not significant. It is concluded that the perception of risk of corona virus disease is related to the knowledge the disease and health belief system of the individual. Higher knowledge of disease though may make one feel susceptible to disease, it removes the barriers and prepares the way for preventive action. .

Keywords: Corona Virus, COVID-19, Health Belief, Risk Perception, Health Belief Model (HBM), Culture, Cultural Belief.

The novel corona virus (COVID-19) outbreak has posed serious threat to public health and has become a global concern. The spread of the disease has not only caused physical risk but has also led to psychological vulnerabilities. The perception of risk though creates anxiety and fear in individual; on the positive side it prepares one to take preventive measures. Risk perception, however is a subjective experience and can be influenced by one's knowledge about the disease, attitude, health belief and cultural belief systems.

Risk perception is an *'individual's perceived susceptibility to a threat'* which is a subjective judgment about the characteristics and/or harshness of a risk. Risk perceptions are vital to altered behavior. The Health Belief Model (HBM) explains that the belief in a threat of an illness along with the belief in the efficiency of the suggested health related behavior determines the chance of indulgence in health related behaviour. The likelihood of an individual to adopt health behaviors depends on the two beliefs – a. the wish to avoid illness, or equally get well if already ill; b. the belief that certain behavior will prevent/cure illness.

The Health Belief Model (HBM) explains when an individual is inclined to judge themselves as less vulnerable than others to health risks (unrealistic optimism) with their subjective judgment; it negatively affects health behaviour (Weinstein, 1980; Ferrer & Klein, 2015). One of the major factors behind the unrealistic judgment or false risk perception of a disease is lack of disease knowledge among individuals.

Risk perception indicates how susceptible the individual feels of himself developing the disease. Risk perception can be influenced

by various factors, such as knowledge of the disease, emotional aspects in available information sources etc. The precision of risk perception in the background of direct health threats is altered and people tend to misjudge the risk of negative outcomes due to extreme emotional distress (Ferrer and Klein (2015).

Disease knowledge refers to one's understanding about the nature and cause of diseases, its severity, awareness about preventive measures and treatment options. Studies have reported a positive relation between disease-related knowledge and perceived risk. Also, dependable information sources are the basis to obtain reliable knowledge and build faith. Incorrect information leads to unwanted fears and anxiety where the individual may fail to focus on an evolving threat (Choi, Yoo, Noh, & Park, 2017).

The level of COVID-19 disease knowledge and risk perception may differ from one group to other depending on their exposure to the threat and access to reliable information. The difference in risk perception may further affect health related decisions such as taking preventive measures and seeking timely treatment. Accurate risk perceptions can help individuals to take right decisions about their health and take action to prevent illness. The subjective belief about the vulnerability to harm can lead to both positive and negative feeling (pleasure about successfully avoiding harm; anxiety about potential illness or disability). Hence, it becomes important to have deeper knowledge about cultural belief in risk perception of disease in order to eliminating harmful practices.

It is already established that risk perception of disease can be influenced by a variety of factors. It is worth examining whether the Knowledge of Corona virus disease (COVID-19), Health Belief system and Risk Perception of COVID -19 varies across rural and urban population of India and whether these variables are related to each other. Keeping this in mind, the present study examines the level of COVID-19 Knowledge, Health Belief and COVID-19 Risk Perception in urban and rural Indians and investigates the relationship among these variables.

Aim

To study and investigate the relationship among COVID-19 Knowledge, Health Belief and COVID-19 Risk perception

Objectives:

1. To study and compare COVID-19 Knowledge, Heath Belief and COVID-19 risk perception in urban and rural groups
2. To investigate the relationship between COVID-19 Knowledge and COVID-19 Risk perception
3. To explore the relationship among COVID-19 Knowledge and Health Belief

Hypotheses:

1. There will be significant difference in COVID-19 Knowledge, Heath Belief and COVID-19 risk perception between urban and rural groups
2. COVID-19 Knowledge will be positively associated with COVID-19 Risk perception

