RISK PERCEPTIONS, PREVENTIVE BEHAVIOURS AND KNOWLEDGE AMONG PUBLIC ON THE COVID OUTBREAK RESPONSE: A CROSS SECTIONAL STUDY IN AN URBAN AREA OF COIMBATORE DISTRICT IN TAMILNADU

Dr. Uma Priyadharsini Thulasimani[1], Dr. Kokila Kolandasamy[2], Dr. Darshan Manoj S[3]

[1]Senior Assistant Professor, Department of Community Medicine, Coimbatore Medical College, Tamil Nadu.
[2]Associate Professor, Department of Community Medicine, Coimbatore Medical College, Tamil Nadu.
[3]Assistant Professor, Department of Community Medicine, Coimbatore Medical College, Tamil Nadu.

Corresponding Author: Dr. Darshan Manoj S, Assistant Professor, Department of Community Medicine, Coimbatore Medical College, Tamil Nadu.

ABSTRACT

Background: The COVID-19 pandemic has prompted unprecedented challenges globally, impacting lives, economies, and healthcare systems. Understanding public perceptions and behaviours towards the pandemic is crucial for effective response efforts. This study aims to investigate risk perceptions, preventive behaviours and knowledge levels among the urban population of Coimbatore district, Tamil Nadu, India.

Methods: A cross-sectional study was conducted from September to December 2021, involving 609 adult participants residing in urban areas of Coimbatore district. Data was collected using a structured questionnaire covering demographic information, risk perceptions, knowledge levels, trust in authorities, and adherence to protective behaviours. Statistical analysis was performed using SPSS version 25, employing descriptive and multivariate techniques.

Results: The majority of participants were female (64.9%) with varying levels of education and occupation. While 7% reported being infected with COVID-19, 81.1% believed their relatives were at risk. Health workers, media, and radio were primary information sources. Despite awareness, willingness to comply with public restrictions varied, and vaccine hesitancy was observed. Financial impacts and lifestyle changes were prevalent among participants.

Conclusion: This study provides valuable insights into COVID-19 awareness, perception, and behaviour among urban residents of Coimbatore district. Findings underscore the need for targeted interventions to address misconceptions, enhance compliance with preventive measures, and mitigate socio-economic impacts. By leveraging these insights, policymakers can formulate evidence-based strategies to strengthen public health responses and to promote sustained efforts to alleviate current and future infectious disease threats.

Keywords: COVID-19, risk perception, preventive behaviours, knowledge levels, urban population, India

INTRODUCTION

The COVID-19 epidemic has caused previously unheard-of difficulties that are upending people's lives, economy, and healthcare systems throughout.[1] Amidst the COVID-19 pandemic, individuals' perceptions of risk play a pivotal role in shaping their behaviours and responses to the crisis.[2] The degree to which individuals perceive themselves to be at risk influences their adherence to recommended preventive measures and their willingness to comply with public

health guidelines.[3] Risk perception is a central characteristic of many health-behaviour theories. According to the Protection Motivation Theory, Protection motivation is a consequence of risk or threat assessment and coping appraisal. Threat assessment consists of estimating the hazard of contracting a disease (perceived vulnerability or susceptibility) and estimating the seriousness of a disorder or sickness (perceived severity).[4]

People's behaviours and decision-making processes are significantly influenced by their level of understanding about COVID-19 and the preventive measures that are linked with it, in addition to their perception of risk.[5] It takes accurate and timely information distribution to enable people to take preventative action to safeguard their communities and themselves. As a result, this study aims to evaluate public awareness in the Metropolitan Coimbatore district, highlighting areas of disinformation and knowledge gaps that could obstruct successful pandemic control initiatives.[6]

Another important aspect impacting people's reactions to the COVID-19 epidemic is trust in Governmental agencies, medical authority, and information sources.[7] In times of disaster, trust is essential for efficient communication, teamwork, and collective action. Pandemic response attempts have become more difficult, though, as a result of the spread of false information and the politicization of public health initiatives.[8] Therefore, this study aims to elucidate the nuances of risk perception among the urban populace of Coimbatore district, thereby contributing to a deeper understanding of the cognitive and emotional processes underpinning individuals' appraisal of risk in the context of the COVID-19 pandemic. Wearing masks, washing hands frequently, and following social distance rules are examples of protective behaviours that serve as first lines of defence against the spread of COVID-19.[9] However, a variety of factors, such as risk perception, knowledge levels, and faith in authority, determine the levels of engagement among people in these actions.[10] As a result, the goal of this study is to evaluate the adoption of protective behaviours among the urban population in the Coimbatore district, identifying the factors that encourage and hinder behavioural compliance and providing guidance for focused interventions that advance public health and safety.

