Original Article

Effect of risk perception, perceived susceptibility and trustworthiness of information sources on maladaptive behaviour during COVID-19: An investigation of psychological well-being

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Abstract

Background: The rapid spread of precipitous COVID-19 pandemic caused havoc across the globe. The behavioural changes during the pandemic significantly contributed to define the 'new normal'. The study explored the association between risk perception, perceived susceptibility, perceived trustworthiness of information sources and maladaptive behavioural response during COVID-19 pandemic in India using a sample of two hundred thirty-two participants from across the country. Regression analysis was conducted. The results suggested significant correlations between perceived risk, perceived susceptibility, perceived trustworthiness of information sources and maladaptive behavioural response during the course of unprecedented pandemic. The risk of COVID-19 reaching the community was high among participants. Friends, family and general practitioners were considered as trustworthy sources of information in comparison with media and government. The susceptibility of a pandemic by a new influenza virus was the highest in the participants when compared with several other medical conditions. In the behavioural response, stocking up and staying indoors was highly considered. In the unique and unparalleled setting of a pandemic, risk perception, perceived susceptibility, perceived trustworthiness of information sources and maladaptive behavioral response correlated significantly with each other.

Keywords: Influenza, Maladaptive Behaviour, Medical condition, Pandemic, Perceived Susceptibility.

Introduction

COVID-19 has become a worldwide phenomenon which has taken a toll on physical, psychological as well as social well-being. After more than a year of its spread, the unusual psychological reactions are still witnessed extensively across the globe. The behavioural changes caused by COVID-19 significantly contributed to define the 'new normal' instigated by an unprecedented pandemic. Even today, there is not much known about the 2019 SARS-CoV-2, with new and more dangerous variant of corona virus strain resulting into havoc all across the globe. The extent of interhuman transmission of the virus also remains undetermined (WHO, 2020). While several nations suffered the peak of the pandemic during the mid of 2020, India was later followed by a sharp increase of rate in positive cases of COVID-19 throughout the population.

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The spread of the contagion in India was supplemented with triggering behavioural changes in the population. Numerous reports came to light where people attempted to escape quarantine and were found fleeing from the hospitals (Ojha, 2020).

Generally, the response to a life-threatening situation is denial in the face of an unprecedented and inescapable danger (Lubega et al, 2015), a situation posed by the COVID-19 pandemic. Initially, denial turns out to be a technique to escape the vulnerability at hand.

Avoidance of unwanted outcomes lead to non-compliance towards precautionary behaviours such as shunning to get tested, prohibiting family members from getting tested for the virus. This mechanism of continuing with everyday life as if nothing happened, is more likely to increase the spread of infection. Even after 16 months of the coronavirus outbreak, the ambiguity still remains all over the world. Even with stringent measures in place, the number of cases has hiked significantly resulting into panic and ambiguity across the globe. As on the last week of February 2021, a total number of 113,894,300 confirmed cases of COVID-19 and 2,527,344 deaths due to the virus have been reported worldwide. Thus, the current state of a precipitous pandemic has become an unforeseen extreme event wherein the societal ramifications are wedged by behavioural responses both at the individual as well as collective level. By this means, the fight against this novel coronavirus rests in the behaviour of individual and the community in order to contain the spread.

During the crisis, the way of communicating information can become critical where people choose to trust/distrust the factual information while opting to follow/unfollow theprovided guidelines (Barbara, 2008). The realm of rumours and perceptions are representative of concerns of the people during uncertainty, which makes it tough to distinguish between baseless fear mongering versus rumours with elements of truth. In the course of the pandemic, it gets challenging to build and maintain trust when the population is suspicious and in distrust of institutions, along with the contradictory information and fake news found on the internet which can lead to dangerous outcomes. Consecutively, trustworthiness on the sources of information is challenged during the time of a public threat, or a pandemic (Larsonn & Heymann, 2010; Hudson, 2020). The magnitude of “who” is communicating the information and “how” the information is processed by the individual can potentially determine the response towards an uncertain crisis during a pandemic. Trust in the veracity of the information is the core of the effective communication (Cui et al, 2017). The degree of trustworthiness in the information provided by different formal and informal sources also contrasts. Levels of trustworthiness on formal sources such as experts, medical practitioners, scientists, government bodies, media; informal sources such as friends, family, and neighbours can decisively determine the impact of the received information leading to behavioural responses (Kok et al., 2010).

