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Slum Dwellers' perception about COVID-19: A Study in Dhaka Metropolis Slums

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Abstract. This research explored Dhaka slum dwellers' (n=434 using convenience, quota, and judgmental sampling) view about COVID-19, its causes, preventive measures, potential high-risk groups, self-awareness, transmission prevention, orthodox beliefs, and vaccine effectiveness using 56 simple variables grouped in eight complex variables. The slum dwellers viewed COVID-19 as a fatal and chronic disease spread by Chinese. They perceive that direct contact with infected persons, cough and sneeze droplets, and physical proximity cause the disease. Regarding preventive measures, they think that they must wear masks, frequently wash hands, face, and feet, use soap or hand sanitizer to wash hands. They assume that hot water gargle, more lime/lemon intake, sunlight exposure, and physical activities can reduce the risk of infection. They also perceive that people of any age bear the risk of contagion; but asthmatic, heart and diabetic patients fall in the high-risk group. The slum people self-protect covering nose and mouth while sneeze and cough, take precaution if tested positive, and maintain social distance. They take this disease seriously, as such, they wear masks, avoid guests, friends, and mass transports. They subscribed that if affected they will be in self-quarantine and follow prescribed movement and lockdown decisions to prevent transmission. They believe that home quarantine is for the infected persons only. Slum residents are found to recognize preventive mechanism and self-awareness tactics; but they are carried away by some religious beliefs like the disease is Allah's will, a curse from Allah, results of our misdeeds, and Allah will save COVID-affected people. Because of their doubt of vaccine effectiveness, they are not quite confident about taking vaccine. Overall, the respondents do not think that they are risk-free. It is found that some of their views are not factual, like COVID-19 is a chronic disease, spread by Chinese; sunrays, hot water gargle reduces risks; lime/lemon intake prevent the disease; or diabetic, asthmatic, and heart patients are at more risks. It is noted that most of the perceptional differences are observed with family types. Nuclear family respondents believe that cold weather causes it and perceive strongly that asthmatic patients are more susceptible to infection. They perceive similar risk of being affected if exposed to a diseased person; however, infected elderly people with comorbidities are more prone to serious illness. They blindly perceive that COVID-19 is all Allah's will. Education wise, the participants differ in their opinion in almost all the variables. Female slum members firmly believe that Chinese has brought the disease; but males are noted to be more self-aware than females. Married slum residents strongly believe that sunlight exposure and physical activities can prevent the disease and hold the misconception that COVID-19 is a curse from Allah and results of all our misdeeds. Irrespective of their literacy level all respondents believe that Allah will save COVID-affected people. Further, occupation-wise slum dwellers have similar viewpoint about preventing the disease and curbing community transmission. Slum residents' opinion related to causes of the disease and vaccination has no association with age and income. Older slum residents are found to be more self-aware and cautious in limiting disease transmission, although they possess stronger orthodox religious views and more dubious about vaccination. Slum dwellers' perception to several aspects of COVID-19 are noticed to be weakly positively related with income, indicating that even when the relatively higher income groups retain views closer to reality, their tendency to be conscious and abide by protective mechanism to reduce risk and control spread of the disease is less as opposed to insolvent slum inhabitants. The factor analysis has found that the grouping variables

...consistent. It is noted that "self-awareness" and "risk reduction" are the most important factors followed by perception regarding COVID-19 vaccine. In short, slum dwellers are not observed to have a very clear idea about COVID-19, its causes, prevention mechanism, etc. They are aware of some methods of self-protection and deterrence of transmission. However, it is to be ensured that they strictly follow the methods to protect themselves and avoid community spread of the disease.

Keywords. Chronic, Covid-19, Fatality, Prevention, Risk reduction, Self-awareness, Slum, Transmission, Vaccine

1.0 Background/issue

Coronavirus disease 2019 (COVID 19), caused by a communicable, deadly, and dangerous coronavirus strain, is the most challenging crisis the world has ever seen (Yang & Wang 2020). From the epicenter Wuhan city in the Hubei Province of China, the rapid outburst of this pneumonia epidemic since December 2020 forced the World Health Organization (WHO) to assess it as a pandemic on 11 March 2020 (WHO 2021c). Since then, the virus has threatened and disrupted the lifestyle, livelihood, regular outdoor and household activities, working pattern and environment along with the physical and mental wellbeing of people around the world. Till date (1 May 2021) there have been 151,803,822 confirmed cases and 3,186,538 loss of lives in 223 countries, areas, or territories around the world (WHO 2021c). After presenting an erratic movement of decreasing new case incidence and increasing death toll since 17 January 2021, however, both statistics were depicting a declining trend up to 15 February 2021 in a row starting from 25 January 2021 in almost all the countries in the world except the Eastern Mediterranean region (WHO 2021e). However, after 15 February 2021 confirmed cases and after 8 March 2021 death cases started to grow again and both figures are still showing an escalating tendency posing great threat to the social and economic condition of many countries around the world. Lately (25 April 2021), the highest number of new cases 2,172,063 has been reported from India indicating a 52% increase from the past week (WHO 2021d).

Bangladesh experienced a slow progress of COVID-19 since its first detection on 8 March 2020 until April 2020. Since then, the cumulative confirmed cases along with fatality began to grow gradually (Islam, Khan, Haque & Mamun 2020), reached a peak on 4 July 2020 and then started to decline with sporadic rises and falls. Detection rate was much lower until mid-February this year. However, the proportion started to grow at a geometric rate from the end of February and reached the peak in April. More than 0.761 million infection and 11,579 death cases have been registered till now (Worldometer 2021). Most of them are in Dhaka metropolis, the capital of Bangladesh (population 2.1 million with a density of 23,234 per sq. km.). Meanwhile, Bangladesh has entered a new era when a nurse of Kurmitola General Hospital, Dhaka received the first shot of Oxford-AstraZeneca vaccine on 27 January 2021. Later, a nationwide immunization against COVID-19 drive was started on 7 February and the second dose inoculation has been started from 8 April 2021. Since the beginning as of 25 April 2021, a total of more than 8.145 million people is vaccinated.

Since, the adversities of the virus are skyrocketing, people need to be careful and cautious to collect enough knowledge and information about Coronavirus disease to follow adequate protective measures, as well as change their behavior and perceptions to safeguard themselves from catching and transmitting the disease. From wearing masks, maintaining social distancing, washing hands to testing and maintaining isolation when symptoms are found, are some of the necessary steps to follow safety rules. The precautions should be maintained even after taking the vaccine as the new wave with different variant may attack anytime. However, there are lots of misinformation and disinformation about this disease even

in the coming days (Cox's Bazar). If so, what will then be the risk among the unprivileged classes of people, e.g., the slum dwellers or the street dwellers of Bangladesh who lack education, awareness, and stable financial position to combat an infectious disease?

The capital, Dhaka, holds more than 1.1 million slum dwellers who are deprived of modern amenities (Anwar, Nasrullah, & Hosen, 2020). The households include maids, rickshaw pullers, taxi drivers, guards, garment workers, etc. Slum residents of each age, gender, education, and income group are at higher risk of morbidity compared to non-slum residents because of their unhygienic living conditions and lower awareness level of preventive care. At the beginning of the pandemic the whole Bangladesh was very worried about the spread of the virus, especially among and through the slum dwellers, garment workers, maids, rickshaw pullers, etc. The rich and middle class totally avoided them thinking that in case this group of people fall ill, there will be very little chance that they would seek for better treatment posing huge threat to their lives and to others' lives as well because of their geographically transient nature.

As a result, the urban poor were in a precarious situation without much work and income (Banik, Rahman, Sikder, & Gozal 2020). Especially, since COVID-19 encounters many myths (BRAC 2020), slum dwellers' health seeking decision or behavior were likely to be considerably influenced by their beliefs, knowledge, and attitudes toward this epidemic turning the slums to be potential virus hubs and devastated by this disease. Local health specialists feared that infection rate would steeply rise in crowded slums because of lack of social distancing as well as poor health and hygiene management system (Basher, Behtarin, Uddin, & Rashid 2021). Interestingly, this prediction seems to be untrue and put the think-tank in a dilemma.

