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# Risk Perception, Knowledge, Social Distancing Measures of COVID-19 Pandemic Among South Indian Population

Sai Sudha Mahajan<sup>1</sup>, Gheena Sukumaran<sup>2</sup>, Pratibha Ramani<sup>3</sup>,  
Abhilasha Ramasubramanian<sup>4</sup>, Hannah Grace<sup>5</sup>

<sup>1</sup>Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India; <sup>2</sup>Associate Professor, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India; <sup>3</sup>Professor and Head of Department of Oral Pathology, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India; <sup>4</sup>Reader, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India; <sup>5</sup>Senior Lecturer, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India.

## ABSTRACT

**Background:** The objective of this study was to monitor variables that are critical for behavioral change in the South Indian population and the measures taken to avoid transmission of COVID-19 pandemic including risk perceptions, knowledge, and social distancing measures.

**Materials and Methods:** An online questionnaire was designed with multiple data in a cross-sectional pattern which was applied to the South Indian population. The appropriate data was collected and analyzed considering the current COVID-19 pandemic using bar graphs through SPSS software.

**Results:** The frequency pattern of the collected data is shown in the study.

**Conclusion:** The unprecedented and dynamically evolving current crises make it hard to predict actual outcomes of appropriate risk management and behavioral policies without clear facts on mortality rate going up and community transmission.

**Key Words:** COVID-19, Risk perception, Social-distancing behavior, Preventive measure, Risk management, Community transmission

## INTRODUCTION

The risk perception has become increasingly relevant to the recognition of knowledge and social behavior<sup>1</sup> of the people with exposure<sup>2</sup> to the environmental pressure of the COVID-19 outbreak. COVID-19 has substantial evidence of being an infectious disease having a severe (Sridharan et al., 2019) impact on human health. Thus, the COVID-19 pandemic has become the most severe global health challenge.<sup>3</sup> COVID-19, although being an infectious disease worldwide, has multiple causative factors<sup>4,5</sup> that facilitate contagion. Factors such as social, cultural, psychological, and environmental co-exist among people travelling and contacting each other with the outbreak.<sup>6</sup>

Along with the pandemic, fear spreads and grows. The reason<sup>7</sup> for this phenomenon could be understood as risk

communication theory found among the people and this is confirmed by the current developments of COVID-19.<sup>8,9</sup> Now-a-days due to the growing fear of the risk of the COVID-19 pandemic, public health policies need to ensure the practice of hand hygiene and social distancing to prevent its spread.<sup>10</sup> While, some strictly adhere to such practices, others ignore or delay the government's rules and mingle in crowds at public places and gatherings or also sometimes within their homes. This indifference in behavior among people at this challenging<sup>11</sup> period indicates that the risk<sup>12</sup> perception strongly<sup>13</sup> relates to the behavioral response to this novel virus. This means risk perception is a strong modifier of the COVID-19 evolution.<sup>14</sup>

As and when the novel virus outbreak was declared by the WHO in Jan 2020 as a public health emergency<sup>15</sup> concerns, many governments had also declared a state of emergency

### Corresponding Author:

**Dr. Gheena Sukumaran**, Associate Professor, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India; Contact: +919884033777; Email: [gheena@saveetha.com](mailto:gheena@saveetha.com)

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allowing the relocation of resources and undertaking drastic measures.<sup>16</sup> In the fight against the pandemic, local governments tried to figure out possible and typical ploys at the time of the pandemic that included accusations, plots, exploitation, obscure interest, misinformation, and disbelief.<sup>17-20</sup>

Therefore, this study aimed to explore the patterns of community risk perception of the COVID-19 pandemic in the South Indian population.

## MATERIALS AND METHODS

The study was carried out as a cross-sectional study via an online questionnaire among the South Indian population. The SRB approval number granted from the institution is SRB/SDC/MDS/003/02. The cross-sectional study was conducted among self-willing participants of the target population during the period of April 2020 to May 2020. This survey included a multiple-choice questionnaire based on the public's risk perception, awareness, and knowledge including social distancing measures during the COVID-19 pandemic. The online questionnaire included 37 questions of different variables pertaining to the public's risk perception, knowledge, and social distancing measures including the socio-demographic data. The sample sheets were reviewed and validated by 3 observers.