Furthermore, it is also crucial to understand how people make sense of the risk during the crisis with the help of information received. There are models which gives the underlying idea that peoples' actions are reactions to a perceived risk. The Extended Parallel Process Model examines people's reactions to risk (Witte, 1992). In this, perceived threat comprises two components: perceived severity and perceived susceptibility (Witte,1996). To be specific, perceived severity is the perception of the magnitude of a crisis, while perceived susceptibility is the perception of the possibility of suffering from the crisis. This further involves evaluation by the individuals of perceived severity and perceived susceptibility, where they require more information to realise their perceived efficacy. Perceived efficacy comprises of two elements: perceived self-efficacy and response efficacy. The perception of the ability to perform action in a crisis is perceived self- efficacy, while the belief that one's action will produce an

effective response is response efficacy. Consequently, if the individual has higher perceived efficacy than perceived severity and perceived susceptibility, the individual is more likely to engage in protective behaviours to prevent the damage.

Indeed, the perception of risk does not exist independent of people's mind and surroundings (Slovic, 2000). In an environment of a crisis, given the unpredictability andambiguity about the duration and long-lasting impacts of the pandemic, different reactions can be consequential amongst the population. Depending on the level of risk perceived, an individual may get overwhelmed if he/she perceives the risk to be high resulting into adverse physical and psychological reactions (Jones & Owen, 2006). Risk perception frameworks can be used to determine behavioral responses by framing the problem as a risk to community, well-being and health of the people. Protection Motivation Theory explains the cognitive processes involved in facilitating behaviour during a threat (Rogers, 1975). It states that when one faces a threat, two kinds of appraisals take place: the first one includes the threat (threat appraisal), the second one involves the capacity to produce actions against the threat (coping appraisal). These further shapes the protective measures taken by individuals and affects the adaptive or maladaptive behavioural response towards the threat. Specifically, threat appraisal includes perceived severity and perceived vulnerability. When the negative consequences of the threat are perceived to be too high, it may result into maladaptive behavioural response (e.g., denial) (Witte & Allen, 2000). Coping appraisal includes self-efficacy and response efficacy. This involves assessment of effectiveness and confidence in the recommended protective behaviours to fight against the threat.

People's protective actions during a pandemic cannot be free of perceived susceptibility towards the threat. The extent to which an individual perceives risk of contracting an infectious disease can determine the behavioural measures involved in protection to counter the threat.

With higher perception of susceptibility, higher compliance with the protective measures were observed (Tang et al., 2004; Balinska & Rizzo, 2009; Kuo et al., 2011; Sim et al., 2014). Tang and colleagues found that individuals who felt more vulnerable towards contracting SARS were

2.5 times more likely to wear masks than others to prevent the spread and contain the infection. This association of higher perceived susceptibility and preventive measures has been witnessed in other studies too (Goodwin & Su, 2013; Kuo et al., 2011).

In connection to the perception of risk, COVID-19 pandemic is relatively unique as this generation is facing a crisis of high magnitude and complexity for the first time. This can result into maladaptive behaviours such as excessive information seeking, helplessness, avoidance, fatalism, denial, anxiety, panic buying, or impulsive decision-making. Several reports of physical attack and hate crimes against Asian people throughout the world shows discrimination as one of the maladaptive responses during the pandemic crisis (Russel, 2020). Other behavioural responseas a measure includes the practice of precautionary behaviours involving pharmaceutical (willingness to take vaccine, etc.) as well as non-pharmaceutical interventions (eg., handwashing, wearing masks, etc.) to reduce the extent of transmission.

The above-stated factors from the literature (perceived trustworthiness, perceived susceptibility, perceived risk, and behavioral response) are not necessarily assumed to be independent. These factors can intermingle dynamically to influence perceived risk and ascertain behaviour. Therefore, since COVID-19 pandemic is unprecedented and people generally are not certain about what should be the optimal response, the current study is an attempt to see how people respond to perceived risk, perceived susceptibility, perceived trustworthiness of information sources in a challenging environment

caused by COVID-19 pandemic. The current research examines the relationship between perceived trustworthiness of information sources, perceived susceptibility, and the degree of perceived risk leading to an array of behavioural responses, in the context of a pandemic.

