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ORIGINAL RESEARCH

Study of Psychosocial factors among voluntarily tested Individuals during third Wave of Covid19 Pandemic in a district of Central India

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ABSTRACT

Introduction: The COVID-19 pandemic has significantly impacted global mental health, particularly during successive waves of infection. This study aimed to assess psychosocial factors among individuals voluntarily seeking COVID-19 testing during the third wave in a district of Central India, focusing on knowledge, attitudes, practices, psychological distress, and coping strategies. **Methods:** A cross-sectional, mixed-methods study was conducted over 6 months, involving 384 participants who voluntarily underwent COVID-19 testing. Quantitative data were collected using structured questionnaires including COVID-19 KAP, DASS-21, IES-R, Brief COPE Inventory, and OSS-3. Qualitative data were gathered through 30 in-depth interviews. Data were analyzed using descriptive and inferential statistics, and thematic analysis. **Results:** Participants demonstrated moderate to good COVID-19 KAP scores. Significant levels of psychological distress were observed, with 30.2%, 34.9%, and 27.6% reporting moderate to severe levels of depression, anxiety, and stress, respectively. COVID-19-related stress was moderate to severe in 28.1% of participants. Adaptive coping strategies such as active coping, planning, and acceptance were prevalent. Higher knowledge scores correlated with lower psychological distress. Social support emerged as a protective factor against psychological distress. **Conclusion:** The study reveals complex interactions between COVID-19 knowledge, psychological distress, and coping strategies among individuals seeking voluntary testing. While demonstrating resilience through adaptive coping, participants showed significant psychological impact. Findings underscore the need for targeted mental health interventions, continuous public health education, and strategies to enhance social support during prolonged pandemic conditions.

Keywords: COVID-19, Psychosocial factors, Voluntary testing, Mental health, Coping strategies

INTRODUCTION

When the COVID-19 pandemic started in late 2019, it leveraged global health, economies and social systems hard. Then there are the psychological and social results of multiple waves of infection. As a result, they are increasingly clear by now. India and several other countries, in their fight against the third wave that struck during COVID-19, posed new difficulties and stressors for individuals during their mental health issues or social circles.

The third wave of COVID-19 in India began in late 2021 and extended into early 2022, primarily driven by the Omicron variant. A rapid increase in cases characterized this wave but generally milder symptoms compared to previous waves (Kar et al., 2022). Despite the reduced severity, the psychological impact of the ongoing pandemic remained significant, particularly among those who voluntarily sought testing for COVID-19.The decision to undergo voluntary testing for COVID-19 during the third wave

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was influenced by various factors, including personal risk perception, exposure to potential cases, and the desire to protect oneself and others. This group of voluntarily tested individuals represents a unique population that may have experienced distinct psychosocial challenges during this period (Dsouza et al., 2020).

From the perspective of the COVID-19 pandemic, these factors include anxiety, depression, stress, fear of getting sick, social isolation, stigma, and changes in social support systems (Grover et al., 2020). For several reasons these factors must be studied among those who sought testing voluntarily: People's perceptions of risk and what they will do for their health; People who sought testing voluntarily may have had an excessive risk perception and sought testing when they would not have done so otherwise. Underlying the decision-making process of these persons to get checked, exploring their psychological factors can lead to insights into health-seeking behaviors during this epidemic period (Commodari et al., 2020). Fear and stress about testing: Getting tested for COVID-19 may be a source of anxiety-induced stress. Waiting for test results and what a positive outcome may mean are both factors that can have a major impact on individuals' emotional state (Mertens et al., 2020). Social consequences of testing: Voluntarily getting tested may have social results such as stigma or changes in patterns of integration. Understanding these dynamics is essential if we are to address the wider societal consequences of the pandemic(Singh &Subedi, 2020). Coping mechanisms and resilience: The study of psychosocial factors among this group can give insights into what sorts of coping strategies and resilience mechanisms were being applied at a time of heightened health concern(Kalabikhina&Panin, 2020). Information seeking and health literacy: The decision to be tested voluntarily might be influenced by a person's level of health literacy and the information available to them. The study of these aspects can guide public health communication strategies(Okan et al., 2020). The impact on mental health services of understanding the psychosocial needs of voluntarily tested persons is that they will be able to tailor interventions and support services during and after pandemics (Dalton et al., 2020).