### Statistical analysis

The responses from 60 participants were tabulated and represented by pie charts and bar graphs.

## RESULTS AND DISCUSSION

The study included 60 participants, among which 60% were males and another 40% were females (Fig. 1) of the ages ranging between 23 to 83 years. From the findings, the risk perception of COVID-19 in the South Indian population fetched information from the data analysis which accounts for 100% awareness on the health and economic risk effects and preventive measures of the COVID-19 outbreak.

All participants have taken upon the preventive measures to keep themselves and their families safe from the COVID-19 infection. Nearly 20% of the population feels mistrust with the public information passed on by the media on managing the COVID-19 outbreak (Fig. 2). All of the participants feel that the adoption of new rituals such as handwashing can protect them against the risk. Around 50% believe that the probability of deaths and ill-effects of COVID-19 are on the rise due to the lack of action to protect the public from the risk of infection (Fig. 3).

Nearly 90% of the population agrees that the risk for exposure to COVID-19 is mainly from infected people and people coming from abroad countries or foreign nationals. 70% of the population is anxious or worried about the risk effects of the COVID-19 pandemic (Fig. 4). More than 55% of the population is still worried about the infection during the course of the COVID-19 outbreak.

Around 80% of the population thinks it is likely that they might get infected with COVID-9 in the near future. Nearly 75% of people think that their family society might get infected with COVID-19 in the near future and are likely to get the infection in general (Fig. 5).

The study on the knowledge of COVID-19 in the South Indian population inferred that the reason for risk exposure with infected and people and foreign nationals could be due to the facts listed below wherein more than 3 to 10% feel the actions of authorities are slow; 10% believe that it could be due to lack of airport surveillance; nearly 3-7% feel there is lack of guaranteed places in health facilities and slow action of authorities; 7-10% believe that infection is due to no isolation; 3-7% believe that there is a lack of travel restrictions, and lack of guaranteed places in health facilities, lack of isolation and action of authorities are slow; 3% believe the risk to exposure is due to personal negligence of the people (Fig.6).

70% of the population believes that we cannot always find the obvious signs and symptoms of the infection in COVID-19 positive patients. About 80% of the population believes we can see the obvious signs and symptoms after 14 days of exposure to the infection and 20% of participants believe we can see the obvious signs and symptoms at any time after the exposure to infection in an infected individual (Fig. 7).

The route of transmission of infection is believed to be both droplet infection and touch of an infected person by 80% of the participants. Less than 20% believed it could be either droplet infection or the touch of an infected person (Fig. 8). Knowledge assessed on who are at a high-risk of the infection in the participant group revealed 30% of elderly, people with low-immunity, people with major illnesses and infants; less than 25% believes that the high-risk group of COVID-19 infection is people with low-immunity; 20% of participants think the high-risk groups are elderly, people with low-immunity and people with major illnesses; 10% or less than that believe the high-risk groups are either elderly, people with low-immunity, people with major illnesses or infants (Fig 9). 90% of participants believe it is likely COVID-19 to be a global disaster.

More than 60% participants think that COVID-19 infection is the cause for many deaths occurring at once (Fig. 10). More than 75% participants think it is not likely that the risk of infection can be easily controlled or reduced. Nearly 85%

of people think it is likely that COVID-19 will affect future generations (Fig 11). 90% of people believe it is likely that the serious consequences of infection would depend on their body's resistance to fight against the infection (Fig 12).

Nearly 85% of participants think it is likely that the serious nature of COVID-19 infection would lead to death. 65% of participants think it is likely that the infection of COVID-19 would become risky over time. Less than 80% believe it is likely that the risk posed by COVID-19 infection is not equally distributed across the society or public (Fig 13). More than 60% of people believe it is not likely that the unknown risk effects of COVID-19 are recognizable. 80% of participants believed it is not likely that the consequences of infection could be delayed. Around 70% of people believe it is likely that health experts are well-aware of the risks posed by COVID-19 (Fig. 14).