There were minimum reports of fatality and infection among the slum dwellers. These people living in very congested areas were not much affected by COVID-19. They dare to move places with minimum precautions for their livelihood. The infection rate in slums has remained quite low even in the most infected areas of the capital (Mollah & Islam, 2020). A research done by IEDCR (The Institute of Epidemiology Disease Control and Research) in collaboration with icddr,b (International Center for Diarrheal Disease and Research, Bangladesh) and USAID (the United States Agency for International Development) revealed that the occurrence of COVID-19 in Dhaka slums was 5.7% as opposed to 9.8% in Dhaka city (icddr,b 2020).

Basher, Behtarin, Uddin, & Rashid (2021) surveyed three most densely populated slums in Dhaka in July 2020 and mid-August. Astoundingly, they found that there was no case of COVID-19 infection among the slum households in those two rounds of inspection and expected deaths of this disease in Dhaka slums was less than 4 out of 247 respondents (Basher et al., 2021). This surprises many intellectuals, researchers, and health experts. So, the question arises what made the slum residents so daring to face the virus in a very difficult situation of work, income, and livelihood. Keeping these in mind this research tried to explore the slum dwellers perception regarding COVID-19 from different angles.

To understand such issues, it is important to know what this unprivileged group perceive about several aspects of this disease like: understanding of COVID-19, its causes, prevention methods, people at potential risk of being infected, self-awareness, deterrence of transmission, vaccination etc. Alongside it is important to know whether they have faith in some myths related to COVID-19. This study is conducted in the quest of uncovering slum inhabitants' perception regarding such aspects of Corona virus disease.

2.0 Objective

The broad objective of this research is to find out the slum inhabitants' perception about COVID-19. Specifically, this study investigates:

a)   Understanding of slum dwellers about COVID-19, its causes, and prevention mechanism.

b)   Insight of slum dwellers regarding the potential high-risk groups, maintaining self-awareness and blocking disease transmission.

c)   Some orthodox religious beliefs regarding COVID-19.

d)   Opinion of the slum households about COVID-19 vaccine.

3.0 Methodology

The study is conducted using both primary and secondary data and relevant literature reviews. The primary data is collected through a structured questionnaire surveys of slum dwellers (n=434). The final questionnaire is developed through pretesting 20 respondents dwelling in the slum area. Secondary data has been collected from various research articles, reports, websites, and newspaper articles to understand the current scenario of slum dwellers in Bangladesh as well as the overall picture of the COVID-19 pandemic. A rigorous literature survey was undertaken to understand the necessity and application of such perception-based study on slum residents of Dhaka about Coronavirus disease.

A coordination schema is developed to identify the parameter, simple variables, complex variables (Appendix 1). The study identified 56 simple variables grouped into nine complex variables. These 56 variables include 55 explanatory variables and one dependent variable (Table 1). The variables were identified through literature review, talking to knowledgeable persons, health experts, NGO workers, etc. The survey questionnaire is designed based on this schema.

Table 1: Categorization of Independent Variables Regarding COVID-19

A. Understanding of COVID-19:	B. Causes of COVID-19:
1. A fatal disease.	1. Cough and sneeze droplets cause it.
2. Just a mental illusion.	2. Preexisting allergic reaction causes it.
3. Chinese has brought this disease.	3. Exposure to smoke, dust pollution triggers it.
4. Our enemies are responsible for this.	4. Being near to stove/fire causes it.
5. Chronic disease.	5. Physical closeness causes it.
6. Another form of pneumonia.	6. Cold weather causes it.
	7. Direct contact with infected person.
C. Prevention measures (Risk reduction) of COVID-19:	**D. People with potential risk of being infected by COVID-19:**
1. Exposure to sunlight reduces the risk.	1. Males are at more risk.
2. More physical labor can reduce the risk.	2. Apprehension of getting infected increases the chances of being infected.
3. Homeopathic treatment can prevent it.	3. Persons of any age are at risk.
4. Frequently washing hands, face, and feet can prevent COVID-19.	4. Only the aged persons are at risk.
5. Wearing a mask can help not to be infected.	5. Diabetic patients are at more risk.
6. Washing hands with soap water can reduce the risk.	6. Asthmatic patients are at more risk.
7. Hand sanitizer can reduce the risk.	7. Heart patients are at more risk.
8. Taking more lime/lemon can prevent it.	8. Mainly the rich get infected.
9. Hot water gargle reduces the risk.	
E. Self-awareness related to COVID-19:	**F. Preventing spread/ transmission of COVID-19:**

1. Nothing to worry about, no precaution needed. 2. Keep strong mental state. 3. Must be taken seriously for future. 4. Take precautions at home also. 5. Must take vaccine. 6. Take precaution (quarantine) if tested positive. 7. Cover nose and mouth while sneezing & coughing. 8. Need to maintain social distancing.	1. If affected go for self-quarantine. 2. Home quarantine for affected people. 3. Need for lockdown when announced. 4. Always wearing a mask. 5. Avoid guests, friends at home. 6. Avoid travelling in mass transports.
G. Some orthodox religious belief regarding COVID-19: 1. Only bad people are infected. 2. Is all Allah's will. 3. It's a curse from Allah. 4. Result of all our misdeeds. 5. Allah will save COVID affected people.	**H. Perception regarding Covid-19 vaccine**: 1. Vaccine will not protect us from this disease. 2. No need to take COVID-19 vaccine. 3. Vaccine can cause harm to people taking it. 4. Vaccine for rich people. 5. Vaccines will have side effects. 6. Effectiveness of the COVID vaccine is questionable.
I. Overall perception regarding COVID-19 1. Slum dwellers are risk-free.	**N. B.:** **A-H** are independent variables (55) **I** is the dependent variable (1)

A combination of convenience, quota, and judgmental sampling was used for sample selection. This sample size is justifiable with a level of significance of 5%, precision of 5%, and a proportion of 50%. A questionnaire is developed focusing the schema which contains ordinal data questions using 5-point Likert scale to understand the perception of the slum dwellers of Dhaka city about COVID-19 along with nominal data questions to determine different demographic attributes of the samples. Mean index analysis, ANOVA, correlation, regression, t-test, factor analysis, etc., are incorporated to analyze the data. The study used face validity to identify the study variables. Literature review and expert opinions helped to logically determine the items as variables. A high Cronbach's alpha of overall responses (0.874 ≥ 0.7) suggests that the variables had acceptable internal consistencies among them and were reliable (Table 2). As noted, the group-wise Cronbach's alphas are also found quite high except for group E.

Table 2: Reliability test (Cronbach's alpha) Results

Group wise Cronbach's alpha values								
A	B	C	D	E	F	G	H	Overall
0.65	0.60	0.737	0.655	0.392	0.841	0.716	0.782	0.874

This research aims at investigating the perception of the slum dwellers and it is confined to only the slums of Dhaka city, the capital of Bangladesh. Slums of Dhaka accommodate majority of the bottom of the pyramid people. Though Dhaka slum dwellers do not represent the slums of the entire country, but their structure, mobility, versatility, income, dynamism are unique and worth researching. A study about the slum residents of the whole country is outside the scope of this work. This study is limited to the data collected for a period of only two months: February and March 2021. By understanding the views of this group of people,

government, policymakers and society—welfare of Bangladesh can improve health risk communication, as well as strengthen the foundation of public health governance.

4.0   Literature Review

As the global pandemic continues to emerge, it is imperative that people from all classes of society improve knowledge and perceptions regarding COVID-19. According to WHO, the best way to prevent and hold back transmission is to be well-informed about the virus, the disease, and the way it spreads. Farhana and Mannan (2020) found that, a significant proportion of doctors, medical students, public service officers, and people from other professions had deficit of knowledge about symptoms and spread of COVID-19 which is alarming. While urban slums have been recognized as potential risky hives for the spread of viral respiratory infections (Hasan et al. 2021); majority of the slum residents in Bangladesh also have inadequate knowledge of COVID-19 (Bassi et al. 2020; S. Islam et al. 2021).