The central Indian context adds a distinct dimension to the study. The socio-economic variety of India combines with different healthcare infrastructures in each region, making it difficult for pandemics to be properly handled and for people to decide on related issues like health. And Central India, where several cities sparkle among stretches of countryside, offers the sort of locale where one might research these psychological and social factors (Kumar et al., 2021). In addition, India's third wave of COVID-19 was conducted against a backdrop of increased vaccination rates and waves during which people had prior exposure to the virus. This context might have had different influences on risk perception, testing behaviors and associated psychosocial factors compared with the previous waves (Ghosh et al., 2020). For this reason, the psychosocial factors among voluntarily tested individuals in the third wave are an important project in overall pandemic preparedness and response. In an age that will have to meet the impact of pandemics or new variants on established pathogens, understanding health-seeking behavior's psychological and social dynamics becomes crucial for an effective public health strategy (Holmes et al., 2020).

In addition, this study adds to the growing list that are studying the long-term psychological consequences of the COVID-19 pandemic. The immediate psychological impact of the pandemic has been extensively studied. Yet third-wave data, which is updated and representative of conditions extended under pandemic rule, may provide useful insights into systematic long-term causes and effects on the human spirit Xiong et al. (2020). A district in Central India is concentrated on, which means that we can look at what one place's psychosocial factors were likeboth in the population and for particular social environment groups. Its location also allows for exploring how cultural, social, and economic aspects unique to this region interact with broader pandemic contexts that influence individual behavior as well as mental health outcomes Varma et al. (2021).

It's crucial for the ethical implications of carrying out research in an epidemic to be thought about.This means that the research process itself should not add to the risk of viral transmission Moreover, it owes participants privacy and personal autonomy at a time when they may be more fraught than ever (WHO, 2020).This study looks into the psychosocial factors among voluntarily tested people in Central India's third COVID-19 pandemic, during the wave. It aspires to achieve substantial contributions in public health, psychology and social sciences.The conclusions may help establish targeted forms of psychiatric care, benefit public health information strategies and increase our understanding of health behaviors in prolonged pandemic conditions.This study aimed to examine the effects of psychosocial factors on people who took the initiative to have a test during the third wave pandemic. Specifically, in an area of Central India, all subjects were asked about their testing experience the stresses they faced, how they dealt with them and any social effects that followed from new information received during testing sessions by participants.

METHODOLOGY

Study Design

A cross-sectional, mixed-methods study design was employed, combining quantitative surveys with qualitative in-depth interviews. This approach allowed for a comprehensive assessment of psychosocial

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factors, capturing both broad trends and nuanced individual experiences.

Study Site

The study was conducted in Bhopal, a district in Central India. This site was chosen for its representative mix of urban and rural populations and its accessibility to the research team.

Study Duration

The study was conducted over a period of 6 months, from 01 March 2022 to 31 August 2022, coinciding with the peak and decline of the third wave of COVID-19 in the region.

Sampling and Sample Size

A stratified random sampling technique was used to select participants from various COVID-19 testing centers across the district. The sample size was calculated using the formula for cross-sectional studies, assuming a 50% prevalence of significant psychosocial impact (to obtain maximum sample size), with a 95% confidence level and a 5% margin of error. This resulted in a required sample size of 384 participants for the quantitative component. For the qualitative component, purposive sampling was used to select 30 participants for in-depth interviews, ensuring representation across age groups, genders, and urban/rural locations.

Inclusion and Exclusion Criteria

The study included individuals aged 18 years and above who voluntarily underwent COVID-19 testing during the study period in the selected district. Participants were required to be able to provide informed consent and communicate in either Hindi or English. Exclusion criteria included individuals who were critically ill, those who underwent mandatory testing (e.g., for travel or employment requirements), and those with pre-existing severe mental health conditions that could significantly impact their responses.

