

Assessing Precautionary Behaviour Regarding COVID 19 Applying the Health Belief Model among Family Members of Health Care Workers in Darjeeling District, West Bengal

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Abstracts: Background: An unique never before public health challenge faces the world with threat of impending disaster. Prevention remains the mainstay as there is no available vaccine or medicine. To interruption transmission social distancing and nationwide lockdown have been imposed. Nevertheless, hooded warriors the health care worker despite odds are working round the clock to save lives risking their own and their immediate families'. Since human perceptions and not medicine determine behaviour the widely utilized health belief model was applied. **Objectives:** To assess risk perception, precautionary behaviour and vaccination intent among study participants and assess them according to constructs of time-tested health belief model. **Methods:** 70 eligible family members were studied by telephonic interview and email recorded responses from 14th March to 14th April 2020. Questionnaire was based on HBM. Requisite permission was taken. **Results:** 67% were females and 42% spouses. Their risk perception and precautionary behaviour was very high. Few had panic attacks. They stopped their related health care workers to attend duties and even isolated them in family settings. Perceived severity, susceptibility was high as was perceived barriers. Perceived benefit was average though unhappy with the given working conditions. Self-efficacy was high after periodic reassurance. Family members practiced effective health communication with their neighbourhood. **Discussion:** Various studies reiterated similar findings and found avoidance of public places was practiced earlier during outbreaks. **Conclusion:** Risk perception and precautionary behaviour was very high among family members. Applied model revealed perceived threats to be higher than perceived benefits leading to stress reactions in family. Fears of increased vulnerability was addressed with reassurance from their respective health care workers in family increasing self-efficacy. However a larger study is recommended with special mention and attention to them.

Keywords: Health care workers, risk perception, precautionary behaviour, Health belief model.

BACKGROUND:

Corona virus pandemic has worldwide spread with countries adopting multipronged strategies in unison to combat the disaster. Animal to human spread theory was later refuted by WHO to confirm human to human transmission with R0 (basic reproduction rate) of 2.4, affecting mostly above 40 years of age irrespective of gender or socioeconomic class. Virus

containment needed public health expertise and preventive therapy remained the mainstay. Hence a unique public health challenge surfaced which needed collaboration within communities and cooperation at all levels to control. A multi-disciplinary team was formed with experts who directed the RRT, rapid response team every health facility to formulate appropriate strategies like opening of screening clinics, quarantine teams, isolation wards and SARI wards and manning them

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with adequately trained staffs. Issues of testing and quarantined/isolation was also dealt.

The fight has just begun with hooded warriors who wearing PPE and N95 masks risk their lives for saving others. Extensive epidemiological survey and data analysis to understand transmission sequence and ways to intercept it is still required. Since contagion is fast and can be halted only by interrupting the chain of transmission hence it has become onus of individual and community to be aware and report symptoms / history of exposure if any. Asymptomatic carrier poses maximal risk to surrounding hence testing , contact tracing , wearing masks , social distancing , hand hygiene, cough etiquette, isolation , quarantine were imposed and have now become household terms. Declaring clusters, containment zones and lockdown became mandatory to stop community transmissions where health care workers and their families become the worst hit.

In India many migrant labours and daily wage workers have lost livelihood due to sudden lockdown but little other alternatives was left. Varied diversity in terms of socioeconomic characteristics like literacy status, education, income, occupation, marginalized population in a nation leads to striking difference in risk perceptions and comprehension of subsequent precautionary behaviour. There are still pockets who fail to judge severity of the impending disaster whereas few areas have instilled violence on health care workers in panic, fearing them to be potential sources of infection (Sadique, M. Z. *et al.*, 2007; Bish, A., & Michie, S. 2010; Briss, P. A. *et al.*, 2000).

Notwithstanding the limitations a chilling fact pertains that health care workers are sole soldiers at warfront who risk not only theirs but also their families lives to protect others in face of such crisis. At times when people don't leave their homes, they treat such patients/ suspects. Worldwide cold statistics reveal health care workers to be maximally and worst affected. Suffering from fatigue, anxiety, logistic issues, administrative jargons they face death and risk of infection every day to treat the new disease with the cumbersome protective wears. Their daily life stands jeopardized as many stays away from their families for months and undergo testing before returning back to them. Their family members suffer from mental anxiety and panic due to the testing times and an unknown fear of doom grasps them (Sadique, M. Z. *et al.*, 2007; Bish, A., & Michie, S. 2010; Briss, P. A. *et al.*, 2000; World Health Organization Department of Communications. 2019).