Even the overly crowded and stuffy slums of Dhaka city are assumed to be gravely impacted by a transmittable disease like COVID-19, the death cases reported in this regard seem to be unexpectedly low (Basher et al. 2021). Basher et al. (2021) proposed two possibilities of the seemingly meager fatality among the slum residents: i) either people from the slum habitats are not getting infected, or ii) are asymptotic and recovering without even recognizing anything. If the assumptions are true, then there lies the question: how they are acquiring such mental strength that is enabling them to combat the deadly virus? Moreover, since it is evident that asymptotic carriers can also take part in rapid transmission (Pal et al. 2020); another question that arises is whether they can escape the devastating effect of spreading the disease? Some of the research findings, in this respect, are narrated below.

4.1   Basics of COVID-19

According to WHO (2021a) Coronavirus disease (COVID-19) is a virulent disease caused by a newly discovered coronavirus SARS-CoV-2. This virus has been found in human for the first time on 31 December 2019 in Wuhan, China and reported to cause viral pneumonia (WHO 2021c). Since then, despite the quick and massive spread of the virus, the death toll remains relatively higher in high income countries compared to the developing countries (Schellekens & Sourrouille 2020). Such observation led many to believe that low-income countries are more invulnerable to COVID-19. However, this has been proved to be a misconception (Roy 2020). Also, there is no such report as only the affluent class gets infected by COVID-19.

Patients affected by the virus are mostly asymptomatic or usually experience mild to moderate respiratory illness and even recover without the need of special treatment. Most people who get COVID-19 recover from it provided symptoms are treated properly (WHO 2021a). Thus, it is not a chronic disease. However, some patients especially elderly or those having underlying comorbidities might develop acute and even fatal complications (Pal et al. 2020, Sarria-Guzmán et al. 2021). WHO is working relentlessly to develop treatments for COVID-19.

4.2   Causes, Risk Reduction, Prevention of Transmission and Self-Awareness

In general, when an infected person coughs or sneezes the virus spreads through respiratory droplets of saliva or discharge from the nose. Thus, a COVID-affected person must follow respiratory etiquettes e.g., covering nose and mouth with a tissue while coughing and sneezing and disposing it in a closed-lid bin immediately. If that is not possible at least such patient should cough or sneeze into a flexed elbow. Moreover, at least 1-meter physical distance must be maintained from others. If such distance cannot be maintained, then people

water, or with a hand sanitizer and avoid touching eyes, nose, and mouth (WHO 2021a).

Cold weather can neither kill corona virus (WHO 2021a), nor cause it. The world health organization reported that there is no convincing evidence that either weather or climate have any strong impact on transmission of SARS-CoV-2 virus. It has been transmitted in all regions of the world, from cold and dry, to hot and humid climates. While temperature and humidity may influence how long the virus survives outside of the human body, this effect is seemingly negligible compared to the degree of contact between people. Physical distancing and washing hands are therefore essential to breaking the chain of transmission, and are the most effective way to protect oneself, in all locations and all seasons of the year.

Further, WHO reports that exposing oneself to sun or high temperature does not prevent nor cure COVID-19 (WHO 2021a), but climate change might indirectly influence the COVID response (WHO 2021f). Nishiura and Mimura (2021) claimed that cold weather can increase the secondary transmission of the virus. Further research may provide conclusive evidence regarding the impact of cold weather in spreading the disease. Physical activity is considered as a critical factor of a healthy lifestyle and many chronic disease prevention (Rahman, Islam, Bishwas, Moonajilin & Gozal 2020). There is evidence that claim more physical exercise/labor can prevent getting infected by COVID-19. Wearing a mask should be made a normal part of being around other people. The appropriate use, storage and cleaning or disposal of masks are essential to make them as effective as possible. Although masks should be used as part of a comprehensive strategy of measures to suppress transmission and save lives, the use of a mask alone is not sufficient to provide an adequate level of protection against COVID-19.

To combat the transmission of COVID-19, non-therapeutic measures like lockdown, travel restriction, social distancing, self-isolation, or quarantine are found to be effective (Islam et al. 2021). Quarantine is used for anyone who is exposed to someone infected with the SARS-CoV-2 virus, whether the infected person has symptoms or not. Quarantined persons must remain separated from others in a facility or at home for 14 days because they have been exposed to the virus and may be infected. In contrast, isolation is used for people with COVID-19 symptoms or who have tested positive for the virus. Being in isolation means being separated from other people, ideally in a medical facility where the patient can receive clinical care. If isolation in a medical facility is not possible and the patient is not in a high-risk group of developing severe disease, isolation can take place at home. If a patient develops symptoms, at least 13 days isolation is required. If someone is infected and does not develop symptoms, 10 days isolation is necessary from the time of being tested positive (WHO 2020).

4.3   People Susceptible to Be Infected by COVID-19

People of any age can get sick with this disease, become seriously ill and even die (WHO 2020). It is commonly believed that infection rate is slightly higher in males compared to females. The reason is males have relatively greater exposure outside. However, people of both genders possess the risk of getting infected if required safety measures are not followed. People aged 60 years and over, and those with underlying medical problems like high blood pressure, heart and lung problems, diabetes, obesity, or cancer, are at higher risk of developing serious illness if they get infected (WHO 2021b). But these diseases are not the cause of COVID-19.

4.4   COVID-19 Vaccination

In addition to managing COVID-19 by different protective mechanism, taking vaccines can prevent people from getting seriously ill or dying from the disease. The vaccine can also provide some protection against new virus variants (WHO 2021b) and it can be an efficient way to diminish the devastating effect of the pandemic and offer remarkable protection to the

effects which indicate that a person's body is building protection. COVID-19 vaccines are also not an exception. However, the side effects are mild or moderate.

5.0   Data analysis and Findings
5.1   Demographic Features of the Respondents

As noted, there are 434 responses from the slum dwellers. Of the total respondents 289 (66.6%) are male and 147 (33.4%) are female. Of them 107 (24.7%) are single and the rest 327 (75.3%) are married. In addition, 204 (47.3%) have a nuclear family[1] and 227 (52.3%) live in a joint or extended family[2]. Education wise 117 (27.1%) has no formal education, 127 (29.4%) has primary education, 92 (21.3%) has secondary education, 53 (12.3%) has primary education and the rest 43 (10.0%) has other educational expertise (e.g., trade certificates).

Profession wise 126 (29.0%) are workers, 55 (12.7%) are maids, 50 (11.5%) are housewives, 49 (11.3%) are day laborers, 36 (8.3%) are drivers, 31 (7.1%) are rickshaw pullers, 27 (6.2%) are shopkeepers, and the rest 60 (13.8%) has other professions. The average age of the respondents is 31.24 years with a deviation of 9.45 years (Range 12 years ~ 93 years). Average income of the respondents is Tk. 12,708.66 with a deviation of Tk. 8,718.07 (Range Tk. 500 ~ Tk. 90,000). Of the total respondents 49 (11.3%) have no formal income.

5.2   Mean Indices of the Simple Variables

The slum dwellers' view regarding COVID-19 are grouped into nine complex variables containing 56 simple variables (Table 3). The nine COVID-19 related complex variables are: i) understanding of COVID-19, ii) causes of COVID-19, iii) prevention measures (risk reduction) of COVID-19, iv) people with potential risk of being infected by COVID-19, v) self-awareness related to COVID-19, vi) preventing spread/ transmission of COVID-19, vii) some orthodox religious belief regarding COVID-19, viii) perception regarding Covid-19 vaccine, ix) overall perception regarding COVID-19. The slum inhabitants' survey is conducted using a 5-point Likert scale representing their viewpoints regarding this disease (1: strongly agree, 2: agree, 3: neutral, 4: disagree, 5: strongly disagree). Based on the responses, the mean indices of all the variables are calculated for testing the research objectives. It is evident from

that excepting eight, the overall mean values of the rest 48 variables are significantly different from 3 (neutral). The detailed group-wise analyses are described below.