Methods

Participants

The study employed 232 (M = 24. 13 years, SD = 4.69) participants from India with age ranging between 18 to 60 years. The data collection was conducted using an online questionnaire in the English language. The study is comprehensive as the data was collected from different parts of India. Convenience sampling technique was used by encouraging participants to forward the survey to as many people as possible. From the first point of contact, the link of the questionnaire was forwarded further. Researchers tried their best to get quality data through the online questionnaire. Due to the contagious pandemic, it was not possible to conduct the study face to face with the participants.

Measures

The current study employed four questionnaires. The questionnaires were administered for the purpose of measuring the trustworthiness of information sources, perceived susceptibility, perceived risk, and the behavioural responses during the sudden COVID-19 pandemic.

The questionnaire on "perceived susceptibility scale", "perceived trustworthiness of information scale", and "behavioural responses scale" was developed by Kok et al (2010). "Perceived susceptibility scale" consisted of 10-items which assessed the sense of susceptibility (How awful it would be if you were to be diagnosed with given medical conditions in the coming12 months). Participants were asked to answer each item on a 10-point scale, the higher score indicated greater perceived susceptibility and vice-versa. This measure identified the levels of susceptibility among various medical conditions. In the current study, the alpha of the scale was .94, thereby indicating an internally reliable scale.

The questionnaire on "perceived trustworthiness of information sources scale" (Kok et al., 2010), assessed by asking participants to indicate the 10-items as sources of information to be trustworthy sources of information during the time of a pandemic. This was measured in a five- point scale anchored with the notations: Very trustworthy, Reasonably trustworthy, Not very trustworthy, Not trustworthy at all, I don't know. This measure attempts to provide the perceived trustworthiness on information received from different sources during the uncertainty of a pandemic. The alpha coefficient for the present study was .86, hence indicating the scale as internally reliable.

The questionnaire on "behavioural responses scale" (Kok et al., 2010) contained 10 statements (e.g. "I will move somewhere where there is no flu", "I will stock up and stay indoors") on a 5-point scale ranging from 'totally agree' to 'totally disagree'. Respondents completed the scale by indicating their agreement with the statements. This measure attempts to provide a picture of the possible behavioural responses during the pandemic crisis. In the present study, the alpha coefficient was .78, hence indicating an internally reliable scale.

The questionnaire on "risk perception scale" was developed by Ibuka et al (2009), which contained questions on risk perception and the willingness to take pharmaceutical interventions during the pandemic. The questions on risk perception assessed the likelihood of contracting the virus, and perceived death toll from the pandemic. Items on pharmaceutical intervention assessed the willingness to take vaccination and antiviral medications. The questionnaire measured the levels of risk perceived by the subjects during an unprecedented pandemic. The alpha coefficient in the present study was .61, which is quite acceptable.

Procedure

In order to understand the perceived risk, perceived susceptibility, perceived trustworthiness of information sources and behavioural response during the pandemic, four scales were selected. The questionnaire was prepared on Google forms. The link to questionnaire was emailed to people across India. A request was made to them to participate in the study and subsequently forward the link of questionnaire in their circles. The questionnaire took ten to twelve minutes to complete. All the participants were assured of the confidentiality of identities. The objective of the research was stated in the instructions for participants. They were informed that the data collection will be utilized for research purpose only. Participants were asked to be as realistic as possible while responding to the questionnaire. A total of 232 responses were collected, validated and analysed. All the responses were stored in an excel sheet and later imported to IBM SPSS Statistics v. 22 for further analysis.

Results

Table 1 shows the demographic characteristics of the sample (N = 232) of the study. The sample comprised slightly more men than women and the participants who are currently pursuing education over the age of 18.