Method

Participants

A total of 270 participants from different socio-cultural, religious background and geographical locations of India participated in the study. The sample included students (both male and female) pursuing higher education from different colleges and universities. The participants were recruited online using purposive sampling method. A link to Google Form questionnaire was sent to the participants through email, to which they were asked to respond. The sample included participants from 11 states of India. Majority of the participants belonged to Haryana (58.1%) followed by Kerala (7.1%), Delhi (5.84%), Bihar (5.7%), Uttar Pradesh (5.7%), Gujarat (4.3%), Rajasthan (4.3%), Jharkhand (2.9%), Odisha (1.9%), Andaman & Nicobar (1.4%), and West Bengal (1.4%).

Measures

1. Knowledge of Corona Virus disease (COVID-19) was measured using a subscale of 'Cognition-Attitude survey on COVID-19" developed by Yan Ding et al. (2020). This subscale comprises of 7 multiple choices items

and thoroughly assesses one's knowledge about Corona Virus disease (COVID-19). The full score on this scale is 20. Higher score represents better knowledge regarding the disease.

2. Health Belief related to Corona Virus disease (COVID-19) was measured using the scale developed by Hossein Shahnazi et al. (2020) which is based on Health Belief Model (HBM). The 21 item scale is specifically designed to assess health belief related to Corona Virus disease (COVID-19) and taps all the component of Health Belief namely – a. Perceived susceptibility b. Perceived severity, c. Perceived barriers, d. Perceived self-efficacy, e. Perceived benefits, f. Fatalistic beliefs and g. Cues to action. Fatalistic belief is not the core component of the health belief model and hence was dropped in the present study. The scale is rated on a 5 point Likert scale. Two items are reverse scored. Higher score on any subscale indicates higher magnitude of the particular component of Health Belief Model.

3. Risk perception of Corona Virus disease (COVID-19) among participants was measured using a subscale of "Risk perception of COVID-19 around the world" scale developed by Sarah Dryhust et al. (2020). The risk perception subscale consists of 6 items and is rated on a 5 point Likert scale. One item is reverse scored. Higher score on this subscale indicates higher risk perception of Corona Virus disease (COVID-19).

Procedure

Participants from different socio-cultural, religious background and geographical locations of India were selected in the sample to participate in the study. Students pursuing their higher education from different universities were contacted through email. Those who met the criteria of the study were selected. They were informed about the nature and purpose of the study and consent was obtained from them. A link to the Google Form consisting all questionnaires was sent to them through email and they participated in the online survey by filling up the questionnaires. Their responses were coded and scored.

Data Analysis

The data was analysed using SPSS version 20. Descriptive analysis was carried out to analyse the demographic data and obtain mean and standard deviation (SD) of the variables under study. The homogeneity of the data was checked using Levene's test for equality of variance and the data was found to be homogeneous. To compare the mean score of urban and rural group on COVID-19 Knowledge, Health belief, and risk perception t-test was conducted. Further to study the relationship among Knowledge of COVID-19, Health belief, and Risk perception Pearson correlation coefficient (r) was conducted.

Results

The demographic analysis presented in table 1indicates that the mean age of participants was 22.5 year with SD 2.17. Majority of the participants in the study were females (62.9%). All the participants were in their higher education. Majority were post graduate (60%) followed by Graduate (17.1%), 10+2 (2.1%) and PhD (1.4%). The domicile status of the participants indicated that majority were from rural background (58.6%). The religious background of the participants revealed that majority were from Hinduism religious background (88.6%) and only a few were from Christianity, Buddhism, Jainism and others (2.9% each).