Table 3: Mean indices of the variables

Variables	Mean (μ)	Variables	Mean (μ)
A. Understanding of COVID-19		**B. Causes of COVID-19**	
1. A fatal disease.	2.13	1. Cough and sneeze droplets cause it.	2.10
2. Just a mental illusion.	3.51	2. Preexisting allergic reaction causes it.	3.17
3. Chinese has brought this disease.	2.57	3. Exposure to smoke, dust pollution triggers it.*	3.09
4. Our enemies are responsible for this.	3.57	4. Being near to stove/fire causes it.	3.71
5. Chronic disease.	2.82	5. Physical closeness causes it.	2.39
6. Another form of pneumonia.*	2.99	6. Cold weather causes it.*	2.91

		7. Direct contact with infected person.	2.03
C. Prevention measures (Risk reduction) of COVID-19		**D. People with potential risk of being infected by COVID-19**	
1. Exposure to sunlight reduces the risk.	2.76	1. Males are at more risk.*	3.01
2. More physical labor can reduce the risk of it.	2.80	2. Apprehension of getting infected increases the chances of being infected.	3.27
3. Homeopathic treatment can prevent it.	3.35	3. Persons of any age are at risk.	2.25
4. Frequently washing hands, face, and feet can prevent COVID-19.	2.20	4. Only the aged persons are at risk.*	2.94
5. Wearing a mask can help not to be infected.	2.19	5. Diabetic patients are at more risk.	2.64
6. Washing hands with soap water can reduce the risk.	2.21	6. Asthmatic patients are at more risk.	2.33
7. Hand sanitizer can reduce the risk.	2.21	7. Heart patients are at more risk.	2.58
8. Taking more lime/lemon can prevent it.	2.38	8. Mainly the rich get infected.	3.46
9. Hot water gargle reduces the risk.	2.36		
E. Self-awareness related to COVID-19		**F. Preventing spread/transmission of COVID-19**	
1. Nothing to worry about/No precaution needed.	3.77	1. If affected go for self-quarantine.	2.00
2. Strong mental state can prevent death of COVID affected people.*	3.07	2. Home quarantine for affected people.	2.25
3. Must be taken seriously for future.	2.15	3. Need for lockdown when announced.	2.17
4. We must follow the precautions at home also.	2.26	4. Always wearing a mask.	2.40
5. Must take vaccine.	2.41	5. Avoid guests, friends at home.	2.56
6. Take precaution (quarantine) if tested positive.	1.99	6. Avoid travelling in mass transports.	2.48
7. Need to maintain social distancing.	2.14		
8. Cover nose and mouth while sneezing and coughing.	1.89		
G. Some orthodox religious belief regarding COVID-19		**H. Perception regarding Covid-19 vaccine**	
1. Only bad people are infected.	3.65	1. Vaccine will not protect us from this disease.*	2.99
2. Is all Allah's will.	1.99	2. No need to take COVID-19 vaccine.	3.52
3. It's a curse from Allah.	2.78	3. Vaccine can cause harm to people taking it.*	3.02
4. Result of all our misdeeds.	2.68	4. Vaccine for rich people.	3.41

...people.	2.05	5. Vaccines will have side effects.	2.53
		6. Effectiveness of the COVID vaccine is questionable.	2.58
Mean index of the 55 variables in 8 areas (A-H)	2.69		
I. Overall perception regarding COVID-19			
1. Slum dwellers are risk-free.	3.78		
* Not significantly different from 3 (Indifference/neutral)			

1. **Understanding of COVID-19**

The respondents' perception regarding understanding of COVID-19 contains six simple variables. By COVID-19, they mostly mean that it is a fatal disease (2.13), Chinese has brought this disease (2.57), and COVID-19 is a chronic disease (2.82). On the other hand, they are indifferent to the idea that this disease is another form of pneumonia (2.99). They disagree that it is just a mental illusion (3.51), and our enemies are responsible for this (3.57).

2. **Causes of COVID-19**

The survey respondents assented that direct contact with infected person (2.03), cough and sneeze droplet (2.1) and physical closeness (2.39) are the major causes of COVID-19. Though they are indifferent about cold weather (2.91) and smoke or dust pollution (3.09) causing this disease, they disagree that preexisting allergic reaction (3.17) or being near to stove/fire (3.71) can be the potential reason for the disease.

3. **Prevention measures (Risk reduction) of COVID-19**

The respondents ended up with agreement to most of the risk reduction measures except the ability of homeopathic treatment to prevent it (3.35). As the risk reduction techniques, slum dwellers perceive that they must wear masks (2.19), and frequently wash hands, face, and feet (2.2). They feel the same way for the use of soap (2.21) and hand sanitizer (2.21) to clean their hands to get rid of this disease. In addition to these, they acquiesce that hot water gargle (2.36), taking more lime/lemon (2.38), exposure to sunlight (2.76), and more physical labor (2.8) can be some of the prevention measures.

4. **People with potential risk of being infected by COVID-19**

The slum inhabitants who were surveyed perceive that not only asthmatic (2.33), heart (2.58), or diabetic patients (2.64) but also persons of any age are vulnerable to the attack of this disease (2.25). However, no conclusive decision can be drawn related to their belief on whether only the aged persons (2.94), or the males (3.01) bear the potential risk of infection more than that of younger or females. The respondents do not feel that likelihood of getting infected increases with the fear of having this disease (3.27). They disagree that mainly the rich get infected by this disease (3.46).

5. **Self-awareness related to COVID-19**

The participants commonly conform that they will cover nose and mouth while sneezing and coughing (1.89) and take precaution if tested positive (1.99). At the same time, they have little or no objection that COVID-19 must be dealt with utmost importance for future (2.15). As a measure of maintaining self-awareness, they have agreed that they must maintain social distancing (2.14), follow precautions at home as well (2.26) and must take the vaccine (2.41). However, the survey has yielded indecisive result in the case of whether a strong mental state

person (3.07). It is evident that they are also taking this disease seriously disagreeing to the matter that - there is nothing to worry about the disease or no precaution is needed (3.77).

6.   Preventing spread/Transmission of COVID-19

COVID-19 can easily spread by respiratory droplets from an infected person to others. As the preventive measures to avoid the transmission of the disease, the respondents give consent that if affected they will go for self-quarantine (2.00) and abide by lockdown requirements when declared (2.17). However, they think that home-quarantine is not for all rather only for the infected people (2.25). To stop transmission, they feel the necessity to always wear a mask (2.4), avoid travelling in mass transports (2.48), and avoid guests and friends at home (2.56).

7.   Some orthodox religious belief regarding COVID-19

Although the survey result reveals that the slum dwellers are aware of many aspects of COVID-19, at the same time, they foster firm belief on some orthodox religious views like- COVID-19 is all about Allah's will (1.99), Allah will save COVID affected people (2.05), COVID-19 is the outcome of all our misdeeds (2.68), and it is a curse from Allah (2.78). However, they disagree that only bad people are infected by COVID (3.65).

8.   Perception regarding COVID-19 vaccine

Slum inhabitants are not confident about COVID-19 vaccine. They believe that vaccine will have side effects (2.53) and the effectiveness of COVID-19 is debatable (2.58). On the contrary they are yet to decide whether to agree that vaccine will not protect them from the disease (2.99) and it can cause harm to people after vaccination (3.02). They do not agree that the vaccine is for rich people (3.41). They do not get strong motivation in favor of the decision to take the vaccine and cannot deny the necessity of vaccination either (3.52).

9.   Overall perception regarding COVID-19

Overall, the respondents are found to disagree that they are risk-free (3.78).

