RESEARCH ARTICLE

COVID-19 related misconceptions among older adults in Bangladesh: findings from a cross-sectional study [version 1; peer review: 1 not approved]

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Abstract

Background

The COVID-19 has been appeared as the most remarkable global calamity of this century. Just as the COVID-19 spread throughout the world, so as the rumour and misconceptions related to it. The present study aimed to explore the prevalence of COVID-19 related misconceptions and its correlates among the older adults in Bangladesh.

Methods

The study followed a cross-sectional design and was conducted among 1032 participants aged 60 years and above from Bangladesh. Information was collected on 14 different locally relevant misconceptions related to the spread, prevention, and treatment of COVID-19, scored each misconception as one, and obtained a cumulative score, ranging from 0 to 14, with a higher score indicating a higher level of misconceptions. A multiple linear regression model explored the factors associated with misconceptions.

Results

The most common misconceptions were, all returning migrants carrying COVID-19 (45.5%), wearing personal protective equipment (PPE) in outdoors (80.1%), not going to the funeral of people died of COVID-19 (45.2%), its prevention by nutritious food (57.6%) and

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drinking water (39.4%), and doctor can cure COVID-19 (49.9%). Misconceptions were higher among the participants who were living alone, whose family members were not responsive to their needs during COVID-19, and who received COVID-19 related information from Radio/TV and health workers. These misconceptions were less likely among those who were aged 70-79 years, who had pre-existing non-communicable chronic conditions, who were overwhelmed by COVID-19, and who felt themselves at highest risk of COVID-19.

Conclusion

Overall, we found that misconceptions were prevalent among the older adults in Bangladesh. Government and other relevant stakeholders should take immediate actions to address the prevalent misconceptions through using appropriate channels, media, and message delivery systems, and applying evidence-based risk communication methods.

Keywords

COVID-19, Misconceptions, Older adults, Bangladesh

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Introduction

The human population is shrouded in a global health crisis due to the COVID-19 pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)¹. As of the 24th of January 2021, more than 96 million people have been infected, and more than two million people have lost their lives². Furthermore, this unprecedented pandemic has substantially changed the way we live across the globe, with deleterious societal and financial outcomes likely to take many years to return to normal³. The ongoing COVID-19 pandemic has affected each part of the world, leaving no country untouched⁴.

However, certain population groups are more vulnerable than others to the deadliest effects of COVID-19. Mortality rates from the USA show that over 80% of COVID-19-related deaths occur among patients ≥ 65 years⁵, with similar figures reported globally, demonstrating that older adults are especially vulnerable to complications and death resulting from COVID-19^{6,7}. The severity of the SARS-CoV-2 infection is influenced by the age of a patient, and disproportionately affects adults over 65 years⁸, meaning that older people are at a higher risk of morbidity and deaths due to COVID-19⁶. Older adults with comorbidities like diabetes, chronic obstructive pulmonary disease, organ receiver/donor, hypertension, heart and kidney diseases are at a significantly higher risk of SARS-CoV-2 severe infection and increased case fatality rates⁹.

Bangladesh, in South Asia, reported its first COVID-19 patient on 8th March 2020¹⁰, when a traveller returned from Italy is believed to have brought the virus into the country¹¹. Since then more than 500,000 infected cases have been reported as of 11th January 2021, with 7,781 deceased due to COVID-19². This triggered a nationwide response to curb the pandemic that has been in operation since early March 2020¹². However, the absence of travel restrictions and allowance of mass gatherings for religious functions are responsible for the recent growth in COVID-19 cases¹³. Like many other countries, Bangladesh is also experiencing growth in the older population, with more than 3.2 million people, or 7.7% of the total population, aged 60 years or above; a proportion that is projected to increase three-fold to 21.9% by 2050¹⁴. As age is a critical risk factor related to COVID-19, Bangladeshi older adults are disproportionately vulnerable to COVID-19; although nearly 7% of total COVID-19 patients are aged ≥ 60 years, this group faces a mortality rate of almost 39%¹⁵.