By investigating risk perceptions, knowledge, trust, and protective behaviours adopted by the public in the context of the COVID-19 pandemic within the urban Coimbatore district, this cross-sectional study seeks to close a significant gap in the body of current work. This study aims to provide evidence-based solutions for improving community resilience, pandemic preparedness, and public health protection against current and emerging infectious disease threats by clarifying these intricate interactions.[11]

MATERIALS & METHOD

Study Settings: The cross-sectional study was conducted in urban areas of Coimbatore district, Tamil Nadu, India. The study period spanned over a period of four months from September 2021 to December 2021. The study design adhered to established guidelines for cross-sectional research, allowing for the assessment of risk perceptions, knowledge levels, trust, and protective behaviours among the public within a specified timeframe.

Study Participants: The study targeted individuals (age group of 18-65 years) residing in urban areas of Coimbatore district. Inclusion criteria encompassed individuals who provided informed consent to participate in the study and were able to comprehend the study questionnaire in either English or Tamil. Exclusion criteria included individuals below the age of 18 and those with cognitive impairments that precluded their ability to provide informed consent or participate meaningfully in the study.

Sample Size: The sample size was calculated using standard formula for cross-sectional studies. At 95% confidence levels, 5% margin of error, and expecting 50% prevalence of perceived

awareness, the sample size was calculated to be 384. Adding a non-response rate of 20%, the minimum sample size of 461 was required to achieve the study objectives and hence the sample size was rounded off to 500. At the end of the study, data was collected from a total of 609 participants.

Sampling Technique: A multi-stage cluster sampling technique was employed to ensure the representativeness of the study sample. Initially, urban areas within Coimbatore district were stratified based on geographical zones. Subsequently, clusters were randomly selected from each stratum using probability proportionate to size sampling. Within each selected cluster, households were systematically sampled, and eligible individuals meeting the inclusion criteria were invited to participate in the study.

Study Methodology: Data collection was carried out using a structured questionnaire administered through face-to-face interviews conducted by trained research personnel. The questionnaire encompassed validated scales and items designed to assess various domains, including risk perceptions, knowledge levels, trust in authorities, and adherence to protective behaviours related to COVID-19. The questionnaire was pre-tested in a pilot study to ensure clarity, relevance, and cultural appropriateness.

Study Tools: The study questionnaire comprised several sections, including

1. Demographic information (age, gender, education level, occupation, household income),
2. Risk perception assessment (perceived susceptibility, severity, efficacy of preventive measures),
3. Knowledge assessment (awareness of COVID-19 symptoms, modes of transmission, preventive measures),
4. Trust in authorities (government, healthcare providers, media), and
5. Self-reported adherence to protective behaviours (mask-wearing, hand hygiene, social distancing).

Ethical Issues: Ethical approval for the study was obtained from the Institutional Ethics Committee (IEC). Informed consent was obtained from all study participants prior to their inclusion in the research. Participants were assured of confidentiality, anonymity, and voluntary participation, and were informed of their right to withdraw from the study at any time without repercussion. Data confidentiality and privacy were strictly maintained throughout the study, with all collected data stored securely and accessible only to authorized research personnel.

Statistical analysis: The collected data underwent thorough statistical analysis using SPSS version 25 for windows with a significance level set at $p < 0.05$. Descriptive statistics summarized demographic characteristics, while bivariate analyses explored associations between variables using Pearson's correlation, chi-square tests, or t-tests. Multivariate techniques like multiple regression were employed to identify independent predictors, controlling for confounders selected based on theoretical relevance and statistical significance. Subgroup analyses and interaction effects were examined to assess variations across demographics and geographical areas.