Knowledge of COVID-19, Health Belief and Risk Perception in Urban and Rural group

Table 1: Comparison of Urban and Rural group on Knowledge of COVID-19, Health Belief and Risk Perception

Variables	Group	Mean	SD	t- Value
COVID-19 Knowledge	Urban	13.17	2.76	.882 (N.S.)
	Rural	13.06	2.90	
Health Belief				
a. Perceived Susceptibility	Urban	9.75	2.37	.450 (N.S.)
	Rural	9.34	2.18	
b. Perceived Severity	Urban	11.41	2.45	.163 (N.S.)
	Rural	10.60	2.26	
c. Perceived Barriers	Urban	19.44	7.36	.679 (N.S.)
	Rural	20.12	6.16	

d. Perceived Self-efficacy	Urban	4.00	0.93	1.00 (N.S.)
	Rural	4.00	1.02	
e. Perceived Benefits	Urban	6.72	1.81	.939 (N.S.)
	Rural	6.75	1.63	
f. Cues to Action	Urban	7.51	1.45	.220 (N.S.)
	Rural	7.04	1.62	
Risk Perception	Urban	20.41	4.20	.576 (N.S.)
	Rural	19.90	3.40	

N.S. = Not significant

Table 1 presented a comparison of Urban and Rural group on Knowledge of COVID-19, Health Belief and Risk Perception. It is apparent that participants from urban background were slightly high on their knowledge of COVID-19, perceived susceptibility, perceived severity, cues to action and risk perception. However, the difference was not statistically significant. Similarly participants from rural background were slightly high on perceived barriers and perceived benefits while the difference not being statistically significant.

Relationship among Health Belief, COVID-19 Knowledge and Risk Perception

Table 2 presented the relationship among COVID-19 Knowledge, components of Health belief, and Risk Perception. The correlation analysis indicated that Knowledge of COVID-19 is positively correlated with perceived susceptibility and negatively correlated with perceived barriers. There is a positive relationship between Risk perception and perceived susceptibility. Risk perception was also found to be positively correlated with Knowledge of COVID-19 but the correlation was not statistically significant. Correlation between the components of Health belief indicated a positive relation between perceived benefits and cues to action.

Discussion

The aim of present research was to study the level of COVID-19 Knowledge, Health Belief and COVID-19 Risk Perception in urban and rural Indians and investigate the relationship among these variables. To materialize the aim the study was conducted on participants from rural and urban background of India. The major findings that emerged from the study are discussed below.

The findings of the study revealed that participants from the urban background were slightly better in their knowledge of Corona virus disease (COVID-19) and were having higher risk perception of COVID-19 compared to participants from rural background. The health belief of the two groups also differed slightly. The urban group demonstrated high perceived susceptibility, perceived severity, and cues to action. This clearly indicates that though knowledge of COVID-19 led higher risk perception and feeling of susceptibility in urban group, it prepared them for action. However, the

Table 2 - Correlation among components of Health Belief, COVID-19 Knowledge and Risk Perception

Variables	1	2	3	4	5	6	7	8
Perceived Susceptibility	1	.030	.092	-.032	.209	.198	.239*	.502**
Perceived Severity		1	-.120	-.019	.076	.082	-.113	.158
Perceived Barriers			1	-.200	.008	-.129	-.320**	-.010
Perceived Self-efficacy				1	.155	.168	.188	.055
Perceived Benefits					1	.443**	-.130	.180
Cues to Action						1	-.077	.238*
COVID-19 Knowledge							1	.191
Risk Perception								1

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

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

difference between the two groups was minimal and statistically not significant.

The next objective of the study was to investigate the relationship among knowledge of COVID-19, Health belief, and risk perception. The analysis revealed that knowledge of COVID-19 was positively related with perceived susceptibility and negatively related with perceived barriers. Risk perception was found to be positively associated with perceived susceptibility and cues to action. This again supports our first finding that knowledge of the disease leads to feeling of susceptibility but on the positive side it removes the barriers to treatment seeking behaviour and prepares the ways for action. Though there was a weak correlation between the knowledge of COVID-19 and Risk perception, it suggests that having knowledge of disease is the first step as it makes one feel vulnerable to the disease which further leads to preventive action. There was a positive relationship between perceived benefits and cues to action. It is apparent that the more benefits we see of health behaviour the more cues are available to compel us for action.