Just as SARS-CoV-2 has spread all over the world, so too has misinformation. Misleading or false information has led to individuals putting themselves and others at risk by believing or acting upon falsehoods, not engaging in protective measures, and self-medicating using toxic medicines. Common misconceptions about the pandemic include: the idea that face masks do not filter SARS-CoV-2, that COVID-19 is like seasonal flu, and that only old older people are affected by the virus¹⁶. Electronic media serves as the dominant platform for circulating fake news and misinformation about the public health crisis¹⁷, creating what the Director-General of the World Health Organisation has called an 'infodemic'¹⁸. Social

stigma is closely associated with believing false information about how SARS-CoV-2 spreads, while gossip quickly circulates rumours and myths¹⁹. Nearly 59% of Bangladeshi have access to the internet, through which they can access rumours and fear about COVID-19²⁰.

Although some recent studies carried out in Bangladesh focused on knowledge, attitude, and fear of COVID-19^{12,21}, none have focused on COVID-19 misconceptions among older adults. Given the heightened vulnerability of older adults to COVID-19-related morbidity and mortality, understanding what older adults believe is of paramount importance in facilitating effective interventions to educate and protect the older adult population. Therefore, the aim of this study was to explore the misconceptions about the COVID-19 pandemic, and associated predictors, amongst older people in Bangladesh.

Methods

Study design and participants

This cross-sectional study was conducted remotely through telephone interviews in October 2020. We utilized our pre-established registry, developed through merging the contact information of households from different research projects accomplished by ARCED Foundation during 2016–2020 as sampling frame. There were around 9000 households with verified contact information in the registry that included households of different demographic characteristics (urban and rural both) and income groups, and covered all eight administrative divisions of Bangladesh.

Anticipating 50% prevalence of misconception among older adults (as prevalence is unknown) with a 5% margin of error, at the 95% level of confidence, 90% power of the test, and 95% response rate, a sample size of 1096 was calculated. However, only 1032 eligible participants responded to the study with an overall response rate of approximately 94%. Based on the population distribution of older adults by geography in Bangladesh, we adopted probability sampling proportionate to the number of older adults to ensure representative selection of older adults from each division¹⁴. This was deemed to address the potential sources of bias that may results through sampling process (selection bias). The inclusion criterion was being aged 60 years and above, with exclusion criteria including severe mental health problems (clinically proved schizophrenia, bipolar mood disorder, dementia/cognitive impairment), a hearing disability, or inability to communicate.

Measures

Outcome measure. The primary outcome measure of this study was the level of misconceptions related to COVID-19, which was captured through the use of a 14 item misconceptions scale. World Health Organization compiled a list of the most common COVID-19 related misconceptions²², we included some of those which were contextually relevant. The survey also included other locally relevant misconceptions, including transmission through mosquito bites, and transmission only to people who practice socially unacceptable activities. Each item was nominally coded as a true/false statement where a

correct response scored zero, and each misconception scored one. The scores were summed to generate a misconception score for each participant. The cumulative score of the 14-items ranged from zero to 14, with a higher score indicating a higher level of misconception.

Explanatory variables. Explanatory variables considered in this study were age (categorized as 60–69, 70–79, and ≥ 80 years), sex (male/female), marital status (currently married/single), literacy (yes/no), family size (≤ 4 and more than 4), family income in Bangladeshi Taka (BDT) (< 5000 , 5000 – 10000 , > 10000), residence (urban/rural), current occupation (employed/unemployed or retired), living arrangements (living with other family members/living alone), source of COVID-19 related information (TV/radio, health workers, and friends/family/neighbors), problem in memory or concentration (no problem/low memory or concentration), walking distance to the nearest health centre (< 30 min/ ≥ 30 min), presence of any non-communicable chronic conditions (yes/no), feeling concerned about COVID-19, feeling overwhelmed by COVID-19 (yes/no), frequency of communication with friends and family during COVID-19 (less than previous/same as previous), feeling at a highest risk of COVID-19 (yes/no), and family members not responsive to their needs during COVID-19 (yes/no).

Self-reported information on non-communicable chronic conditions such as arthritis, hypertension, heart diseases, stroke, hypercholesterolemia, diabetes, chronic respiratory diseases, chronic kidney disease, and cancer were collected.