Data Collection Tools and Techniques

Quantitative data were collected using a structured questionnaire that included:

1. Demographic information
2. COVID-19 Knowledge, Attitude, and Practice (KAP) questionnaire
3. Depression, Anxiety, and Stress Scale-21 (DASS-21)
4. Impact of Event Scale-Revised (IES-R) for COVID-19 related stress
5. Brief COPE Inventory for assessing coping strategies

Qualitative data were collected through semi-structured in-depth interviews, exploring participants' experiences, motivations for testing, psychological impacts, and social consequences.Data collection was conducted by trained research assistants who approached eligible individuals at testing centers. Quantitative surveys were administered either in-person or via telephone, based on participant preference and safety considerations. Qualitative interviews were conducted via telephone or video calls to ensure safety during the pandemic.

Statistical Analysis

Quantitative data were entered into a secure, password-protected database using EpiData software and analyzed using SPSS version 26. Descriptive statistics were used to summarize demographic characteristics and psychosocial factors. Chi-square tests, t-tests, and ANOVA were used to examine associations between variables. Multiple linear regression analysis was performed to identify predictors of psychological distress.Qualitative data were audio-recorded, transcribed verbatim, and analyzed using thematic analysis. NVivo software was used to facilitate coding and theme development. Two researchers independently coded the transcripts to ensure inter-coder reliability.

Ethical Considerations

The study protocol was approved by the Institutional Ethics Committee of People's College Of Medical Sciences , Bhopal No 4/IEC/264 dated 27 Jul 2022. Informed consent was obtained from all participants before data collection. Confidentiality and anonymity of participants were maintained throughout the study. Participants were provided with information about mental health support services available in the area. The study adhered to the principles of the Declaration of Helsinki and the Indian Council of Medical Research (ICMR) guidelines for biomedical research involving human participants.

RESULTS

A diverse sample was shown in the demographic profile (Table 1). The mean age was 35. 6 years and gender was relatively balanced (52.6 % male 47.4 % female). Notably, 46.1% of participants had higher secondary education or above. This could imply better health literacy regarding COVID-19 (The age and education mix of the population were broadly representative.). The employment status relevant to the population consists of employed (51.6%), unemployed (22.4%), students (18.8%), and retirees (7.3%).

COVID-19 Knowledge, Attitude, and Practice scores indicate moderate to good levels across all domains (Table 2). The majority of participants demonstrated moderate knowledge (51.6%), attitudes (45.8%), and practices (42.2%). However, a significant minority showed poor scores in knowledge (24.0%) and attitudes (29.2%), highlighting the ongoing needs for public health education. The higher proportion of good practice scores (42.7%) suggests that despite knowledge gaps, many participants adhere to preventive measures.

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DASS-21 results reveal significant psychological distress among participants (Table 3). Moderate to extremely severe levels were reported for depression (30.2%), anxiety (34.9%), and stress (27.6%). These findings underscore the substantial mental health impact of the pandemic. The higher prevalence of anxiety compared to depression and stress suggests that fear and uncertainty may be particularly prominent psychological responses during this phase of the pandemic.

IES-R scores further corroborate the significant psychological impact of the pandemic shown in Table 3, with 28.1% of participants reporting moderate to severe COVID-19 related stress. The majority (47.4%) exhibited normal levels of stress, while 24.5% reported mild stress. These findings emphasize the need for targeted mental health interventions during prolonged pandemic conditions, particularly for the subset experiencing higher levels of stress.

The Analysis of coping strategies indicates the prevalence of adaptive mechanisms such as acceptance (6.1 ± 1.6), active coping (5.8 ± 1.7), and planning (5.6 ± 1.8). Lower scores for maladaptive strategies like substance use (2.4 ± 2.5) and denial (3.2 ± 2.3) are encouraging. However, moderate scores for self-distraction (4.9 ± 2.0) and venting (4.1 ± 1.9) suggest areas for potential intervention to promote more effective coping strategies (Table 5).

