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COVID-19 Testing: Perceived Barriers Among the Urban Slum Dwellers of Dhaka, Bangladesh

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Abstract

Background: Urban slum dwellers are unduly affected by COVID-19, and low testing rates among them are worsening their situation. This study aimed to explore the perceived barriers to COVID-19 testing in the slums, which is crucial to its surveillance, tracking, and allocating resources to combat the pandemic. Methods: A quantitative study with a cross-sectional design was conducted among 149 urban slum dwellers (≥ 11 years of age), who had previously experienced COVID-19 like symptoms. They were identified from an existing slum cohort at Bauniabadh, Dhaka. Information related to their testing status and perceived barriers was acquired by a telephone survey from October to November 2020. Results: The mean age of the respondents was 34.4 ± 15.6 years, and 58.4% of them were female. Fever (79.2%) and cough (74.5%) were the most common symptoms mentioned. Only 6.7% of the respondents had undergone COVID-19 testing. Fast relief (within 1-3 days) from symptoms (87.6%) was the most prevailing barrier to testing, seen across all age and education groups. Negative advocacy regarding the testing from family and friends (46.7%), participants uncertainty about the guidelines, site, cost, and schedule of testing (15.3%), and a general belief that 'COVID-19 is not a disease of slum people instead, it is an affliction of the rich folk' (20.4%), were the other cited barriers. Conclusions: The COVID-19 testing rate remained very low among the urban slum dwellers. To remove the barriers to testing, tailored behavioral change communication and augmenting the resources for testing are necessary to curb the spread in the slums.

Keywords: COVID-19 Testing, Bangladesh, Urban Slum Dwellers

1. Introduction

The World Health Organization (WHO) declared the coronavirus disease 2019 (COVID-19) outbreak a pandemic in March 2020, and it has spread to more than 200 countries, with severe public health and economic consequences (Tilford et al., 2020). The effective management of COVID-19 outbreak primarily relies on constant surveillance by testing (Tandel et al., 2021), as it plays a vital role in mapping the spatial distribution of the virus and taking measures to contain the contagion (Rahaman et al., 2020). Amid the estimated 90% of all reported COVID-19 cases, urban areas have become the epicenter of the pandemic (United Nations Policy Brief, 2020). Within the cities, COVID-19 has disproportionately affected the urban slum dwellers, since the slums are recognized hotspots for the transmission (Lau et al., 2020). Dhaka, the capital city of Bangladesh, has listed 3394 slums, with over six hundred thousand people inhabiting them (The Daily Star, 2019). In a recent study conducted by Islam et al., (2020) revealed that majority of the slum dwellers in Bangladesh had very limited knowledge of COVID-19, but it was intriguing to observe that they exhibited positive attitudes and favorable preventive practices towards COVID-19 (Islam et al., 2020). In spite of such reassuring results, Hossain et. al., (2020) reported that none of the participants of his study went for COVID-19 testing, despite having experienced symptoms for COVID-19 (Hossain et al., 2020). Among the few reasons assumed by the experts for the possible low testing rates in Bangladesh, included the unequal distribution of test centers across the country to the population density, charging a fee for testing, multiple testing scams, loss of confidence in the health care systems, delay in receiving results, and the loss of jobs, leading to economic difficulties especially for the poor (Cousins, 2020). While reviewing to date, no studies have been conducted to understand the barriers towards testing, targeting vulnerable populations. Therefore, this study was designed to explore the barriers to COVID-19 testing among the urban slum dwellers of Bangladesh.