The findings of the present study are consistent with previous studies in this area. A positive relationship has been noted between perceived benefits and cues to action. It has been noted that perceived benefit is positively associated with health behaviour (e.g., wearing mask) (Shahnazi et al. 2020). Self-efficacy has been shown to relate to various health-related practices, such as smoking cessation, diet, and health-promoting lifestyle (Berner, 2007; Hollister & Anema, 2004).

It has been pointed out that Perceived barriers (beliefs about obstacles to performing a behaviour, and the negative aspects of adopting a health behaviour e.g., social distancing and hand hygiene), and Perceived benefits (belief in efficacy of the advised action to reduce risk or seriousness of impact) are two important factors in taking actions on preventive measures (Nasir, 2020; Glanz, Rimer & Viswanath 2015).

The perception of risk of corona virus disease is related to the knowledge the disease and health belief system of the individual. Higher knowledge of disease though may make one feel susceptible to disease, but on the positive side it removes the barriers and prepares the way for preventive action. Hence, it can be said that accurate risk perception of corona virus disease (COVID-19) is necessary in order to seek timely help.

Conclusion

From the findings of the present study, it can be concluded that risk perception of corona virus disease (COVID-19) is positively correlated with cues to action and knowledge of the disease. The knowledge of disease (COVID-19) though makes one feel susceptible it removes barriers and prepares way for preventive action. Perceived benefit was linked with cues to action which suggests that the more benefit we see in health behaviour the more we are prepared for action. Though statistically not significant, the disease knowledge and risk perception was found to be somewhat higher in urban population compared to rural background. In conclusion, it can be stated that knowledge the disease is associated with health belief and risk perception and may positively facilitate preventive action .

References

Berner, E.S. (2007). Clinical decision support systems (Vol. 233). New York: Springer Science+ Business Media, LLC.

Boyd, R., & Richerson, P. J. (2005). The origin and evolution of cultures. Oxford University Press.

Choi, D. H., Yoo, W., Noh, G. Y., & Park, K. (2017). The impact of social media on risk perceptions during the MERS outbreak in South Korea. *Computers in Human Behavior, 72,* 422-431.

Dietz, T., & Shwom, R. Culture, Environmental Risk Perception and Behavior.

Ding, Y., Du, X., Li, Q., Zhang, M., Zhang, Q., Tan, X., & Liu, Q. (2020). Risk perception of coronavirus disease 2019 (COVID-19) and its related factors among college students in China during quarantine. *PloS one, 15*(8), e0237626.

Dryhurst, S., Schneider, C. R., Kerr, J., Freeman, A. L., Recchia, G., Van Der Bles, A. M., ... & van der Linden, S. (2020). Risk perceptions of COVID-19 around the world. *Journal of Risk Research,* 1-13.

Ferrer, R. A., & Klein, W. M. (2015). Risk perceptions and health behavior. *Current opinion in psychology, 5,* 85-89.

Glanz, K., Rimer, B. K., & Viswanath, K. (Eds.). (2015). Health behavior: Theory, research, and practice. John Wiley & Sons.

Hollister, M. C., & Anema, M. G. (2004). Health behavior models and oral health: a review. *American Dental Hygienists' Association, 78*(3), 6-6.

Jones, C. L., Jensen, J. D., Scherr, C. L., Brown, N. R., Christy, K., & Weaver, J. (2015). The health belief model as an explanatory framework in communication research: exploring parallel, serial, and moderated mediation. *Health communication, 30*(6), 566-576.

LaMorte, W. W. (2018). The theory of planned behavior In: Behavioral Change Models. University of Boston School of Public Health.

Nasir, E. F., & Almahdi, H. A. (2020). Study of the Sudanese perceptions of COVID-19: Applying the Health Belief Model. medRxiv.

Shahnazi, H., Ahmadi-Livani, M., Pahlavanzadeh, B., Rajabi, A., Hamrah, M. S., & Charkazi, A. (2020). Assessing Preventive Health Behaviors from COVID-19 Based on the Health Belief Model (HBM) among People in Golestan Province: A Cross-Sectional Study in Northern Iran.

Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of personality and social psychology, 39*(5), 806.

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