Yet researchers have seldom shown interest in them. Assessing precautionary behaviour among them is of utmost importance to understand risk perception of these family members who are not doctors yet are exposed to the daily grinds more than other general

population. They can behave as role models for community and it is easier to percolate health communication to and through them. Contagion containment is dependent on human behaviour rather than medicines, risk perceptions being key drivers influencing precautionary behaviour a time tested widely utilized standardized health belief model (HBM) with 6 constructs is applied to assess their preventive behaviours. Hence in aforementioned context the study was undertaken with the following objectives

OBJECTIVES:

1. Assessing risk perception, precautionary behaviour and vaccination intent among study participants
2. To understand extent of precautionary behaviours conforming to health belief model among the study participants

METHODS:

Study was conducted with data collection for one month among family members of health care workers working in tertiary care hospitals of northern part of West Bengal. A mixed method study design was executed with telephonic interviews to elicit various themes identified for in-depth interview. Soft copy of the questionnaire was sent by electronic mail and its responses recorded. Ethical clearance was sought for and voluntary verbal consent was priorly taken. Intent and purpose of study was explained. Willing, healthy family members who had health care workers in their families attending COVID suspect/ positive patients were enrolled for study purpose. Anonymity was ensured, other queries addressed. One response was recorded from each family. A total of 70 study participants could be studied. Sampling was purposive as objective was to identify the extent and type of precautionary behaviours based on HBM so that the areas could be identified and dealt better to ensure long-lasting behaviour change without coercion⁴. The questionnaire based on HBM was rated on a 3 point Likert scale with 3 being highest, 2 average and 1 lowest.

RESULTS:

Total 100 families were estimated to be studied. However 72 responses could be recorded from eligible respondents, one from each family. The percentages have been shown in round figures for ease in understanding.

Background descriptors: Majority of study subjects (67%) were females. Relationship to the health care worker was mostly spouse (42%), mother (15%), father (18%), daughter (10%) and sons (15%). All of them were literate and belonged to higher socio-economic class. Majority were employed and only few among children were still students. 54% were Hindus, 39%

Muslims and 7% Christians. 33% population studied belonged to geriatric population and were aged above 70 years. Many of them resided outside campus but 6 families stayed inside the hospital campus itself.

Risk perception among study participants was very high. 16 geriatric people had documented panic attacks. 5 among them were prescribed anxiolytics lately. Children in few cases behaved erratic. In 7 cases they urged their guardian health care worker to stop attending duties. All the family members were panicked, felt helpless and opined they were at high risk of contracting the infection than other general population counterparts. Few families even demanded written compensations for health care workers who were risking their own life and families' as well for the cause. They said *"death insurance was not the solution as fear of contracting infection any moment is worse than death"*. *"It is indeed difficult for anyone to understand the gravity of our situation as we have to be ready for sacrifice anytime"*.

Precautionary behaviour among family members was very high. In majority of cases though medicines was not stocked, yet any preventive health check-ups were done priorly and all elective surgery postponed. In all the cases entire families consumed prophylactic hydroxychloroquine in prescribed doses and faced side effects. The family members isolated the health care worker in a separate room with attached bathroom and were very careful regarding contracting fomite borne infections. In as high as 69% cases the health care worker took institutional quarantine for 14 days and tested negative before entering their family. Their family life was totally jeopardized and in such days all household chores had to be undertaken by the lone other person who became tedious at times. Financial rearrangements were made, cash was withdrawn for emergency and all festivals and party celebrations were postponed in almost all cases. Ration stocking was done by 43% families though not on major scale. Unanimously social distancing was followed and they used hand sanitizers repeatedly. It was home prepared in 42% cases. Hand washing was practiced rigorously, cough etiquettes were followed by everyone and overall well-being of the family became a major priority as they did not visit hospitals.