5.3 Slum Dwellers Perception and COVID-19 Related Facts

In this section the study tried to see the gap between COVID-19 related facts and corresponding slum dwellers perception. The factual data related to each of the 56 statements are collected through literature review, response from the knowledgeable persons and researchers' judgement (Table 4). As noted in 20 out of 56 cases the fact and perception are different. Out of the 20 cases, in eight cases the respondents' perception is indecisive (**). In one case the facts are indecisive (***). The 11 cases (*) where there is clear difference between perception and fact are: i) Chinese has brought this disease, ii) Chronic disease, iii) Exposure to sunlight reduces the risk, iv) Taking more lime/lemon can prevent it, v) Hot water gargle reduces the risk, vi) Diabetic patients are at more risk, vii) Asthmatic patients are at more risk, viii) Heart patients are at more risk, ix) It's a curse from Allah, x) Result of all our misdeeds, and xi) Is all Allah's will.

Table 4: COVID-19 Related Facts and Slum Dwellers' Perception

Variables	Perception	Facts	Variables	Perception	Facts
A. Understanding of COVID-19			**E. Self-awareness related to COVID-19**		
1. A fatal disease.	True	True	1. Nothing to worry about/ No precaution needed.	False	False
2. Just a mental illusion.	False	False	2. Strong mental state can prevent death of COVID affected people.**	Neutral	False
3. Chinese has brought this disease.*	True	False	3. Must be taken seriously for future.	True	True
4. Our enemies are responsible for this.	False	False	4. We must follow the precautions at home also.	True	True
5. Chronic disease.*	True	False	5. Must take vaccine.	True	True
6. Another form of pneumonia.**	Neutral	True	6. Take precaution (quarantine) if tested positive.	True	True
B. Causes of COVID-19			7. Need to maintain social distancing.	True	True
1.Cough and sneeze droplets cause it.	True	True	8. Cover nose and mouth while sneezing & coughing.	True	True
2.Preexisting allergic reaction causes it.	False	False	**F. Preventing spread/ transmission of COVID-19**		
3.Exposure to smoke, dust pollution triggers it.**	Neutral	False	1. If affected go for self-quarantine.	True	True
4.Being near to stove/fire causes it.	False	False	2. Home quarantine is for exposed people and Isolation is for sick people.	True	True
5.Physical closeness (with infected people) causes it.	True	True	3. Need for lockdown when announced	True	True
6.Cold weather causes it.**	Neutral	False	4. Always wearing a mask.	True	True
7.Direct contact with infected person.	True	True	5. Avoid guests, friends at home.	True	True
C. Prevention measures (Risk			6. Avoid travelling in mass transports.	True	True

...COVID-19					
1.Exposure to sunlight reduces the risk.*	True	False	**G. Some orthodox religious belief regarding COVID-19**		
2.More physical labor can reduce the risk of it.***	True	Neutral	1. Only bad people are infected.	False	False
3.Homeopathic treatment can prevent it.	False	False	2. Is all Allah's will.	True	False/ Neutral
4.Frequently washing hands, face, and feet can prevent COVID-19.	True	True	3. It's a curse from Allah.*	True	False
5.Wearing a mask can help not to be infected.	True	True	4. Result of all our misdeeds.*	True	False
6.Washing hands with soap water can reduce the risk.	True	True	5. Allah will save COVID affected people.	True	True
7.Hand sanitizer can reduce the risk.	True	True	**H. Perception regarding Covid-19 vaccine**		
8.Taking more lime/lemon can prevent it.*	True	False	1. Vaccine will not protect us from this disease.**	Neutral	False
9.Hot water gargle reduces the risk.*	True	False	2. No need to take COVID-19 vaccine.	False	False
D. People with potential risk of being infected by COVID-19			3. Vaccine can cause harm to people taking it.**	Neutral	False
1. Males are at more risk (in a sense that they go out frequently).**	Neutral	True	4. Vaccine for rich people.	False	False
2. Apprehension of getting infected increases the chances of being infected.	False	False	5. Vaccines will have side effects.	True	True
3. Persons of any age are at risk.	True	True	6. Effectiveness of the COVID vaccine is questionable.	True	True
4. Only the aged persons are at risk.**	Neutral	False	**I. Overall perception regarding COVID-19**		
5. Diabetic patients are at more risk.*	True	False	1. Slum dwellers are risk-free.	False	False
6. Asthmatic patients are at more risk.*	True	False			
7. Heart patients are at more risk.*	True	False			
8. Mainly the rich get infected.	False	False			

... sunlight, more physical labor, and hot water gargle can reduce the risk, taking more lime/lemon can prevent the disease, aged persons, diabetic, asthma or heart patients are more at risk, etc. The fact is that exposure to sunlight has nothing to do with preventing the disease. On the other hand, extensive physical labor can give a boost to the immune system; however, that does not reduce the risk of being infected. Similarly, hot water gargle can be soothing for a person having sore throat, but it cannot reduce the risk of getting infected. Accordingly, if people believe that by taking more lime/lemon they will not get infected even if they are exposed, then it would be a wrong perception and risky as well. Lemon/lime is a great source of vitamin C which can boost up the immunity and keep the seriousness of the disease mild. But lemon/lime cannot prevent COVID.

The possibilities of getting infected by COVID are the same for patients having diabetes or asthma or heart disease and those who do not have such diseases. However, after getting infected, the chances of developing serious illness, suffering, and fatality are higher for such patients compared to others. People of any age can get sick with this disease, become seriously ill and even die. Another common belief of the slum households living in the Muslim country is that this disease is all Allah's will. Being Muslims, the experts cannot disagree with this statement. On the other hand, being physicians, they could not even agree to such a statement.

5.4 Demography Wise Perceptional Difference of the Responses
A. Gender wise perceptional difference

Difference of perception between male (n=289) and female (n=145) respondents is represented in Appendix 2. It is noted that, all except seven simple variables (i.e., Chinese has brought this disease, persons of any age are at risk, COVID-19 must be taken seriously for future, will take precaution if tested positive, cover nose and mouth while sneezing and coughing, no need to take COVID-19 vaccine, and effectiveness of COVID-19 vaccine is questionable) the gender wise responses are not significantly different at 5% level of significance.

Male and female participants both agree that Chinese has brought this disease. However, females' view (2.34) regarding this matter is stronger than males (2.69). They also agree to the views that persons of any age are at risk and COVID-19 must be taken seriously for future. In both cases, males possess stronger agreement (2.18 and 2.07 respectively) than females (2.40 and 2.30 respectively). Males strongly agree that they will take precaution (quarantine) if tested positive (1.89) and cover nose and mouth while sneezing and coughing (1.82). On the other hand, females agree to these matters (2.18 and 2.03 correspondingly). Respondents of both genders are neutral that there is no need to take COVID-19 vaccine. Males' indifference (3.61) is closer to disagreement than that of females (3.34). Furthermore, male participants are more doubtful (2.64) about the effectiveness of COVID-19 vaccine than female participants (2.44).

1. Perceptional difference based on marital status

Appendix 3 depicts the difference in views between single (n=107) and married (n=327) participants. It is evident that according to marital status as well almost all the responses are not statistically significant at 5% level of significance except nine. The simple variables which are perceived significantly differently by singe and married respondents are- i) exposure to sunlight reduces the risk, ii) more physical labor can reduce the risk of it, iii) males are more at risk iv), apprehension of getting infected increases the chance of getting infected by the disease, v) mainly the rich get infected, vi) it is a curse from Allah, vii) result of all our misdeeds, viii) Allah will save COVID-affected people, ix) vaccine is for rich people.

can lower the chances of being infected while single slum inhabitants are indifferent to such matters (3.02 & 3.16 correspondingly). Considering the risk susceptance of people to the disease, unmarried respondents are indifferent that males possess more danger (3.45) as opposed to the married group who express their consent to this issue (2.87). Nevertheless, married participants cannot draw conclusive decision regarding whether primarily the rich get affected by the disease (3.36) whereas single slumdwellers kind of disagree to such statement (3.75). Under the same complex variable, another variable where the married group (3.19) significantly differ from the single group (3.49) is that the anxiety of getting affected enhances the possibilities of really getting the disease. Though both groups are showing their neutral views, married group is stronger in their perception than the single one.