Data collection tools and techniques

A pre-tested semi structured questionnaire in the Bengali language was used to collect the information through telephone interview. Data collection was accomplished electronically using SurveyCTO mobile app (Version 2.70.6, SurveyCTO CATI feature, Doherty, Inc., Washington, DC, USA) (<https://www.surveyccto.com/>) by ten research assistants, recruited based on previous experience of administering health surveys using an electronic platform. The research assistants were trained extensively by SKM, AMI and UNY for three days through Zoom meeting (Version 5.4.2, Zoom Video Communications, Inc., San Jose, CA, USA) before the data collection commenced.

The English version of the questionnaire was first translated to Bengali language and then back translated to English by two researchers to ensure the contents' consistency. The questionnaire was then piloted among a small sample ($n=10$) of older adults to refine the language in the final version which ensures the face validity of the tool. The contents of the questionnaire were approved by the participants from the pilot study without requiring any changes in wording or sentence structure. This was undertaken to address any potential bias that may arise from using the tool. Moreover, Cronbach's alpha for the misconception items was 0.87, which indicates acceptable reliability of the tool. The final Bengali version of the tool was administered for collection of the information.

Statistical analysis

The distribution of the variables was assessed through descriptive analysis. The Chi-square test was performed

to compare the prevalence of misconceptions and stigma within different gender groups at a 5% level of significance. To explore the factors associated with misconceptions among the participants we executed a linear regression model. We used backward elimination criteria with the Akaike information criterion (AIC) to select the final model. Briefly, the backward elimination algorithm starts with a full model (model with all variables) and drops one by one variable from the model based on the statistical significance of that variable. In this case, we reported the adjusted beta-coefficient and 95% confidence interval (95% CI). We also performed the model diagnostics, such as normality of the residuals, and multicollinearity in the model. All the analysis was performed using the statistical software Stata (Version 14.0)

Ethical approval

The study protocol was approved by the institutional review board of Institute of Health Economics, University of Dhaka, Bangladesh (Ref: IHE/2020/1037).

Consent

Verbal consent was sought from the participants before administering the survey. Participation was voluntary, and participants did not receive any compensation. As the interview was conducted remotely using telephone, verbal consent was sought instead of written consent and consent of each participant was noted in the questionnaire. This verbal consent was approved by the ethics committee (Ref: IHE/2020/1037).

Results

Background characteristics

A total of 1032 older Bangladeshi adults aged 60 years and above participated in the study (Figure 1). Table 1 describes the sociodemographic and lifestyle characteristics of participants, reflecting a higher proportion of participants aged 60–69 years (77.8%), male (65.5%), married (81.4%), illiterate (58.3%), residents of rural areas (73.9%), and living with other family members (92.3%). The most common source of COVID-19 related information was radio/television (83.04%), followed by friends/family/neighbors (71.2%), and a very small number also received information from health workers (9.3%). The majority of participants reported that they were concerned about (71.3%) and overwhelmed by (63.2%) COVID-19. Reduced social interaction during the pandemic was reported by 42% participants and around 59% had pre-existing non-communicable chronic conditions.

Prevalence of misconceptions

Participant misconceptions related to the spread, prevention, and treatment of COVID-19 are presented in Table 2. Nearly half of the participants (45.5%) had the misconception that all returning migrants carried COVID-19. The most commonly held misconceptions related to the prevention of COVID-19 included wearing personal protective equipment (PPE) outdoors (80.1%), not going to the funeral of people who died of COVID-19 (45.2%), and its prevention by nutritious food (57.6%) and drinking water (39.4%). Meanwhile, the most notable misconception regarding the treatment of COVID-19 was that doctors can cure COVID-19 (49.9%) (Table 2).

Figure 1. Participants enrolment.