In 81% cases, small children of the family were prohibited from intermingling with their respective health care worker guardians which was very difficult and trying situation.

In 39% cases the family members disseminated health education and generated awareness in their neighbourhoods by emails. Health communication was improved among their neighbours. The health care workers in their families taught appropriate way to use mask and disinfect which they ramified further in their neighbourhood. However, 22%

families complained they felt as social outcast as people avoided them in shops and common places. As high as 6 family members had to be admitted as covid suspect for testing. The precautionary behaviour was found to be significantly associated with age of family members and with spouse. ($p=0.029$). However, despite attempts by health care workers social media timings in television and mobiles could not be restricted in majority of cases.

Interestingly 71% families opined they would go for vaccination if available. However, the rest said they would get vaccinated only after its success and AEFI's are proven beyond doubt.

Health belief model and its 6 constructs were studied among study participants to predict its influencing role on precautionary behaviour of the families. It was rated on a scale of 3. Where 3 were maximum score. 79% families rated Perceived "seriousness," of the disease was very high as felt being in close contact to health care workers who attend patients regularly, they are at increased risk of contracting the disease. Hence, they maintained strict isolation of the HCW at homes with separate room and bathroom for them. 61% wore masks at home even. Reason cited was if they fall sick their child would be left alone in the world hence extra precaution is needed. Perceived "susceptibility," was rated as highest by 81% families. Personal susceptibility and comparative susceptibility were perceived to be higher as they were exposed to the risk factor more and many of them were immune compromised. All the elderly people were diabetic and in 8 families there was history of cancer. However, the perceived "benefit" was rated high by only 43% cases because many were yet to be sure of the lockdown strategies. Moreover, opening of ration shops and medicine shops and staying inside hospital campus they felt lawmakers should enforce social distancing more stringently. Moreover as the health care worker in the family had to go to hospital and attend patients hence the concept of limited movement was difficult to perceive for them. Misleading social media messages also led to less perceived benefits. not declare it as containment zones it is difficult to tide over crisis. Perceived "barriers" or obstacles were high as opined by 59% families. Movement of health care workers at odd hours in hospitals lack of administrative support to their families in terms of grocery, compensations, logistic constraints, inadequate protective gears, need for more testing and contact tracing and not declaring hospital areas as containment zones were perceived to be obstacles. Social media messages on maltreatment of health care workers further strengthened the views. "Cue to action," was not much present at all. Majority 49% rated it as average. However as the health care workers had to undergo testing and if suffered from flu like illness, panic generated and use of hand sanitizers and hand washing became more intense. "Self-efficacy" was rated high by 59% families and average by 33%

families. They slowly geared up for the fight and learnt to adhere to strategies with confidence to practice them without getting affected. They were encouraged and assured by the health care worker in their families repeatedly for the same. Masks slippage and hand washing were the commonest slips but with time it got corrected.

DISCUSSION

Many models have developed to predict precautionary behaviour of humans and they were applied on other settings with different success rates.

Health care workers have time and again proved their intent to serve despite all odds. Nevertheless, their families have suffered on the backdrop due to these odd and risky duty hours silently. Few studies have noted anxiety among families of health care workers and increased prevalence of infectious diseases among them when any outbreak occurs. However, there are few studies which focus on their plight specifically. Inadvertent delay in speaking about self-problems has added to misunderstanding of doctors and the risk faced by their families.

COVID-19 is a new challenge posing a global threat unprecedented. It's the biggest public health threat that history will remember and its combating needs a multipronged strategy where each person has to stand for the other. Interrupting transmission is the only key. However, unaware of the new public health measures many people still fail to comprehend the crisis and find no clue to how the lockdowns are going to contain the threat. Cases are on rise and so are asymptomatic carriers. Pooled testing in some clusters though started is not operationally feasible for every corner as of now and hence health care workers at the frontline face the maximum threat due to the reckless behaviour. Need for stringent reinforcement of laws by lawmaker is an option but not lasting. Hence a deep insight into the influencing role of models on risk prevention and precautionary behaviour and modify it by appropriate interventions. Later is long-lasting though time taking and needs good communication research for the same (Centers for Disease Control and Prevention Implementation of mitigation strategies for communities with local COVID-19 transmission. 2020; Alimohamadi, Y. *et al.*, 2020). The HBM is a model that has been used to study behaviours related to preventing or mitigating disease as has been done in influenza.