The survey respondents who are married agree to some conventional beliefs like COVID-19 is a bane to mankind from Allah (2.66) and it is the outcome of all our transgressions (2.60). Moreover, they strongly agree that Allah will protect the COVID affected patients (1.97). The single participants, however, are yet to decide whether it is a curse from Allah (3.15) and consequences of our wrongdoings (2.90). But they agree that Allah will shower His protective blessings upon the COVID patients (2.31).

Both single and married participants are indifferent to the perception that vaccine is for the affluent class. However, the single respondents are somewhat more inclined to disagreement (3.69) than the married group (3.32).

2.   Perceptional difference based on family type

Based on family type (i.e., nuclear and joint), respondents differ in many of the perceptions (27 out of 56) regarding COVID-19 (Appendix 4). The simple variables on which the nuclear (n=204) and joint (n=227) family members significantly differ (α = 5%) are as follows. Regarding understanding of covid-19, both nuclear and joint family holders differ regarding it is just a mental illusion (3.69 versus 3.36), and our enemies are to be blamed for this disease (3.84 versus 3.35). In these two cases, the nuclear family members are more of disagreement than the joint family members.

Regarding causes of COVID-19, in five out of seven cases the two groups differ in their opinion. The nuclear family members are more of disagreement than joint family members regarding the responses to preexisting allergic reaction causes COVID-19 (3.30 vs. 3.04) and exposure to smoke, dust pollution triggers it (3.27 vs. 2.92). Both nuclear and joint family members differ in their agreement that physical closeness is one of the causes of COVID-19. Here the nuclear family members are stronger in their opinion compared to joint family members (2.25 vs. 2.50). Participants from nuclear family group agree (2.75) that cold weather causes this disease as opposed to the respondents from joint family (3.07) who possess neutral views regarding this matter. Slum dwellers who belong to nuclear family comparatively agree more than joint family members that direct contact with infected person is a cause of the disease (1.90 vs. 2.12).

In three preventive/risk reduction measures of COVID-19 the groups differ in responses. Slum dwellers living in a nuclear family comparatively are more in agreement than joint family members that frequently washing hands, face, and feet can prevent COVID-19 (2.07 vs. 2.31). Similar responses from nuclear and joint family members regarding the statements washing hands with soap water can reduce the risk (2.11 vs. 2.31), and hand sanitizer can reduce the possibilities of getting infected (2.01 vs. 2.36) are observed. Regarding people with potential risk of being infected by COVID-19 the nuclear family members are more of disagreement than joint family members concerning variables apprehension of getting sick increases the chances of catching the disease (3.44 vs 3.12) and largely the rich get infected by COVID-19 (3.79 versus 3.16). But, regarding the variable asthmatic patients are at more

paratively stronger views than the neutral ones (2.23 vs. 2.44).

In four self-awareness related to COVID-19 cases the responses of nuclear and joint family differ. Nuclear family members disagree more than the joint family members that nothing to worry about/no precaution needed against the disease (4.07 vs. 3.54). Even though nuclear families are in disagreement that strong mental state can prevent death of COVID affected people, the joint family holders slightly acquiesce with the statement (3.20 vs. 2.96). It is also noted that the nuclear family members more strongly agree than joint family members regarding one should take precautions if tested positive (1.85 vs. 2.10) and one should cover nose and mouth while sneezing & coughing (1.79 vs. 1.96).

In almost all cases (five out of six) noteworthy variation has been found in the perception of nuclear and joint family holders regarding the prevention of transmission of COVID-19 (α=5%). The nuclear family members more strongly agree than joint family members that they will be in self-quarantine if affected (1.83 vs. 2.16), need for home quarantine for affected people (2.10 vs. 2.38), go for lockdown when declared (2.05 vs. 2.29), always wear masks (2.22 vs. 2.56), and avoid travelling in mass transports (2.35 vs 2.61).

In three cases regarding orthodox religious belief related to COVID-19 the two groups differ. The nuclear family members more strongly disagree than joint family members that only bad people are infected by COVID-19 (4.04 vs. 3.30). But the nuclear family members are in more agreement than joint family members that it is all Allah's will (1.87 vs 2.11) and Allah will save COVID affected people (1.92 vs 2.17). In only one case the perception of the two groups regarding COVID-19 vaccine vary. The nuclear family respondents' view toward the variable vaccine is for rich people is more inclined to disagreement than joint family members (3.80 vs 3.08). Overall, the nuclear and joint family members remarkably differ in their opinion that slum dwellers are risk-free. The nuclear family members disagree more than the joint family members regarding this statement (4.01 vs 3.59).

D. **Perceptional Difference Based on Education**

Respondents having different educational backgrounds are found to possess variation in perception about COVID-19. The different educational certificates the respondents have are: no formal education, primary, secondary, higher secondary, and others. Group wise testing of difference of means are done by ANOVA test[3]. The variables that significantly differ with different educational backgrounds are detailed in Appendix 5. Participants with different educational qualification differ significantly in their understanding of COVID-19: a fatal disease, just a mental illusion, and responsibility of our enemies. Regarding causes of COVID-19, the slum dwellers differ in their perception that cough and sneeze droplets, preexisting allergic reaction, closeness to stove/fire, physical proximity, and direct contact with infected persons are the causes of this deadly disease based on their literacy level.

Education wise the slum habitants occupy significantly different opinion in many risk reduction techniques of COVID-19. These include avoiding exposure to sunlight, increasing the level of physical activities, washing hands, face, and feet repeatedly, wearing a mask, washing hands with soap water or hand sanitizer, and gargling with hot water. Regarding people with potential risk of being infected by COVID-19, the education wise variation in perception is found in variables fear of getting infected enhances the risk of being diseased, along with persons of any age, only the elderly people, asthmatic patients, and rich people are susceptible to the disease. In terms of self-awareness related to COVID-19, the participants from different educational background have varying opinion regarding all the eight variables measuring self-awareness related to COVID-19, e.g., no need to bother, strong mental state can prevent death, must be taken seriously for future, must follow precautions at home as well,

tested positive, must maintain social distancing and cover nose and mouth while sneezing and coughing.

Regarding preventing spread/ transmission of COVID-19, noteworthy variation has been observed in the perception of the respondents regarding all the six prevention measures of transmission of COVID-19 centered around education. These are- if affected being self-quarantined, infected people needs to be home quarantined, abiding by lockdown when announced, always wearing a mask, avoiding guests, and friends at home, and avoiding public transport for commuting. Education wise the slum dwellers significantly differ in almost all orthodox religious beliefs regarding COVID-19 except that Allah will save COVID-affected people.

In perception regarding Covid-19 vaccine based on education the respondents expressed difference in views toward five variables measuring their perception regarding COVID-19 vaccine. These are: vaccine will not protect them, no need to take the vaccine, vaccine can cause harm to people taking it, vaccine is for rich/elites, and vaccines will have side effects. Overall, the respondents belonging to all education groups remarkably differ in their opinion that slum dwellers are risk-free.

E. Perceptional difference based on profession

Respondents having different professions are found to vary in perception about COVID-19. Profession wise the respondents are housewife, worker, day laborer, driver, shopkeeper, rickshaw puller, maid, and others. The variables that significantly differ along with different professional status are detailed in Appendix 6. The study noted that slum dwellers of different occupation differ significantly in their understanding of COVID-19 in terms of just a mental illusion, Chinese has brought COVID-19, and responsibility of our enemies. Career-wise the slum dwellers significantly deviate only in the views that preexisting allergic reaction and cold weather are the causes of it. Surprisingly, slum residents of different professional levels possess similar views about the prevention methods of COVID-19.