This study also evaluated social distancing measures in the South Indian population which suggested that all participants think the practice of social distancing and timely hand washing play a major role in controlling the transmission and spread of infection in families and community and also believed that migrants play a role in the transmission of infection. They also think that avoiding travel has limited the spread of infection and 80% participants believe it is likely that they disinfect their hands more often than usual.

More than 90% of people felt that they avoid public events and public transports (such as subway, train, bus, and flight). 70% of participants felt they were likely to avoid contact with risk-groups (including old people and people with infectious diseases) and more than 20% felt that they would very likely avoid contact with risk-groups (including old people and people with infectious diseases) (Fig. 15).

On correlating the gender and the perception of increasing risks of COVID due to lack of appropriate measures by the government (Fig. 16); the gender who are more likely to avoid public places and events (Fig. 17) and the gender who are more anxious or apprehensive (Fig. 17) it was found that the males were more than the females though statistically insignificant.

Approximately 60-70% of the population thinks it is likely that they bought larger quantities of hand disinfectants and soaps or intended to buy them in the near future. 70-80% population rated it is likely that they bought larger quantities of staple food (including flour, sugar, pasta, rice, canned foods) due to lockdown and social distancing measures or will buy more in the near future. Most findings in this study are in accordance with most of the previously published literature and a few findings make distinct contributions to the existing literature.

From the findings in this study, it is evident that most people have adequately perceived risks of the susceptibility to

COVID-19 infection and protective behaviors towards the pandemic. Whereas, in the study by Mya KS et al. which stated that the community has not acquired enough knowledge and practiced inadequate protective behaviors which could very likely facilitate infection spread across the family and society.<sup>21</sup>

People of all age groups seemed to be at the risk of COVID-19. Whereas, in the study by Lars Gerhold which stated that older people estimated the risk of the COVID-19 as being less than the younger age group. It was also found that people of both genders showed equal concerns with the risk posed by COVID-19. This finding was not in accordance with the study by Lars Gerhold which assessed the perceived risks of the COVID-19 among which the study showed women were more concerned about the risk of COVID-19 than men.<sup>22</sup>

COVID-19 being a global disaster, participants especially worry about the ill-effects and death caused due to perceived lack of action to protect from the infection. People also show concern about the exposure to the infection in public places and events. This finding is in accordance with most of the studies. Further research using nationally represented samples may be warranted.

## CONCLUSION

Risk perception by the general public is fluctuating as new information comes in from reliable sources. Therefore, this study provides information on the risk perception, awareness, and knowledge of the COVID-19 pandemic at the time of the survey. This survey reveals that the community has acquired adequate knowledge regarding the pandemic and practiced safe social distancing measures in general. An interesting fact which emerged was the male gender tended to go out more, were more risk-taking though professing to be more apprehensive. The majority of the surveyed population is well aware of the risk-prone subsets of the population, avoid public places and events, and follow social distancing measures. Further research may be helpful in monitoring the COVID-19 pandemic situation periodically and thereby help the government in drafting preventive strategies to face the ill-effects of COVID-19.

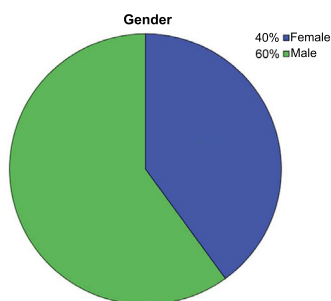
## ACKNOWLEDGEMENTS

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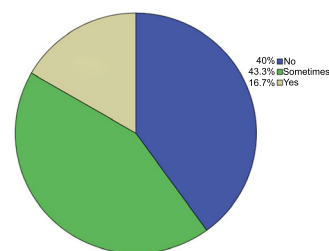
**Conflict of interest:** Nil