RESULTS

A total of 609 participants took part in the survey, with females representing the majority at 64.9%. The educational attainment of the participants varied, with 63% having completed higher

secondary education, while 14.78% completed graduation and above. 36.62% of the participants worked for daily wages, 36.12% were unemployed and majority were married (84.07%). Regarding financial status, 11.97 % experienced an improvement, 44% experienced a worsening, 20.03% reported no change, and 24% were uncertain about the impact of the pandemic on their finances. The vast majority (94%) reported no chronic illnesses (Table 1).

Table 1: Sociodemographic characteristics of study participants

S.No	Characteristic		Number	Percentage
1	Gender	Female	396	64.9
		Male	213	35.1
2	Educational Status	Primary School	4	0.60
		Middle School	11	1.81
		High School	120	19.70
		Higher Secondary	384	63.05
		Graduation and above	90	14.78
3	Occupational Status	Employed in Govt / private organisations	40	6.57
		Daily wages	223	36.62
		Self Employed	126	20.69
		Unemployed	220	36.12
4	Marital status	Married	512	84.07
		Unmarried/Single	97	15.93
5	Financial status during COVID-19	Improved	73	11.97
		Worsened	268	44.0
		No change	122	20.03
		Unsure	146	24.0
		Not infected	566	92.94
7	Chronic illness	Present	36	5.92
		None	573	94.08

Awareness and Perception towards COVID-19 among Participants

A majority of 75.69% of participants suffered from COVID-19 during the pandemic. Among them, 66.05% were diagnosed through laboratory tests, 52.54% underwent RT-PCR tests whereas 55.7% were subjected to X Rays or CT Scans. Only 38.8% participants aware about number of COVID-19 related deaths during peak pandemic. Regarding information sources, 46.8% felt adequately informed, with health workers (80%), media (79%), and radio (60%) being the primary sources. 65.7% followed public restrictions van 34.3% did not follow pubic restrictions. 78.7 % and 81.11% of participants perceived that there were high chances of acquiring and preventing COVID 19 infection respectively. (Table 2).

Table 2: Awareness and perception regarding COVID-19 among study participants.

S.No	Variable		Number	Percentage
1		No	148	24.31

	Number of participants who suffered from COVID-19 during the pandemic	Yes	461	75.69
2	Mode of diagnosis of COVID-19	Clinical symptoms alone	186	30.50
		Laboratory tests	405	66.50
		Others	18	3.0
3	Number of participants who underwent RT-PCR test for COVID-19	Yes	289	47.45
		No	320	52.54
4	Number of participants who had X-ray or CT scan during COVID-19	Yes	270	44.3
		No	339	55.7
5	Number of participants aware about number of COVID-19 related deaths during peak pandemic	Yes	236	38.8
		No	373	61.2
6	Sources of Information about COVID-19	Through Health workers	285	46.8
		Through Media	324	53.2
7	Number of participants who followed public restrictions	Yes	209	34.3
		No	400	65.7
8	Participant's perception of chances of acquiring COVID-19 infection	High	479	78.7
		Low	130	21.3
9	Participant's perception of chances of preventing COVID-19 infection	High	494	81.11
		Low	115	18.88

Attitude and Behaviour towards COVID-19 among Participants

A notable portion (32.2%) acknowledged the media's role in the pandemic's spread and control. Concerning public restrictions, 34.3% were willing to follow them, with 82.1% willing to comply with workplace-related restrictions, and 55.8% avoided public gatherings. Additionally, 59.1% were aware of the importance of hand hygiene, and 59.3% preferred hand sanitizer over soap and water

A significant majority (81.1%) believed their relatives were at risk of infection, with 84.2% willing to undergo testing if a close contact tested positive. However, 15.8% were reluctant to disclose the identities of infected relatives, and 23% preferred not to seek medical care if infected themselves. The pandemic induced lifestyle changes, with 88.7% reporting COVID-related depression and 76.7% fearing infection. Despite advisories, only 8.4% were willing to receive vaccination, with willingness increasing to 23% if advised. Furthermore, 37.1% exercised less, 7.1% increased alcohol consumption, and 42.9% reported adopting healthier dietary habits.