2. Materials and methods

The cross-sectional study was conducted among the urban slum dwellers of Bauniabadh, Mirpur in Dhaka city, Bangladesh. The socio-demographic profile of this urban slum has been described elsewhere (Khalequzzaman et al., 2017). The study participants were recruited from an ongoing cohort study titled Bangladesh Longitudinal Investigation of Emerging Vascular and Nonvascular Events in an urban slum setting (BELIEVE Slum study) conducted at Bauniabadh, since 2019 by the Department of Public Health and Informatics, Bangabandhu Sheikh Mujib Medical University (BSMMU). In this cohort, a total of 5200 participants have been recruited, among which 3700 participants were under telephone-based review for any presenting COVID-19 infection symptoms since June 2020. Among those inquired previously, 200 participants were identified as potential participants for this study, who were more than 11 years of age, and had previously experienced any of the five common COVID-19 infection like symptoms - fever, sore throat, cough, difficulty in breathing, and loss of sense of smell and taste. From this, an estimated sample size of 150 participants was calculated. The respondents for this study were selected from the sampling frame by a computer-generated simple random sampling technique. A pretested semi-structured questionnaire was used for data collection. The questionnaire included questions regarding basic demographics, awareness of COVID-19, knowledge of symptoms, perceived risk, practicing current preventive measures such as handwashing, quarantine, social distancing, testing if symptoms arise, and barriers to undertaking COVID-19 testing. In order to minimize the risk of COVID-19 transmission, in-person interviews were avoided, and the interview was done over the telephone. Survey responses were collected from October 2020 to November 2020. The interviews, consent and assent of the participants were all audio recorded. Informed verbal consent was taken from each participant above the age of 18 years. For respondents between the age of 11 to 17 years, verbal assent was taken from the adolescent and informed verbal consent from their parents before commencing the interview. This study received ethical clearance from the Institutional Review Board of BSMMU (Reference No. BSMMU/2020/3214).

All the survey responses were analyzed initially by using frequency distribution, mean and standard deviation. They were then tabulated by gender, age and education level to generate basic descriptive tables. Intergroup differences were assessed for statistical significance within each category using chi-square tests with a significance level of ≤ 0.05 .

3. Results

A total of 198 telephone calls were placed. Out of them, 24 (12%) of the respondents reached on the phone refused to participate in the study, 22 (11%) phone numbers were found to be either switched off or did not respond to the calls, and 3 (1.5%) of the respondents were excluded from the interviews as they did not fulfill our inclusion criteria. Therefore, a total of 149 interviews were completed. Descriptive statistics of the participants are presented in Table 1, where females (58.4%) represented over half of the respondents. The mean age of the respondents was 34.4 ± 15.6 years, and the highest proportion (23.5%) belonged to the age group of 35-44 years. The majority (56.5%) of the respondents had completed their education only up to the primary level, and almost half (48.4%) of the subjects were homemakers. Fever (79.2%) and cough (74.5%) were mentioned as the most common COVID-19 like symptoms present among the respondents preceding the study. A substantial proportion (93.3%) of them did not go for COVID-19 testing even though they had COVID-19 like symptoms previously.

Table 1: Study participant characteristics (N=149)

Variables	n (%)
Age (in years)	
11-17	21 (14.1)
18-24	31 (20.8)
25-34	25 (16.8)
35-44	35 (23.5)
45-54	18 (12.1)
>55	19 (12.8)
Age (Mean \pm SD)	34.4 ± 15.6
Gender	
Male	62 (41.6)
Female	87 (58.4)
Religion	
Islam	147 (98.7)
Hindu	2 (1.3)
Marital status	
Married	101 (73.2)
Unmarried	30 (21.7)
Widow/Widower	7 (5.1)
Educational attainment	
No formal education	25 (19.6)
Up to primary	78 (56.5)
Secondary and above	31 (23.2)
Occupation	
Service	33 (27.6)
Small trade	29 (23.3)
Student	27 (22.6)
Homemaker	60 (48.4)
Reported COVID-19 infection like symptoms in the last 3 months (Multiple responses)	
Fever	118 (79.2)
Cough	111 (74.5)
Sore throat	53 (35.6)
Difficulty in breathing	4 (2.7)
Loss of sense of taste and smell	1 (0.7)
COVID-19 testing status	
No	139 (93.3)
Yes	10 (6.7)

Table 2 reveals the mentioned barriers towards COVID-19 testing. Relief from symptoms within 1-3 days (87.6%), negative counseling regards testing from family and friends (46.7%), the belief that COVID-19 is not a disease of slum people, instead it is an affliction of the rich people (20.4%), and not knowing when, how and where to get tested (15.3%) were the most common barriers to COVID-19 testing. There was no significant difference observed

between the male and female respondents considering the drawbacks of testing. Fast relief from symptoms within 1-3 days and negative counseling from family and friends were the significant barriers among the relatively younger respondents (11-34 years). Among the respondents with secondary and above education levels, 93.5% mentioned fast relief from symptoms was the common cause for not undertaking COVID-19 testing. On the other hand, respondents who are ≥ 35 years and with no formal education, significantly did not go for testing as they believed that COVID-19 is not a disease of slum people, and even if they were infected, they would be cured by the Almighty. Other significant reasons also included the respondents not knowing when, how and where to get tested and being too weak or ill to go for COVID-19 testing.