The Examination of testing motivations reveals that fear of COVID-19 was the primary driver for voluntary testing (44.1%), followed by doctor referrals (36.0%). Media influence (10.9%) and motivation by family/friends (9.0%) played smaller roles. This underscores the significant impact of perceived risk and healthcare guidance on testing behavior. Gender differences in testing motivations were minimal, suggesting similar decision-making processes across genders for seeking COVID-19 testing (Table 6).

Table 1: Demographic Characteristics of Study Participants (n=384)

Characteristic	n (%)
Age (years), mean ± SD	35.6 ± 12.3
Gender	
Male	202 (52.6%)
Female	182 (47.4%)
Education Level	
Primary	65 (16.9%)
Secondary	142 (37.0%)
Higher Secondary and above	177 (46.1%)
Occupation	
Employed	198 (51.6%)
Unemployed	86 (22.4%)
Student	72 (18.8%)
Retired	28 (7.3%)

Table 2: COVID-19 Knowledge, Attitude, and Practice Scores (n=384)

Category	Mean Score (SD)	Poor (<60%)	Moderate (60-80%)	Good (>80%)
Knowledge	7.2 ± 1.8	92 (24.0%)	198 (51.6%)	94 (24.4%)
Attitude	6.8 ± 2.1	112 (29.2%)	176 (45.8%)	96 (25.0%)
Practice	8.1 ± 1.5	58 (15.1%)	162 (42.2%)	164 (42.7%)

Table 3: Prevalence of Psychological Distress (DASS-21) (n=384)

Category	Normal	Mild	Moderate	Severe	Extremely Severe
Depression	186 (48.4%)	82 (21.4%)	68 (17.7%)	32 (8.3%)	16 (4.2%)
Anxiety	172 (44.8%)	78 (20.3%)	74 (19.3%)	38 (9.9%)	22 (5.7%)
Stress	202 (52.6%)	76 (19.8%)	62 (16.1%)	28 (7.3%)	16 (4.2%)

Table 4: Impact of Event Scale-Revised (IES-R) for COVID-19 Related Stress (n=384)

Category	n (%)
Normal (0-23)	182 (47.4%)
Mild (24-32)	94 (24.5%)
Moderate (33-36)	68 (17.7%)
Severe (>37)	40 (10.4%)

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Table 5: Coping Strategies (Brief COPE Inventory) (n=384)

Coping Strategy	Mean Score (SD)
Active coping	5.8 ± 1.7
Planning	5.6 ± 1.8
Positive reframing	5.2 ± 1.9
Acceptance	6.1 ± 1.6
Humor	3.8 ± 2.1
Religion	5.4 ± 2.2
Emotional support	5.3 ± 1.8
Instrumental support	5.1 ± 1.9
Self-distraction	4.9 ± 2.0
Denial	3.2 ± 2.3
Venting	4.1 ± 1.9
Substance use	2.4 ± 2.5
Behavioral disengagement	3.0 ± 2.2
Self-blame	3.5 ± 2.1

Table 6: Reason for Testing among volunteers (n=311)

Reason	Male	Female	Total
Media	22	12	34
Fear of Covid19	70	67	137
Referred by Doctor	60	52	112
Motivation by Family/ Friends	16	12	28
Total	**168**	**143**	**311**

DISCUSSION

The demographic profile of our study participants (Table 1) reflects a diverse population with a mean age of 35.6 years and a relatively balanced gender distribution. The education level of participants was notably high, with 46.1% having higher secondary education or above. This educational background suggests a potential for better health literacy and understanding of COVID-19-related information.

The COVID-19 Knowledge, Attitude, and Practice (KAP) scores (Table 2) indicate moderate to good levels across all three domains. These findings are consistent with earlier studies conducted during previous waves of the pandemic. For instance, Zhong et al. (2020) reported high knowledge scores and optimistic attitudes towards COVID-19 among Chinese residents during the initial outbreak. Similarly, Azlan et al. (2020) found generally good knowledge and positive attitudes towards COVID-19 prevention in Malaysia.However, the presence of 24.0% participants with poor knowledge scores highlights the ongoing need for public health education. This aligns with the findings of Erfani et al. (2020), who emphasized the importance of continuous public health education to improve knowledge and practices related to COVID-19.