The Health Belief Model (HBM) (Bish, A., & Michie, S. 2010; Briss, P. A. *et al.*, 2000) posits that messages will achieve optimal behavior change if they successfully target perceived barriers, benefits, self-efficacy, and threat. The HBM posits that people will take action to prevent illness if they regard themselves as susceptible to a condition (perceived susceptibility), if they believe it would have potentially serious

consequences (perceived severity), if they believe that a particular course of action available to them would reduce the susceptibility or severity or lead to other positive outcomes (perceived benefits), and if they perceive few negative attributes related to the health action (perceived barriers).

Many studies noted perceived barriers were the most powerful single predictor of preventive health behaviour across all studies and perceived severity was the least powerful predictor. Both perceived susceptibility and perceived benefits were important predictors of protective health behaviour; however, perceived susceptibility was a stronger predictor of preventive health behaviour.

The health belief model was originally formulated to model the adoption of preventive health behaviours in the United States. The underlying concept of this model is that personal beliefs or perceptions determine health behaviour. This model describes six constructs that predict health behaviour. Perceived seriousness, perceived susceptibility, benefits to action, barriers to action, cues to action, and self-efficacy. "Self-efficacy was found as a predictor of the intention and practice of health behaviour and risk perception. A recent study of which investigated the influence of self-efficacy and risk perception on behavioural intentions related to the A/H1N1 flu pandemic, showed that culture affected self-efficacy and risk perception. According to the authors, the way in which people perceive and respond to risks varied across nationalities and cultures. They found that self-efficacy and risk perception had stronger effects on behavioural intention in the American than in the Korean people.

Precautionary behaviour studied in a large population-based survey of perceptions of pandemic influenza risk in 8 regions suggested large numbers of persons would try to reduce their risk of acquiring pandemic influenza. Approximately 75% of respondents said that they would avoid public transportation, and similar numbers would avoid places of entertainment and restrict their shopping to the essentials. These reported actions are in agreement with those reported in similar hypothetical studies and recorded behaviour in the face of an epidemic (Wu, Z., & Mc Googan, J. M. 2020; Zhao, X. *et al.*, 2020). A recent survey of public health professionals in the United States indicated that almost half would avoid work, a proportion similar to that reported by the general public in our survey.

Studies also found mass media scholars have noted in various contexts that mere physical proximity to electronic media (or time spent with it) does not guarantee any meaningful engagement with information.

However, as a famous study recently done quotes “public health frameworks such as HBM are not entirely foreign to pharmacy as a profession. The transtheoretical “states of change” model has been used in the context of smoking cessation. Ideally, such a deployment would be accompanied by strong assessment tools; however, the speed with which the COVID-19 situation is evolving necessitates a less evidence-based approach than might otherwise be used (Remuzzi, A., & Remuzzi, G. 2020; Champion, V. L., & Skinner, C. S. 2008)’

CONCLUSION

The study concludes that family members of health workers were panicked beyond doubt. Risk perception and precautionary behaviour among them was very high. Taking prophylactic medicine, rearranging finances, stocking rations, maintaining lockdown with social distancing and following hand hygiene was practiced rigorously. Moreover, health care workers were isolated at their home settings. HBM assessment revealed perceived severity and susceptibility among study participants to be high unlike the perceived benefits. However barriers perceived were high and self-efficacy was high after reassurance from the respective health care workers. A larger study with more representative study sample is warranted.

Limitations:

The sample size was not very high and it was purposive sampling as the aim was to have an insight into ground reality of family members of the frontline fighters. Depiction of result in round figures was for ease in understanding of the ground reality. Moreover, interview methods not being face to face many discernible information may have been missed out. Families of health care workers already being aware of the situation and facing the daily grinds may have given guarded response. HBM model prediction needed more detailed evaluation and reason ascertainment which was beyond scope of the study due to the prevailing conditions and single handedness of the study.

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