4. Discussion

This study was designed to identify the barriers for COVID-19 testing among the urban slum residents who had previously experienced COVID-19 infection-like symptoms. The top two clinical symptoms experienced by the respondents of this study were fever (79.2%) and cough (74.5%). Many previous COVID-19 related studies also had mentioned fever and cough as the most reported symptoms experienced by their respondents (Abdelhafiz et al., 2020; Ahdab, 2020; Austrian et al., 2020; Clements, 2020; Lau et al., 2020). In this study, a very small fraction of the respondents (6.7%) went for testing when they had experienced symptoms. This finding is complementary to another study conducted previously in Bangladesh, where the respondents who had experienced COVID-19 like symptoms, none underwent testing (Hossain et al., 2020). This slight difference in the testing rate might be explained by the time lapse between the two studies, where possibly, there might have been an increase in the number of testing facilities, reduction in the appointment related complexities, and reduced fear related to testing, which might account for this small increase in the number of testings.

The most voiced barriers towards COVID-19 testing identified in this study were, fast relief (within 1-3 days) from symptoms (87.6%), negative advocacy regarding the testing from family members, relatives or friends (46.7%), confusion about when, how and where to get tested (15.3%) and general belief that COVID-19 is not a disease of slum people, instead it is an affliction of the rich people (20.4%). Avoiding testing due to fast relief from symptoms was a unique barrier found in this study, which was seen highest among all age groups and education levels. Among the few literatures describing the barriers to COVID-19 testing, none mentioned this particular barrier. Comparable reasons with regards to 'symptoms' to avoid testing were cited by Bonner et al. (2020), where the participants mentioned they were unsure if their symptoms were bad enough, unsure if the symptom needs testing, symptoms were due to something else and will wait for the symptoms to get worse before doing COVID-19 testing (Bonner et al., 2020). Discouragement and negative advocacy from family and/or friends, played another prominent role in avoiding COVID-19 testing among the participants and was significantly seen in the younger age groups. This negative counseling possibly rises from insufficient knowledge about the importance of the testing, lack of credibility of the testing, mistrust on the health care workers, multiple testing scams (Cousins, 2020) and existing misinformation about COVID-19 (Barua et al., 2020). Such discouragement and negative advocacy were reported previously as barriers to testing for other infectious diseases such as in human immunodeficiency virus infection (Denison et al., 2008). Furthermore, not knowing when and where to get tested, thinking that the test is expensive, added to their confusion about testing. A study conducted in the United States reported similar confusion about testing, where frequent changes to the Centers for Disease Control and Prevention guidelines during the COVID-19 pandemic prevented people from clearly knowing when and where to test (McElfish et al., 2021). Similarly, a study conducted in Australia reported that 7.1% of their respondents were unaware of how, when, and where to get tested, 11% thought that testing was painful and 5.0% were concerned about getting infected in the testing center (Bonner et al., 2020). To overcome these obstacles, some possible solutions include using community non-governmental organizations, schools, and community centers as mobile testing centers for easy access, developing community-based applications, and paying attention to systematically listing the nearest testing centers, hours of operation, testing criteria and cost (McElfish et al., 2021).

Table 2: Perceived barriers to COVID-19 testing among the respondents with gender, age category and education