## REFERENCES

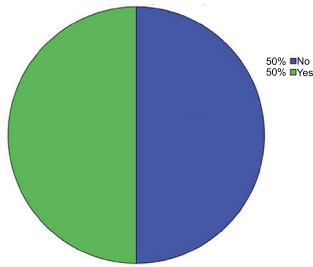
- Viveka, T. S. et al. p53 Expression Helps Identify High Risk Oral Tongue Pre- malignant Lesions and Correlates with Patterns of Invasive Tumour Front and Tumour Depth in Oral Tongue Squamous Cell Carcinoma Cases', *Asian Pacific journal of cancer prevention*. APJCP. 2016; 17(1):189–19
- Jayaraj, G., Sherlin, H. J., et al. 'Cytomegalovirus and Mucoepidermoid carcinoma: A possible causal relationship? A pilot study', *Journal of oral and maxillofacial pathology: JOMFP*. 2015;19(3): 319–324.
- Hema Shree, K. et al. 'Saliva as a Diagnostic Tool in Oral Squamous Cell Carcinoma - a Systematic Review with Meta Analysis', *Pathology oncology research: POR*. 2019; 25(2): 447–453.
- Jayaraj, G., Ramani, P., et al. 'Inter-observer agreement in grading oral epithelial dysplasia – A systematic review', *Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology*. 2015;112–116. doi: 10.1016/j.ajoms.2014.01.006.
- Swathy, S., Gheena, S. and Varsha, S. L. Prevalence of pulp stones in patients with history of cardiac diseases', *Research Journal of Pharmacy and Technology*. 2015; 8(12):1625–1628.
- Cori, L. et al. (no date) 'Risk Perception and COVID-19'. doi: 10.20944/preprints202005.0132.v1.
- Jangid, K. et al. 'Ankyloglossia with cleft lip: A rare case report', *Journal of Indian Society of Periodontology*, 2015;19(6):690–693.
- Gheena, S. and Ezhilarasan, D. Syringic acid triggers reactive oxygen species-mediated cytotoxicity in HepG2 cells', *Human & Experimental Toxicology*. 2019; 694–702. doi: 10.1177/0960327119839173.
- Thangaraj, S. V. et al. Molecular Portrait of Oral Tongue Squamous Cell Carcinoma Shown by Integrative Meta-Analysis of Expression Profiles with Validations', *PloS one*, 2016;11(6):e0156582.
- Gupta, V. and Ramani, P. Histologic and immunohistochemical evaluation of mirror image biopsies in oral squamous cell carcinoma', *Journal of Oral Biology and Craniofacial Research*. 2016; 6(3): 194–197.
- Sridharan, G., Ramani, P. and Patankar, S. 'Serum metabolomics in oral leukoplakia and oral squamous cell carcinoma', *Journal of cancer research and therapeutics*, 2017;13(3): 556–561.
- Sridharan, G. et al. Evaluation of salivary metabolomics in oral leukoplakia and oral squamous cell carcinoma', *Journal of oral pathology & medicine: official publication of the International Association of Oral Pathologists and the American Academy of Oral Pathology*. 2019; 48(4):299–306.
- Sivaramakrishnan, S. M. and Ramani, P. 'Study on the Prevalence of Eruption Status of Third Molars in South Indian Population', *Biology and Medicine*. 2015;doi: 10.4172/0974-8369.1000245.
- Barrios, J. M. and Hochberg, Y. 'Risk Perception Through the Lens of Politics in the Time of the COVID-19 Pandemic'. National Bureau of Economic Research (Working Paper Series). 2020; doi: 10.3386/w27008.
- Jayaraj, G. et al. Stromal myofibroblasts in oral squamous cell carcinoma and potentially malignant disorders', *Indian journal of cancer*, 2015;52(1): 87–92.
- Sherlin, H. et al. 'Expression of CD 68, CD 45 and human leukocyte antigen-DR in central and peripheral giant cell granuloma, giant cell tumor of long bones, and tuberculous granuloma: An immunohistochemical study', *Indian Journal of Dental Research*, 2015; p. 295. doi: 10.4103/0970-9290.162872.
- Hannah, R. et al. (2018) 'Awareness about the use, ethics and scope of dental photography among undergraduate dental students dentist behind the lens', *Research Journal of Pharmacy and Technology*. A & V Publications, 11(3), pp. 1012–1016.
- Dryhurst, S. et al. Risk perceptions of COVID-19 around the world', *Journal of risk research*. Routledge. 2020; 1–13.
- Husnayain, A. et al. Assessing the community risk perception toward COVID-19 outbreak in South Korea: evidence from Google and NAVER relative search volume', *medRxiv*. Cold Spring Harbor Laboratory Press. 2020; Available at: <https://www.medrxiv.org/content/10.1101/2020.04.23.20077552v1.abstract>.
- McFadden, S. M. et al. (2020) 'Perceptions of the adult US population regarding the novel coronavirus outbreak', *PloS one*, 15(4), p. e0231808.
- Mya, K. S. et al. (2020) 'Awareness, perceived risk and protective behaviours of Myanmar adults on COVID-19', *International Journal Of Community Medicine And Public Health*, p. 1627. doi: 10.18203/2394-6040.ijcmph20201530.
- Gerhold, L. (no date) 'COVID-19: Risk perception and Coping strategies'. doi: 10.31234/osf.io/xmpk4.