The prevalence of psychological distress as measured by DASS-21 (Table 3) reveals significant levels of depression, anxiety, and stress among participants. Notably, 30.2% of participants reported moderate to extremely severe levels of depression, 34.9% for anxiety, and 27.6% for stress. These findings are comparable to those reported in earlier studies during the pandemic.Wang et al. (2020) found that 16.5%, 28.8%, and 8.1% of their respondents reported moderate to severe levels of depression, anxiety, and stress respectively during the initial outbreak in China. Our higher percentages might be attributed to the prolonged nature of the pandemic and the specific stressors associated with voluntary testing.

The Impact of Event Scale-Revised (IES-R) scores (Table 4) further corroborate the significant psychological impact of the pandemic, with 28.1% of participants reporting moderate to severe COVID-19 related stress. This is consistent with the findings of Liu et al. (2020), who reported high levels of post-traumatic stress symptoms among the general population in China during the early stages of the COVID-19 outbreak.

The analysis of coping strategies (Table 5) provides insights into how individuals manage stress during the pandemic. The higher mean scores for active coping, planning, acceptance, and religion suggest that many participants employed adaptive coping mechanisms. This is encouraging and aligns with previous research on coping during health crises.

Main et al. (2011), in their meta-analysis of coping responses during pandemics, found that problem-focused coping strategies were associated with better psychological outcomes. Our findings of high scores in active coping and planning reflect similar adaptive responses.The relatively low scores for maladaptive coping strategies such as substance use and denial are positive indicators. However, the moderate scores for self-distraction and venting suggest that some individuals may benefit from additional support in developing more effective coping mechanisms.

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Further analysis (not shown in tables 6) revealed significant correlations between COVID-19 KAP scores and psychological distress levels. Participants with higher knowledge scores tended to report lower levels of depression ($r = -0.32$, $p < 0.001$), anxiety ($r = -0.28$, $p < 0.001$), and stress ($r = -0.30$, $p < 0.001$). This relationship underscores the protective role of knowledge in mental health outcomes during pandemics, a finding consistent with previous research.Lau et al. (2010), in their study during the H1N1 influenza pandemic, found that better knowledge about the disease was associated with lower levels of anxiety. Our results extend this finding to the context of COVID-19 and voluntary testing.

The findings of this study have several implications for public health interventions. Firstly, the presence of a significant minority with poor knowledge scores, despite overall moderate to good KAP scores, indicates a need for targeted educational interventions focusing on specific knowledge gaps and misconceptions about COVID-19. Secondly, the high prevalence of psychological distress underscores the importance of accessible mental health services, with tele-mental health services potentially being particularly effective during pandemic conditions, as suggested by Zhou et al. (2020). Thirdly, public health messaging should prioritize promoting and providing guidance on adaptive coping strategies, with brief online cognitive-behavioural interventions potentially beneficial in fostering resilience. Additionally, initiatives to strengthen social support networks, even within the constraints of physical distancing, should be emphasized, potentially through virtual support groups and community engagement programs. Lastly, special attention should be given to vulnerable groups, particularly individuals with lower education levels and those exhibiting maladaptive coping strategies, as they may be at higher risk for adverse psychological outcomes.

CONCLUSION

This study provides valuable insights into the psychosocial factors affecting individuals who voluntarily sought COVID-19 testing during the third wave of the pandemic in Central India. The findings highlight the complex interplay between knowledge, attitudes, practices, psychological distress, and coping strategies in the context of prolonged pandemic conditions.While the study demonstrates some resilience in the population, as evidenced by moderate to good KAP scores and the prevalence of adaptive coping strategies, it also reveals significant levels of psychological distress. These results underscore the need for continued public health efforts that not only focus on disease prevention but also address the mental health implications of the pandemic.

Future research should explore longitudinal changes in these psychosocial factors and evaluate the effectiveness of interventions designed to enhance resilience and mental health during pandemics. Additionally, qualitative studies could provide deeper insights into the lived experiences of individuals undergoing voluntary testing and their decision-making processes.

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