Slum residents diverge in assuming that fear of getting infected enhances the risk of being diseased. Furthermore, they perceive differently that persons of any age, only the elderly people, diabetic, and asthmatic patients, and the affluent people bear higher risk. Participants from different professional status differ only in the idea that they must take vaccine. According to profession, they do not differ significantly in any of the actions to prevent transmission of the disease. Profession wise the slum dwellers significantly differ in all religious beliefs. People from varying profession have differing views toward five variables measuring their perception regarding COVID-19 vaccine except that vaccine will not protect them from the disease. Finally, participants belonging to all professional groups significantly differ in their opinion that slum dwellers are risk-free.

F. Correlation between perception regarding COVID-19 and age

Pearson's correlation is conducted to observe the correlation between perception about COVID-19 and age. Then the statistically significant correlation coefficients indicate very weak association of perception of COVID-19 with age (Table 5). Except one, all variables are negatively related to age. Among all the variables representing slum dwellers' understanding of COVID-19, only 'just a mental illusion' is found to be statistically significantly correlated to age at 5% level of significance. However, the correlation is weakly positive (0.105). None of the measures depicting the causes of COVID-19 to slum inhabitants is noticed to be significantly correlated to age. Though weak, exposure to sunlight (-0.107) and increasing the level of physical work (-0.147) are found to be negatively correlated to age at 5% and 1% level of significance, respectively. More aged people more strongly perceive that males (-0.118), diabetic (-0.167), asthmatic (-0.172), and heart patients (-0.159) are at more risk.

[...] precaution at home also' and 'cover nose and mouth while coughing and sneezing' is very weakly negatively correlated to age (-0.094 & -0.106). The negative association means the higher the age, the more the tendency to be self-aware. Negative association is noted between some preventive measures of transmission of COVID-19 and age, e.g., if affected go for self-quarantine (-0.150), home quarantine for affected people (-0.103), and need for lockdown when announced (-0.127). This in turn means that younger slum inhabitants are less interested to follow the preventive mechanisms to avoid spread of the disease. Older slum residents are supposed to retain stronger religious views than younger ones since COVID-19 is all Allah's will (-0.209) and Allah will save COVID-affected people (-0.242) are negatively related to age. The statistically significant correlation coefficient of -0.156 can be interpreted as the younger slum dwellers oppose more to the viewpoint – 'COVID-19 vaccine will have side effects' than the older ones. The correlation between slum dwellers are risk-free and age is not statistically significant.

Table 5: Correlation between perception regarding COVID-19 and age

Variables	r_{age}	Variables	r_{age}
A. Understanding of COVID-19		**E. Self-awareness related to COVID-19**	
1. Just a mental illusion.	0.105*	1. We must follow the precautions at home also.	-0.094*
B. Causes of COVID-19		2. Cover nose and mouth while sneezing & coughing.	-0.106*
N/A		**F. Preventing spread/ transmission of COVID-19**	
C. Prevention measures (Risk reduction) of COVID-19		1. If affected go for self-quarantine.	-0.150**
1. Exposure to sunlight reduces the risk.	-0.107*	2. Home quarantine for affected people.	-0.103*
2. More physical labor can reduce the risk of it.	-0.147**	3. Need for lockdown when announced.	-0.127**
D. People with potential risk of being infected by COVID-19		**G. Some orthodox religious belief regarding COVID-19**	
1. Males are at more risk.	-0.118*	1. Is all Allah's will.	-0.209**
2. Diabetic patients are at more risk.	-0.167**	2. Allah will save COVID affected people.	-0.242**
3. Asthmatic patients are at more risk.	-0.172**	**H. Perception regarding Covid-19 vaccine**	
4. Heart patients are at more risk.	-0.159**	1. Vaccines will have side effects.	-0.156**
		I. Overall perception regarding COVID-19	
		N/A	

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

G. Correlation between perception regarding COVID-19 and monthly income

The statistically significant correlation coefficients of the insight of slum households about COVID-19 and monthly income are listed in Table 6. All the measuring variables have

who possess relatively higher income are from the higher income group tend to possess higher level of disagreement that COVID-19 is just a mental illusion (0.350), Chinese has brought the disease (0.237), our enemies are responsible for this (0.402), a chronic disease (0.113), and another form of pneumonia (0.120). Among the seven measures depicting the causes of COVID-19 perceived by slum inhabitants, five are noticed to be significantly correlated to monthly income. They are- cough and sneeze droplets (0.133), preexisting allergic reaction (0.101), exposure to smoke and dust pollution (0.133), cold weather (0.096), and direct contact with the infected person (0.112). Though weak, washing hands with soap water (0.190), taking more lime/lemon (0.126), and gargling with hot water (0.114) are found to be correlated to monthly income. The lower the income, the stronger the agreement regarding the risk reduction methods.

It is also noted that the more the income, the less they perceive that persons of any age (0.116), diabetic (0.106), asthmatic (0.114), and heart patients (0.130) are at more risk. The opinion that 'we will take precaution if tested positive' is very weakly positively correlated to income (0.099). The positive association means the higher the income, the less the propensity to be self-aware. Positive association is detected between some preventive measures of transmission of COVID-19 and monthly income, e.g., home quarantine for affected people (0.099), and need for lockdown when announced (0.099). This in turn means that slum inhabitants who belong to the lower income group are more interested to follow the preventive mechanisms to avoid spread of the disease. Down and out slum residents are observed to hold stronger conventional views than the solvent ones since 'COVID-19 is all our misdeeds' (0.095) is positively related to income.

Table 6: Correlation between perception regarding COVID-19 and monthly income

Variables	r_{income}	Variables	r_{income}
A. Understanding of COVID-19		**D. People with potential risk of being infected by COVID-19**	
1. Just a mental illusion.	0.350**	1. Persons of any age are at risk.	0.116*
2. Chinese has brought this disease.	0.237**	2. Diabetic patients are at more risk.	0.106*
3. Our enemies are responsible for this.	0.402**	3. Asthmatic patients are at more risk.	0.114*
4. Chronic disease.	0.113*	4. Heart patients are at more risk.	0.130**
5. Another form of pneumonia.	0.120*	**E. Self-awareness related to COVID-19**	
B. Causes of COVID-19		1. Take precaution (quarantine) if tested positive.	0.099**
1. Cough and sneeze droplets cause it.	0.133**	**F. Preventing spread/ transmission of COVID-19**	
2. Preexisting allergic reaction causes it.	0.101*	1. Home quarantine for affected people.	0.099*
3. Exposure to smoke, dust pollution triggers it.	0.133**	2. Need for lockdown when announced	0.099*
4. Cold weather causes it.	0.096*	**G. Some orthodox religious belief regarding COVID-19**	
5. Direct contact with infected person.	0.112*	1. Result of all our misdeeds.	0.095*

reduction) of COVID-19		**H.** **Perception regarding Covid-19 vaccine:**	
1. Washing hands with soap water can reduce the risk.	0.190**	N/A	
2. Taking more lime/lemon can prevent it.	0.126**	**I.** **Overall perception regarding COVID-19**	
3. Hot water gargle reduces the risk.	0.114*	N/A	

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

5.5 Grouping the Variables with Factor Analysis

Confirmatory factor analysis (CFA)[4] seeks to determine the number of factors[5] and the loadings[6] of measured variables (indicator) on them to conform to what is expected on the basis of pre-established theory. Factor Analysis was performed on the data to select grouping of variables under common premise. The researcher's a priori assumption is that each factor (the number and labels of which may be specified a priori) is associated with a specified subset of indicator variables. The result from extraction method Principal Component Analysis and Varimax rotated component matrix with Kaiser Normalization[7] grouped the 55 variables into 12 factors that explained 62.029% of the total cumulative variance (Table 7). The 12 factors with corresponding variables and factor loadings are shown in table 8. The high factor loadings in each group shows strong correlation between the factor and the corresponding variables. The factor analysis of 55 variables with 434 sample[8] is found adequate (KMO=0.881≥0.5) and valid (Bartlett's test of sphericity indicates a significance level of 0.000).