Table 1

Characteristics of the Sample (*n*=232)

Characteristics	*n*	%
Gender		
Male	133	57.32
Female	97	41.81
Prefer not to say	2	.86
Age		
18-29	160	68.96
30-39	33	14.22
40-49	19	8.18
50-59	17	7.32
>60	3	1.29
Occupation		
Student	156	67.24
Employed	76	32.75

The current study evaluated risk perception (M = 1.974, SD = .516), perceived trustworthiness of information sources (M = 3.673, SD = .611), perceived susceptibility (5.961, SD = 2.364) and maladaptive behavioural response (M = 3.202, SD = 6.13) of the participants (N= 232). Descriptive statistics (See Table 2) were reported to examine all the variables.

Table 2

Descriptive Statistics (*n*=232)

Predictors	M	s
Risk perception	1.974	.516
Perceived trustworthiness of information sources	3.673	.611
Perceived susceptibility	5.961	2.364
Maladaptive behavioural response	3.202	.614

Risk Perception: Regarding risk perception (M = 1.974, SD = .516), 51% participants believed that the likelihood of COVID-19 reaching their community to be 50% and above, whereas 51% believed the likelihood of personally encountering someone with COVID-19 to be 20% or below. 77% respondents opined that the number of deaths due to COVID-19 will be between 500000 - 1000000 worldwide. 95% of the respondents were positive of taking the vaccine as soon as it became available. 70% respondents were willing to pay ?5000 or less to get vaccinated. 87% participants were willing to take antiviral medications against COVID-19 for the entire duration of the pandemic and the amount they were willing to pay for the medication were `2000 or less.

Perceived Susceptibility: Perceived susceptibility (M = 5.961, SD = 2.364) varied across diseases. Comparisons across several medical conditions tell us that HIV, a heart attack and a new influenza virus causing the pandemic were considered to be highly susceptible than other diseases, whereas common cold and common flu which were considered to be least susceptible. Susceptibility did not differ significantly between the flu caused by a new influenza virus and the pandemic caused by a new

influenza virus. Diabetes, high blood pressure and tuberculosis were considered to be more susceptible than food poisoning and frequent cases of flu.

Perceived Trustworthiness of Information Sources: Regarding the perceived trustworthiness of information sources (*M* = 3.673, *SD* = 0.611), participants reported that general practitioner, the community health services and friends/family to be the most trustworthy. The government in general, the current national government, state departments, the municipal government and the neighbours were considered reasonably trustworthy by more than 60%, whereas the corporate enterprise and media were considered trustworthy, but 50% and 43% respectively.

Maladaptive behavioural response: Regarding maladaptive behavioural responses (*M* = 3.202, *SD* = 0.614), 85% of respondents reported that they would stock up and stay indoors if an influenza pandemic was happening. Approximately 40% considered that the media and the government will exaggerate the threat and that it will not be as bad as predicted. 38% of the participants trusted that medication for the virus would become available soon, whereas 56% of participants responded that pandemic simply has to be accepted as a reality. Few of the participants reported an intention to flee where there is no flu, 32% chose to neither agree nor disagree, while the other 32% could not consider moving somewhere else as an option. 45% of respondents reported that they would be utterly powerless during the pandemic, while only 25% indicated their disagreement with the statement.

Furthermore, the study employed multiple linear regression to understand the relationship between the maladaptive behavioural response, perception of risk, perceived susceptibility and perceived trustworthiness of information sources during a pandemic. The study identified a significant contribution of the risk perception, perceived susceptibility, and perceived trustworthiness of information sources towards how people might behave during the time of the pandemic. Regression analysis shows the relationship between the dependent and independent variables. The goal of tapping the risk perception, perceived susceptibility, and the perceived trustworthiness to predict the maladaptive behavioural responses was explored by performing regression as statistical analysis. Regression analysis was calculated to predict participants maladaptive behavioural response based upon their perceived risk, susceptibility, and trustworthiness. A significance regression equation was found ($F(3,468) = 35.682$, $p < .000$), with an R^2 of 0.181. This study was conducted to determine if risk perception, perceived susceptibility, perceived trustworthiness can influence individuals' likelihood to respond with the maladaptive behaviour when confronted with a worldwide pandemic. Results show that 18% of the variance in maladaptive behavioural responses can be accounted for by the three predictors, collectively, $F(3, 228) = 17.89$, $p < .000$. Looking at the unique individual contributors, the result showed that risk perception ($\beta = -0.161$, $t = -0.2598$, $p = 0.010$, perceived susceptibility ($\beta = -0.182$, $t = -2.842$, $p = 0.005$), and perceived trustworthiness ($\beta = 0.269$, $t = 4.285$, $p = 0.000$) positively predicts maladaptive behavioural response of people in a pandemic (See Table 3).