Barriers	Gender		Age category						Education			Overall		
	Male	Female	11-17 years	18-24 years	25-34 years	35-44 years	45-54 years	>55 years	No education	Primary and below	Secondary and above			
Relieved from symptoms within 2-3 days	50 (87.7)	70 (87.5)	21 (100.0)	24 (85.7)	23 (100.0)	29 (87.9)	12 (75.0)	11 (68.8)	*	15 (65.2)	67 (91.8)	29 (93.5)	*	120 (87.6)
Discouraged by relatives/ friends	29 (50.9)	35 (43.8)	14 (66.7)	10 (35.7)	15 (65.2)	11 (33.3)	5 (31.3)	9 (56.3)	*	8 (34.8)	41 (56.2)	12 (38.7)		64 (46.7)
It is not a disease of slum dwellers	14 (24.6)	14 (17.5)	0 (0.0)	1 (3.6)	1 (4.3)	6 (18.2)	8 (50.0)	12 (75.0)	*	12 (52.2)	13 (17.8)	1 (3.2)	*	28 (20.4)
Do not know how, when and where to get tested	9 (15.8)	12 (15.0)	1 (4.8)	2 (7.1)	1 (4.3)	7 (21.2)	3 (18.8)	7 (43.8)	*	8 (34.8)	10 (13.7)	3 (9.7)	*	21 (15.3)
Testing is expensive	6 (10.5)	5 (6.3)	2 (9.5)	0 (0.0)	0 (0.0)	4 (12.1)	3 (18.8)	2 (12.5)		4 (17.4)	7 (9.6)	0 (0.0)		11 (8.0)
Will be cured by Almighty	4 (6.5)	7 (8.0)	1 (4.8)	0 (0.0)	0 (0.0)	2 (5.7)	3 (16.7)	5 (26.3)	*	3 (11.1)	8 (10.3)	0 (0.0)		11 (7.4)
Fear of losing job	2 (3.6)	2 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	3 (9.1)	1 (6.3)	0 (0.0)		2 (8.7)	1 (1.4)	1 (3.3)		4 (2.9)
Severely weak /ill	2 (3.5)	2 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	1 (3.0)	2 (12.5)	1 (6.3)		3 (13.0)	1 (1.4)	0 (0.0)	*	4 (2.9)
Fear of social isolation	0 (0.0)	1 (1.3)	0 (0.0)	1 (3.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)		0 (0.0)	0 (0.0)	1 (3.2)		1 (0.7)

*P-value ≤ 0.05 was considered to be significantly associated

This study also identified how individual beliefs impacted the slum dweller's approach towards testing. The most common belief iterated by people of >55 years of age and with no formal education was that COVID-19 is not a disease of the poor; instead, it is an affliction of the rich people, hence, they thought there was no need for testing if even they had COVID-19 infection-like symptoms. Additionally, a nested religious belief was also found to influence their testing behavior. They believed that even if the slum dwellers were infected with COVID-19, they will be cured by the Almighty. It is evident that, during any disaster, epidemic or pandemic, religion plays a substantial role in influencing people's behavior (Barua et al., 2020) and already religious groups in different countries are promoting their belief in the religion that will save them from COVID-19 (Graham et al., 2021). Thereupon, to reduce the impact of such beliefs on testing, it is ideal for the government to take measures to limit the propagation of false ideas or information regarding COVID-19. One such step is to promote COVID-19 facts and dispel related myths on media platforms using an authoritative and trustworthy personality. In addition to the above, they can continuously remove fact-checked false and potentially harmful information from social media (Rosenberg et al., 2020). Another initiative that can be taken up includes directing the country's religious leaders to provide people with accurate information and creating awareness among them, amid the pandemic for the safety of the society (Barua et al., 2020).

There are some limitations in this study that warrants considerations. The small sample size of this study and the larger proportion of female respondents may influence the generalizability of the results to the slum itself. Also, the study type did not allow us to explore the barriers more in-depth and its nuanced insights for COVID-19 testing.

5. Conclusions

A very low proportion of the urban slum dwellers with COVID-19 infection-like symptoms went for testing. This behavior was influenced by barriers such as fast relief (within 1-3 days) from symptoms, negative advocacy from family and friends, uncertainty of the participants with regards to the site, cost and schedule of testing, and the belief that it is not a disease of the slum people rather is a disease of the rich people. Understanding these barriers is crucial to improving the testing rates. To mitigate these barriers, expanding on the available testing resources and behavior change communication adapted for the inhabitants of urban slums is essential to curb the spread of COVID-19 in the slums.

6. Declarations

6.1 Acknowledgments

The authors would like to thank all of the participants who consented willingly and enrolled in the study voluntarily.

6.2 Ethics approval

This study was conducted according to the Declaration of Helsinki and performed after getting ethical clearance from the Institutional Review Board of Bangabandhu Sheikh Mujib Medical University (Reference No. BSMMU/2020/3214).

6.3 Competing interests

The authors declare that there are no competing interests.

6.4 Funding

The study received financial support from Bangabandhu Sheikh Mujib Medical University.

6.5 Author Contributions

Conceptualization: RS, SER, MK. Data curation: RS, KMTR. Formal analysis: RS, SER. Funding acquisition: RS, SER, SSI. Methodology: RS, SER, MK, SSI. Project administration: SER, KMTR. Visualization: RS, SER, KMTR. Writing - original draft: SER, RS. Writing - review & editing: SER, MK, SSI.

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