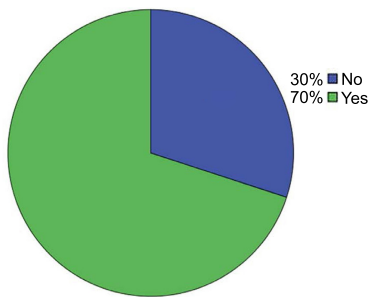
**Figure 1:** Pie chart depicting the responses based on gender distribution of participants with the percentage of males being 60% (green) and females being 40% (blue).



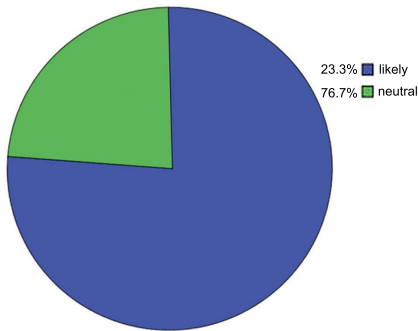
**Figure 2:** Pie chart depicting responses based on the mistrust in the information passed on to them such as public health messages from the media in managing the threat of COVID-19 pandemic. Those who agreed - 16.7% (beige), disagreed - 40% (blue), sometimes agreed - 43.3% (green).



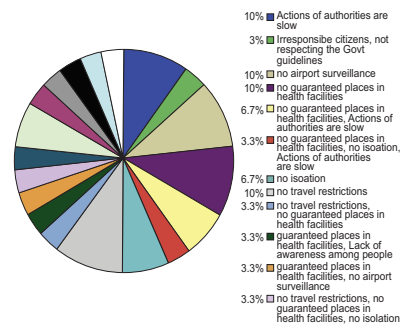
**Figure 3:** Pie chart depicting the responses based on the belief that the probability of death and ill-effects of COVID-19 is on the rise due to lack of action to protect the public from risk of infection. Those who agreed - 50% (green), disagreed - 50% (blue).



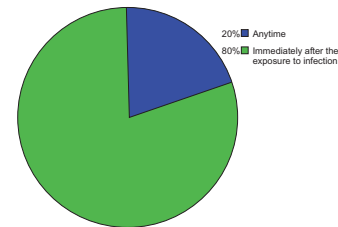
**Figure 4:** Pie chart depicting the responses based on the anxiousness about COVID-19 pandemic health risk effects. Those who agreed - 70% (green), disagreed - 30% (blue).



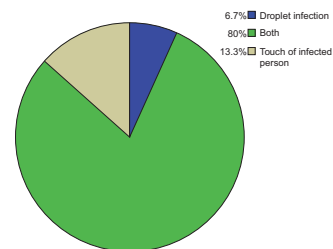
**Figure 5:** Pie chart depicting the responses based on the likelihood that participants think people in their family and society might become infected with COVID-19 in the near future. Those who think it is likely - 76.7% (blue), neutral - 23.3% (green).