DISCUSSION

The findings of this study shed light on the awareness, perception, attitude, and behavior of the urban population in Coimbatore district towards the COVID-19 pandemic. These findings are

consistent with and contribute to the existing body of literature on COVID-19 risk perceptions, preventive behaviors, and knowledge levels among the public.

Our study revealed a notable level of awareness among participants regarding COVID-19-related issues. Similar to findings reported by Shahin & Hussien (2020), a significant proportion of our participants perceived COVID-19 as a serious risk, with a considerable percentage reporting individuals in their social circle infected with the virus. This underscores the widespread impact of the pandemic on communities, as observed in studies conducted in China by Ning et al. (2020)[12] and Zhong et al. (2020)[13], where high levels of perceived risk were associated with negative emotional states.

The study identified health workers, media, and radio as primary sources of information, consistent with findings from Mc Call et al. (2023)[14], who highlighted the role of media in disseminating information about the pandemic. However, it is noteworthy that a significant portion of participants acknowledged the role of the media in both spreading and controlling the pandemic, echoing concerns raised in Geldsetzer's study (2020)[15] about the prevalence of misconceptions and myths surrounding COVID-19.

Despite the awareness, our study found varying levels of willingness to comply with public restrictions, with a minority willing to adhere to them. This reluctance echoes findings from studies in Saudi Arabia, Egypt, and Jordan by Shahin & Hussien (2020)[16], where compliance with preventive measures was suboptimal, indicating the need for targeted interventions to enhance adherence.

The COVID-19 pandemic has induced significant lifestyle changes and psychological impacts on individuals. Our study reported high rates of COVID-related depression and fear of infection, consistent with studies by Ozdemir (2020)[17] and Alkhaldi et al. (2021)[18], highlighting the need for mental health support services amid the pandemic. Despite advisories, vaccine hesitancy remains a challenge, aligning with findings from Kaushik et al. (2020)[19], indicating the importance of addressing concerns and misinformation surrounding vaccination to achieve widespread immunization.

Furthermore, the pandemic has exacerbated existing socio-economic disparities, as evidenced by our findings on the financial impact of the pandemic. Similar concerns were raised in studies by Kuang et al. (2020)[20] in Tamil Nadu, India, where a significant proportion of participants reported increased stress about finances. These findings underscore the need for targeted interventions to mitigate the socio-economic repercussions of the pandemic, particularly among vulnerable populations.

Despite the valuable insights provided by this study, several limitations should be acknowledged. Firstly, the cross-sectional design limits our ability to establish causal relationships between variables. Secondly, the reliance on self-reported data may introduce response bias and inaccuracies. Future research employing longitudinal designs and objective measures of behavior would provide a more comprehensive understanding of the dynamics of risk perception and behavior over time.

Additionally, while our study focused on the urban population of Coimbatore district, future research could explore variations across rural and urban settings to identify context-specific factors influencing risk perception and behavior. Furthermore, interventions targeting specific demographic groups, such as health professionals or individuals with chronic illnesses, could be developed based on the findings of this study to enhance pandemic preparedness and response efforts.

This study contributes to the growing body of literature on COVID-19 risk perceptions, preventive behaviors, and knowledge levels among the urban population of Coimbatore district. The findings underscore the importance of tailored interventions to address misconceptions, enhance compliance with preventive measures, and mitigate the socio-economic impacts of the pandemic.

By addressing these challenges, policymakers and public health authorities can effectively promote public health and safety in the face of current and future infectious disease threats.

CONCLUSION

In conclusion, this study highlights the COVID-19 awareness, perception, and behavioural patterns among the urban populace of Coimbatore district. Findings illustrate the importance of targeted interventions to address misconceptions, enhance compliance with preventive measures, and mitigate socio-economic impacts. By leveraging these findings, policymakers and public health authorities can formulate evidence-based strategies to bolster community resilience and safeguard public health in the face of current and future infectious disease threats.

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