Table 3

Predicting maladaptive behavioural response (*n*=232)

Predictors		*t*	*p*
Risk Perception	-0.161	-2.598	0.01
Perceived Susceptibility	-0.182	-2.842	0.005
Perceived trustworthiness of information sources	0.269	4.285	0.001

$R^2 = 0.18$

Discussion

The findings of the present study suggest that based on the risk perception, perception of susceptibility of the threat and the trust/distrust in the information received during the threat of COVID-19 determines maladaptive behavioural response of the people. The current study corroborates with previous studies which specify the importance of risk perception, perceived susceptibility and perceived trustworthiness of information sources and their functionality in determining the behavioural responses of the population in a global epidemic. However, since this generation faced a pandemic for the first time in India, we were able to gather specific data during the contagion spread.

The results after analyses support the findings of the previous literature. Previous studies also found an association between the perception that when the threat is exaggerated, there may be a lower behavioural change in individuals. These perceptions take a longer time to be corrected. Hence, it is not surprising to see that 40% of the participants (n=232) in the study agreed with the statement that the threat will be exaggerated by the media; and that it will not be as bad as predicted. However, a more encouraging finding showed that 60% of participants had higher trust in government and its bodies which might result for the people to willingly follow the recommendations given by the government during the pandemic. Perceived susceptibility of contracting the new influenza virus causing a pandemic, when compared to numerous other diseases (for eg., HIV, diabetes) was high among participants.Previous literature shows the finding that risk perception is a useful predictor in various environmental domains such as flooding, health hazards and climate change (Tan & Xu, 2019). During a health and safety crisis such as a pandemic, persistent failure to control the situation can lead to an increase in perceived risk resulting in learned helplessness leading to maladaptive behaviour. In the present study, most participants felt that the pandemic has to be accepted as a reality, and there is little they could do about it. Novel coronavirus or COVID-19 presents a wholly new and complex environment where predicting future outcomes has become difficult not just for an ordinary person but for researchers and scientists as well. This aggregates into an escalation in the perception of risk, the susceptibility of contracting the virus and trust in the veracity of the received information via different sources during an unprecedented pandemic.

Additionally, if there is a lack of trust in the information received from media and institutions, this may initiate the maladaptive responses with insufficient knowledge about the situation. In case of lack of trustworthiness, the general public tends to rely heavily upon experts, medical professionals to outsource vigilance in order to receive the necessary research and information to remain safe. At the time of the pandemic, other trusted institutions such as the World Health Organisation (WHO) helps in safeguarding interests of the public. The importance of reducing uncertainty by providing clear information to the general public has been highlighted in previous studies (Larson & Heymann, 2010; Walter et al., 2012).

Conclusion

The purpose of present investigation was to tap how factors such as risk perception, perceived susceptibility, and perceived trustworthiness of information sources' aid in understanding the behavioural responses during a pandemic crisis. The objective of the research was to see effect of risk perception on peoples' response in a specific environment concerning behaviours. Most of the studies regarding risk perception were conducted when the pandemic was not regarded as highly risky, and the responses were mostly hypothetical, in contrast, the current study has strength as the data collection was done during the COVID-19 pandemic in India. The studies published prior to the current COVID-19 pandemic on risk perception and

behavioural responses showed that as people perceive the risk to be higher during an insurmountable threat, all kinds of behaviour can be expected arising from state of helplessness, denial and so on.

Understanding how perceptions of risk, susceptibility and trust help in shaping the behavioural response becomes critical during an unprecedented pandemic. The findings from present investigation contribute to the current understanding of behaviour undertaken by public during an unprecedented pandemic. Accordingly, such studies could be effective in determining the risk communication during such crisis and help in building the trust among people and initiate responsive protective actions necessary.

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