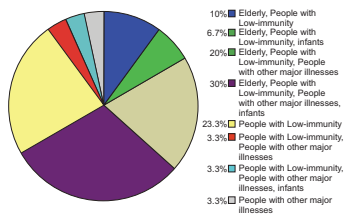
**Figure 6:** Pie chart depicting the responses based on the reason for risk exposure with infected people and foreign nationals. The slow action of authorities - 10% (blue); Irresponsible citizens - 3.3% (green); No airport surveillance - 10% (beige); Inadequate health facilities - 10% (purple); combination of inadequate health facilities and government inaction - 6.7% (yellow); lack of adequate health facilities, government inaction and no isolation - 3.3% (red); no isolation - 6.7% (turquoise blue); no travel restrictions - 10% (grey); no travel restrictions and inadequate health facilities - 3.3% (light blue); no travel restrictions, inadequate health facilities and lack of awareness - 3.3% (green); no travel restrictions, inadequate health facilities and no airport surveillance - 3.3% (orange); no travel restrictions, inadequate health facilities and isolation - 3.3% (pink). Majority of the surveyed population believes that the reason for risk exposure may be the lack of airport surveillance, lack of travel restrictions and inadequate health facilities.



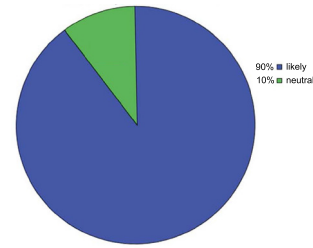
**Figure 7:** Pie chart depicting the responses based on the manifestation of obvious signs and symptoms in an infected individual. Those who think it is anytime - 20% (blue), immediately after the exposure - 80% (green).



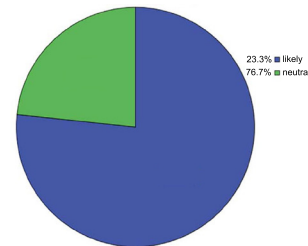
**Figure 8:** Pie chart depicting the responses based on the route of transmission of the infection. Those who think it is droplet infection - 6.7% (blue), touch of infected person - 13.3% (beige), both - 80% (green).



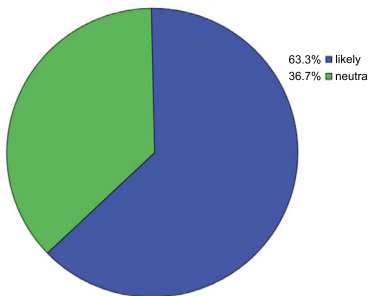
**Figure 9:** Pie chart depicting the responses based on those who are at high-risk to the COVID-19 infection. Elderly and people with low immunity - 10% (blue), elderly and people with low immunity and infants - 6.7% (green), elderly and people with low immunity and people with other major illnesses - 20% (beige), elderly and people with low-immunity and people with other major illness and infants - 30% (purple), people with low immunity - 23.3% (yellow), people with low-immunity and people with other major illnesses - 3.3% (red), people with low-immunity and people with other major illnesses and infants - 3.3% (turquoise blue), people with other major illnesses - 3.3% (grey). The majority of the surveyed population are well aware of the risk prone subsets of population.



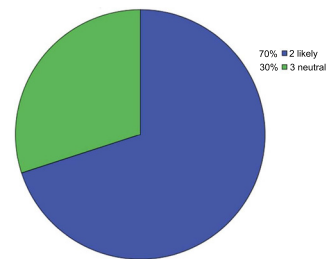
**Figure 12:** Pie chart depicting the responses based on the likelihood that the serious consequence of the infection would depend upon the nature of resistance the body will help to fight against COVID-19. Those who think it is likely - 90% (blue), neutral - 10% (green).