Factors associated with misconceptions

The final model, based on the lowest AIC, retained the variables shown in Table 3. Hence, the model is adjusted for all the variables in Table 3. The q-q plot of the residuals of the model (Figure 2) shows that the data is normally distributed, while VIF values of less than 10 for each variable (Table 4) reflects the absence of multicollinearity. Average misconception scores were higher among participants who were living alone (β : 0.94, 95% CI: 0.43 to 1.45); who were literate (β : 0.43, 95% CI: 0.18 to 0.68); whose family members were not responsive to their needs during COVID-19 (β : 0.99, 95% CI: 0.71 to 1.28); who received COVID-19 related information from radio/TV (β : 0.89, 95% CI: 0.55 to 1.21); and who received COVID-19 related information from health workers (β : 0.60, 95% CI: 0.25 to 0.94). On the other hand, the misconception scores were lower among participants who were aged 70–79 years (β : -0.57, 95% CI: -0.87 to -0.26); who had pre-existing non-communicable chronic conditions (β : -0.43, 95% CI: -0.70 to -0.15); who were overwhelmed by the pandemic (β : -0.40, 95% CI: -0.69 to -0.10); and who felt themselves at highest risk of COVID-19 (β : -0.41, 95% CI: -0.68 to -0.14).

Discussion

The present study assessed the prevalent misconceptions about the spread, treatment and prevention of COVID-19 and its associated factors among older adults in Bangladesh. To the best of our knowledge this is the first study to document misconceptions about the COVID-19 pandemic among the older population of Bangladesh at the community level. Overall, we found that some misconceptions related to COVID-19 spread, treatment and prevention remain persistent to varying degrees among the participants. Evidence from similar epidemics (such as Middle East respiratory syndrome (MERS) and Swine flu (H1N1)^{23,24}) show that misconceptions, myths and rumours always exist in the general population during and following an outbreak, and this is also true for the COVID-19 pandemic^{22,25}.

In the present study, the most notable misconception was the mandatory use of PPE for everyone to go outside (80.1%). The importance of PPE in preventing the spread of infection is indisputable, but PPE is particularly important for health professionals who come in close contact with COVID-19 patients²⁶. Over-emphasis of PPE as a mode of prevention of COVID-19 and widespread reporting in print media regarding the shortage of PPE in health services might have created the notion that one should wear PPE when outside to protect themselves from COVID-19¹¹.

Many participants in the present study believed that all returnee migrants carry COVID-19. This can possibly be attributed to the increase in number of COVID-19 cases in Bangladesh after the arrival of Bangladeshi citizens returning from abroad during this pandemic²⁷. Also, many countries including Bangladesh have taken measures to restrict international travel and quarantine travellers upon arrival, which might have shaped the perception among the older adults that all returnee migrants carry COVID-19²⁸. While the percentage was relatively low, some participants also reported about the belief that COVID-19 spreads through mosquito bites. This may be because many of the symptoms of COVID-19, such as fever and body ache, are like that of dengue, Chikungunya virus and malaria, which are spread through mosquito bites²⁹. The myth of transmitting the virus through mosquito is also prevailing in neighboring countries (e.g. India) and other parts of the world³⁰.

One of five participants also believed that COVID-19 was spread through testing for it. According to the Centers of Disease Control, one of the key steps for successful COVID-19 management is early test, trace (contact tracing) and quarantine of the cases³¹. This misconception is therefore of serious concern, as it may reduce the willingness of people to undergo testing, and eventually lead to community spread of the virus.

Table 1. Sociodemographic and lifestyle characteristics of the respondents (N=1032).

Characteristics	n	%
Administrative division		
Barishal	149	14.4
Chottogram	137	13.3
Dhaka	210	20.4
Mymensingh	63	6.1
Khulna	158	15.3
Rajshahi	103	10.0
Rangpur	144	14.0
Sylhet	68	6.6
Age (years)		
60 – 69	803	77.8
70–79	174	16.9
>= 80	55	5.3
Sex		
Male	676	65.5
Female	356	34.5
Marital status		
Married	840	81.4
Widow/Widower	192	18.6
Family size		
≤4	318	30.8
>4	714	69.2
Family monthly income in Bangladeshi taka		
<5,000	145	14.1
5,000–10,000	331	32.1
>10,000	556	53.9
Residence		
Urban	269	26.1
Rural	763	73.9
Current occupation		
Employed	419	40.6
Unemployed or retired	613	59.4

Characteristics	n	%
Literacy		
Illiterate	602	58.3
literate	430	41.7
Living arrangement		
Living with other family members	953	92.3
Living alone	79	7.7
*Source of COVID-19 related information		
Radio/Television	857	83.04
Health workers	96	9.3
Friends/family/neighbours	735	71.2
Walking distance to the nearest health centre		
<30 min	508	49.2
≥30 min	524	50.8
Feeling concerned about COVID-19		
Hardly	299	28.97
Sometimes/often	733	71.03
Feeling overwhelmed by COVID-19		
Hardly	370	36.38
Sometimes/often	647	63.62
Presence of any non-communicable chronic conditions		
No	424	41.09
Yes	608	58.91
Communication with others during the COVID-19		
Same as previous	598	57.95
Less than previous	434	42.05
Family members not responsive to their needs during COVID-19		
No	687	66.57
Yes	345	33.43
Feeling himself at highest risk of COVID-19		
No	603	58.43
Yes	429	41.57

*Multiple responses

Table 2. Misconceptions among the participants.

Misconceptions	n	%
Misconception regarding spread		
COVID-19 spread through mosquito bites	106	10.3
COVID-19 spread through COVID-19 testing	214	20.7
All returning migrants carry COVID-19	470	45.5
COVID-19 is transmitted only to non-religious or less religious people	107	10.4
COVID-19 is transmitted only to people who practice “socially unacceptable activities”	82	8.0
Misconception regarding prevention		
Drinking water can prevent COVID-19	407	39.4
Nutritious food can prevent COVID-19	594	57.6
Everyone should wear PPE when go out to prevent COVID-19	827	80.1
It is not important for all COVID patient to quarantine	25	2.4
Should not go to funeral of people who died of COVID-19	466	45.2
Smoking does not increase risk of COVID-19	185	17.9
Misconception regarding treatment		
Doctor can cure COVID-19	515	49.9
Traditional healer can cure COVID-19	10	1.0
Antibiotic can cure COVID-19	142	13.8

This misconception may relate to uncertainty regarding accuracy of the test (due to false positives), false rumors on COVID-19 spread, poor health literacy of older adults, and reports of COVID-19 test scams (e.g. selling COVID-19 positive or negative results without actual laboratory analysis)^{32,33}.

Some of the participants also believed that COVID-19 is transmitted only to non-religious, less religious and people who practice socially undesirable activities, which is important to consider. Evidence from several countries suggests that religious stigma and orthodoxies resulted in mismanagement of COVID-19. For example, in India, cow dung or urine has been used as a treatment to cure COVID-19, in Latin America and Spain religious leaders have claimed vaccine development as the work of devil stating that it would involve cell lines from aborted fetuses³⁴. Earlier, religious misinformation from Muslim clerics stating that the polio vaccine contains pork have reduced the success of vaccination in Pakistan³⁵. Therefore, it is important to dissect these existing prevailing religious myths regarding the spread of COVID-19 among older population of Bangladesh and make sure that these myths are addressed by appropriate/accurate information dissemination and risk communication.

The present research supports recent studies that also documented misconceptions regarding prevention of COVID through good nutrition and drinking water^{30,36}. Although the benefits of hydration, balanced diet and specific nutrients such as vitamin C and D in COVID-19 management is proven, to date there is no evidence that a specific nutrient or food can prevent COVID-19 infection^{37,38}. Many participants also believed that smoking does not increase the risk of COVID-19, although emerging evidence suggests that smokers are more likely to develop severe COVID-19 symptoms and outcomes as compared to non-smokers^{39,40}. This misconception may be attributed to poor health literacy⁴¹ and lack of updated information of COVID-19 among older adults in Bangladesh¹².

In our study we found that half of the participants believe that doctors can cure COVID-19. This is also in line with the findings that around 14% of respondents had the misconception that antibiotics can treat COVID-19. The notion that doctors can cure every disease including COVID-19, and antibiotics can treat every disease is not surprising in developing countries. Recent evidence also suggests that there is unnecessary use of antibiotics as a treatment of COVID-19 in many places⁴². A study on hospitalized patients in New York, USA revealed

Table 3. Factors associated with misconceptions among the participants.