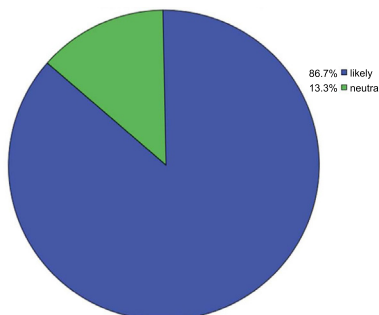
**Figure 13:** Pie chart depicting the responses based on the likelihood of the risk posed by COVID-19 infection are not equally distributed across the society/public. Those who think it is likely - 76.7% (blue), neutral - 23.3% (green)



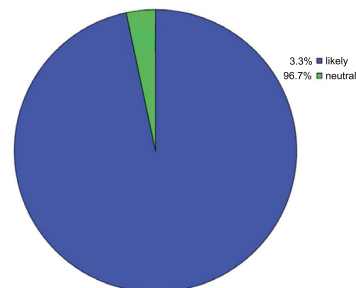
**Figure 10:** Pie chart depicting the responses based on the likelihood that COVID-19 can cause many deaths at once. Those who think it is likely - 63.3% (blue), neutral - 36.7% (green).



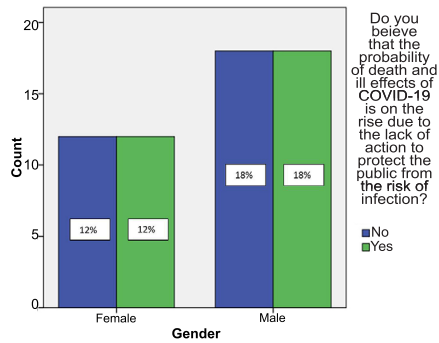
**Figure 14:** Pie chart depicting the responses based on the health experts being aware of the risks posed by COVID-19. Those who think it is likely - 70% (blue), neutral - 30% (green).



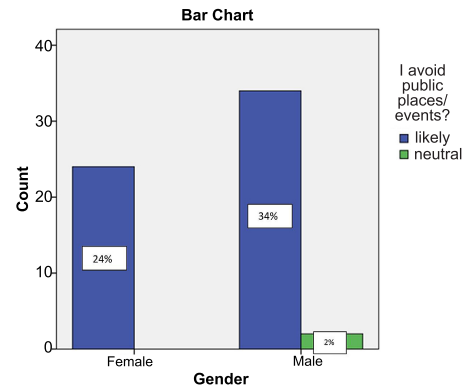
**Figure 11:** Pie chart depicting the responses based on the likelihood that COVID-19 will still affect future generations. Those who think it is likely - 86.7% (blue), neutral - 13.3% (green).



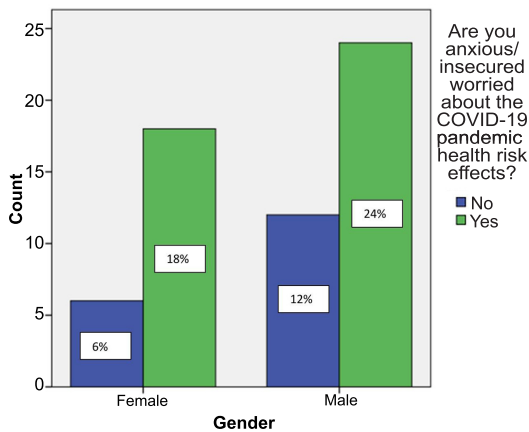
**Figure 15:** Pie chart depicting the responses based on the likelihood that the participants avoid public places/events. Those who think it is likely - 96.7% (blue), neutral - 3.3% (green).



**Figure 16:** Bar chart showing association between gender and the belief of participants that the probability of death and ill-effects of COVID-19 is on the rise due to the lack of action to protect the public from the risk of infection. X-axis represents gender, Y-axis represents number of responses. Males are found to have more positive responses than females. Pearson’s Chi-square test shows p-value is 1.000 (>0.05). Hence it is statistically not significant.



**Figure 18:** Bar chart showing association between gender and the likeliness that the participants avoid public places/events. X-axis represents gender, Y-axis represents number of responses. Males are found to be more likely to avoid public places/events rather than females. Pearson’s Chi-square test shows p-value is 0.240 (>0.05). Hence it is statistically not significant.



**Figure 17:** Bar chart showing association between gender and the anxiousness about COVID-19 pandemic health risk effects. X-axis represents gender, Y-axis represents number of responses. Males are found to be more anxious than females. Pearson’s Chi-square test shows p-value is 0.490 (>0.05). Hence it is statistically not significant.