Characteristics	β	P	95% CI
Age (years)			
60 – 69	<i>Ref</i>		
70–79	-0.57	<0.001	-0.87, -0.26
>= 80	-0.21	0.507	-0.85, 0.42
Family size			
≤4	<i>Ref</i>		
>4	0.21	0.141	-0.07, 0.49
Family monthly income in Bangladeshi taka			
<5000	<i>Ref</i>		
5000–10000	-0.03	0.900	-0.50, 0.44
>10000	-0.46	0.054	-0.93, -0.01
Living arrangement			
Living with other family members	<i>Ref</i>		
Living alone	0.94	<0.001	0.43, 1.45
Literacy			
Illiterate	<i>Ref</i>		
Literate	0.43	0.001	0.18, 0.68
Feeling overwhelmed by COVID-19			
No	<i>Ref</i>		
Yes	-0.40	0.008	-0.69, -0.10
Feeling himself at highest risk of COVID-19			
No	<i>Ref</i>		
Yes	-0.41	0.003	-0.68, -0.14
Family members not responsive to their needs during COVID-19			
No	<i>Ref</i>		
Yes	0.99	<0.001	0.71, 1.28
Presence of non-communicable chronic condition			
No	<i>Ref</i>		
Yes	-0.43	0.002	-0.70, -0.15
Received COVID-19 related information from Radio/TV			
No	<i>Ref</i>		
Yes	0.89	<0.001	0.55, 1.21
Received COVID-19 related information from health worker			
No	<i>Ref</i>		
Yes	0.60	0.001	0.25, 0.94

Figure 2. Normality q-q plot.

Table 4. Multicollinearity diagnosis result.

Variable	VIF	1/VIF
Age		
• 70–79	1.27	0.784382
• ≥ 80	1.10	0.912809
Family size	3.57	0.279977
Family income (BDT)		
• 5,000–10,000	3.66	0.273001
• >10,000	5.92	0.168917
Literacy	1.83	0.545536
Living arrangement	1.29	0.777372
Feeling overwhelmed by COVID-19	3.14	0.318233
Feeling himself at highest risk of COVID-19	2.01	0.497822
Family members not responsive to their needs during COVID-19	1.69	0.590717
Having any pre-existing non-communicable chronic conditions	2.83	0.353822
Received COVID-19 related information from Radio/TV	6.78	0.147428
Received COVID-19 related information from health worker	1.40	0.711858

that 71% of COVID-19 patients received antibiotics, while only 4% had bacterial co-infection⁴³. Studies carried out in Australia³⁶ and Iran⁴⁴ also revealed a higher proportion of people inaccurately using antibiotics to treat COVID-19.

The present study also identified some correlates of misconceptions among the participants. It was found that the participants who were overwhelmed by COVID-19 and felt themselves at highest risk of COVID-19 had lower misconception scores, implying that anxiety, worry, and caution might have contributed in a positive way to drive them to acquire more accurate information, or made them more aware of the existing misconceptions⁴⁵. Likewise, misconception scores were significantly lower among those who had pre-existing non-communicable chronic conditions. In general, complications and case fatality risk of COVID have been reported higher in people who had other chronic disease or co-morbid conditions^{46,47}. There have been reports of increased hospitalization rate and death in elderly populations with pre-existing conditions around the globe^{48–50} and have been aired through various news agencies. This might have encouraged older adults with non-communicable chronic conditions to gather accurate information regarding COVID transmission, spread and treatment.

We also observed that living alone, and family members' non-responsiveness to their needs during the pandemic, increases the misconceptions among older populations. This is important to consider because older people often rely on other family members not only for their medical care but also as trusted source of information⁵¹. We also observed that misconception scores were significantly lower among older adults aged 70–79 years compared to those aged 60–69 years. This suggests that relatively older adults are more open to receiving accurate information related to COVID-19, which is also supported by the findings of recent research⁵². Participants aged 70–79 years may have been open to receiving accurate information regarding COVID-19 due to awareness that COVID-19 related morbidities and mortality increases with age⁵². Therefore, accurate COVID-19 messaging should prioritize the older age groups. The present study found that literacy was not associated with more accurate knowledge, with a BBC report suggesting that literate people may be more prone to misinformation related to COVID-19 because of an overload of information, sharing before thinking, and override of reactions⁵³.

Surprisingly we haven't observed reduced misconceptions scores in groups who received information from radio/TV compared to those who didn't receive any information. This is a big concern from the public health perspective since it denotes that there is a mistrust in the content of information provided by the media. There is also evidence that COVID-19 myths and misconceptions can spread through the media^{54,55}, which could explain distrust of the media as a source of accurate information. Also, misconceptions were higher among the participants who received information from health workers. There could be two possible reasons for this. Firstly, health workers may not be adequately trained on the issues related to

COVID-19. Secondly, the participants may not trust the information provided by health workers even when it is accurate. Thus, health care workers need to be properly trained on accurate COVID-19 related information and on effective delivery to the community.

Policy implications/recommendations

The misconceptions reported in this study present several public policy implications. The findings demonstrate that unscientific misconceptions regarding spread and prevention of COVID-19 persist among older people, supporting calls for extensive and accurate dissemination of information, as these misconceptions may lead to failure to follow recommended public health measures and practices in this vulnerable group. Furthermore, in a collectivist society where the household-head or the decision-maker is the older family member, misconceptions and misinformation among household heads prevent younger family members from accessing health care. For example, they may prevent their daughters, daughters-in-law, and grandchildren from seeking health services, including future immunization programs against COVID-19. Awareness programs designed for older people should utilize a range of different channels; telecommunications might play a pivotal role here, since older adults are less likely to make an in-person visit to a health care provider. Finally, to reduce and control the infodemic, the government must monitor print and social media to ensure credible and correct information sharing based on evidence and should take legal action against the spread of any fake news, myths or rumors.

Limitations

Our study has several limitations. Although we collected nationwide data to reflect a representative view of misconceptions in Bangladesh, a larger sample would have allowed further stratification of the factors associated with misconceptions. Also, we prepared our sampling frame based on the available household-level information that we have in our repository, therefore presenting the possibility of selection bias towards previously engaged participants. The decision to use telephone interviews to collect data was made to maintain social distancing, but this presents a bias towards telephone owners (people without a telephone were excluded), and people comfortable with speaking on the telephone. Finally, although we conducted a thorough literature review to identify the most prevalent misconceptions regarding COVID-19 in Bangladesh, other misconceptions may exist that were not included in the current study.

Conclusion

Certain misconceptions are held by many older people residing in Bangladesh regarding the spread, prevention, and treatment of COVID-19, which increases the likelihood of disease transmission and mismanagement of COVID-19 in this vulnerable group. These findings can provide insight into and support public health training and awareness activities in this population. Government and other agencies should co-ordinate education activities with consideration of the prevalent misconceptions, and focus on addressing the varied misconceptions, using appropriate channels, media, and

message delivery systems, and applying evidence-based risk communication methods. A holistic health literacy intervention program should be included as part of infodemic management activities to address these misconceptions at individual, household, community, and health care levels.

Data availability

Underlying data

Dataverse. Replication Data for: Misconception of COVID-19 among older adults in Bangladesh. DOI: <https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/AFSPZS>

This project contains the following underlying data:

- Data file 1. Misconceptions of COVID-19 among older adults in Bangladesh

Data are available under the terms of the Creative Commons Zero "No rights reserved" data waiver (CC0 1.0 Public domain dedication).

Extended data

Dataverse, Replication Data for: Misconception of COVID-19 among older adults in Bangladesh. DOI: <https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/AFSPZS>

This project contains the following extended data:

- Copy of the questionnaire in English and Bengali.

Data are available under the terms of the Creative Commons Zero "No rights reserved" data waiver (CC0 1.0 Public domain dedication).

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The introduction is written on COVID. The paper, however, is not on COVID but COVID-related misconceptions. Almost nothing is mentioned in the introduction about COVID-related misconceptions, which is not acceptable.

The tables are not designed well. There is no descriptive table that describes all aspects of the participants and also shows the correlates of each COVID-related misconception item and correlates of overall measure. The current tables are very small and are not informative at all.

We also see some results that should be in fact in the methods section. Test of distribution of the variables should not be presented in the results. That is a part of the methods section.

Given all these issues, the paper needs major revision.

Is the work clearly and accurately presented and does it cite the current literature?

No

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

No

If applicable, is the statistical analysis and its interpretation appropriate?

No

Are all the source data underlying the results available to ensure full reproducibility?

No

Are the conclusions drawn adequately supported by the results?

No

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Public health expert, global health expert, social epidemiologist

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

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