Table 7: Total Variance Explained

Components	Initial Eigenvalues	% of Variance	Cumulative %
1	10.132	18.422	18.422
2	7.725	14.046	32.468
3	3.272	5.949	38.416
4	2.109	3.834	42.251
5	1.717	3.121	45.372
6	1.633	2.969	48.341
7	1.484	2.699	51.040
8	1.342	2.440	53.480
9	1.269	2.307	55.786
10	1.257	2.285	58.071
11	1.144	2.080	60.150
12	1.033	1.878	62.029

As can be seen from the table 8, that the first factor (Self-awareness) appears to be the most important as it explains 18.422% of the variability consists of nine of the 55 variables. The second important factor (Risk reduction) explains 14.046% of the variability and consists of six variables. The third factor "Perception regarding Covid-19 vaccine" explains 5.949% of the variability and consists of six variables. Other factors do not seem to be very significant as they explain very low variability. The communalities[5] of the variables that constituted the factors are found very strong, which indicates strong relationships among the variables (Appendix 7).

The factors table 8 showed that the grouping (Eight groups) made from the schema and the variables under the factors are quite consistent. As noted, factor 1 contains most of the

...ed to COVID-19 (Group E)” (5 out of 8). One variable of this group is included in factor 11 and other two are under factor 4. The factor 2 "**Prevention measures/risk reduction of COVID-19 (Group C)**" includes six out of nine variables. One variable of this group is included in factor 12 and other two are included in factor 4. The factor 3 grouped all the variables of "**Perception regarding Covid-19 vaccine (Group H)**" (6 out of 6). The variables of factor 4 and factor 5 mainly focuses "**People with potential risk of being infected by COVID-19 (Group D)**" (7 out of 8). The other variable of this group is included in factor 7.

The variables of factor 6 and factor 7 mainly focuses "**Causes of COVID-19 (Group B)**" (6 out of 7). The other variable of this group is included in factor 5. Factor 8 mainly focuses "**Some orthodox religious belief regarding COVID-19 (Group G)**" (4 out of 5). The other variable of this group is included in factor 1. Factor 9 mainly focuses "**Preventing spread/transmission of COVID-19 (Group F)**" (3 out of 6). The other three variables of this group are included in factor 1. It can be noted that Group E and F are quite close in some respect. Factor 10 mainly focuses "**Understanding of COVID-19 (Group A)**" (3 out of 6). The other variables of this group are included in factor 7.

Table 8: Factors with corresponding variables

Factors with variables (σ^2)	Factor loading	Factors with variables (σ^2)	Factor loading	Factors with variables (σ^2)	Factor loading
Factor 1 (σ^2=18.42%): Self-awareness (1) 5/8		**Factor 3 (σ^2=5.95%): Perception regarding Covid-19 vaccine 6/6 (Cont.)**		**Factor 7 (σ^2=2.70%): Causes of Covid-9 (2) 3/7 (Cont.)**	
Must be taken seriously for future	0.770	Effectiveness of the COVID-19 vaccine is questionable	0.602	Physical closeness causes it	0.643
If affected, go for self-quarantine	0.712	**Factor 4 (σ^2=3.83%): People with potential risk (1) (3/8)**		Direct contact with infected person	0.560
Must follow the precautions at home also	0.707	Males are at more risk	0.739	Chinese has brought this disease	0.529
Take precaution (quarantine) if tested positive	0.665	Apprehension of getting infected increases the chances of being infected	0.620	A fatal disease	0.417
Need for lockdown when announced.	0.646	Strong mental state can help prevent fatality/ infection	0.575	Persons of any age are at risk	0.353
Cover nose and mouth while sneezing and coughing.	0.640	Exposure to sunlight reduces the risk	0.542	**Factor 8 (σ^2=2.44%): Orthodox belief (4/5)**	

...quarantine... for affected people		...physical labor can reduce the risk of it	0.519	COVID-19 ...result of all our misdeeds	
Only bad people are infected	-0.457	Nothing to worry about/ No precaution needed	0.499	It is a curse from Allah	0.723
Must take vaccine	0.426	Mainly the rich get infected	0.437	Allah will save COVID affected people	0.649
Factor 2 (σ²=14.01%): Preventive measures (Risk reduction) (1) (6/9)		**Factor 5 (σ²=3.12%): People with potential risk (2) (4/8)**		Is all Allah's will	0.631
Washing with soap water can reduce the risk	0.732	Diabetic patients are at more risk	0.789	**Factor 9 (σ²=2.31%): Preventing spread (3/7)**	
Frequently washing hands, face, and feet can prevent it	0.619	Heart patients are at more risk	0.782	Avoid guests, friends at home	0.804
Hot water gargle reduces the risk	0.608	Asthmatic patients are at more risk	0.709	Avoid travelling in mass transports	0.659
Use of hand sanitizer can reduce the risk	0.607	Only the aged persons are at risk	.434	Always wearing a mask	0.520
Taking more lime/ lemon can prevent it	0.570	Cold weather causes it	.376	**Factor 10 (σ²=2.29%): Understanding COVID (3/6)**	
Wearing a mask can help not to be infected	0.538	**Factor 6 (σ²=2.97%): Causes of Covid-19 (1) (3/7)**		Another form of pneumonia	0.719
Factor 3 (σ²=5.95%): Perception regarding Covid-19 vaccine (6/6)		Exposure to smoke, dust pollution triggers it	.756	A chronic disease	0.652
No need to take COVID-19 vaccine	0.678	Preexisting allergic reaction causes it	.746	Our enemies are responsible for this	0.371
Vaccine can cause harm to people taking it	0.646	Being near to stove/fire causes it	.725	**Factor 11 (σ²=2.08%): Self-awareness (7/9) (2) (1/8)**	
Vaccine will not protect us from this disease	0.623	Just a mental illusion	.454	Maintain social distance (3-6 feet)	0.439

Vaccine is for only rich/elites		**7** **(σ^2=2.70%): Causes of Covid-9 (2) (3/7)**		**Factor 12 (σ^2=1.88%): Preventive measures (Risk reduction) (2) (6/9)**	
Vaccine will have side effects	0.602	Cough and sneeze droplets cause it	.649	Homeopathic treatment can prevent it	0.584

5.6 Regression Analysis with the Factors

Through factor analysis, we have identified 12 factors as independent variables. Associated with these 12 factors are 55 variables which independently will affect the overall outcome of the research. A regression analysis (enter method) is conducted taking these 12 factors as the independent variable and the **"Slum dwellers are risk-free"** as the dependent one. The model is found significant and the resultant adjusted r^2 came out as 37.0%. The regression factors 5, 6, 7, 8 and 10 are noted to be insignificant at 5% level of significance. The 12 factors that were identified by the factor analysis and their corresponding coefficients are tabulated in Table 9.

Table 9: Regression model with 12 factors

Variables	Coefficients	Standardized Coefficients	Significance (p-value)
(Constant)	3.807	-	0.000
REGR factor score 1	-0.467	-0.379	0.000
REGR factor score 2	-0.140	-0.114	0.004
REGR factor score 3	0.401	0.326	0.000
REGR factor score 4	0.187	0.152	0.000
REGR factor score 5	-0.036	-0.029	0.459*
REGR factor score 6	0.039	0.032	0.415*
REGR factor score 7	0.052	0.042	0.281*
REGR factor score 8	0.081	0.066	0.093*
REGR factor score 9	-0.226	-0.184	0.000
REGR factor score 10	0.030	0.024	0.535*
REGR factor score 11	-0.243	-0.198	0.000
REGR factor score 12	0.176	0.143	0.000
N.B.: Dependent Variable: Slum dwellers are risk-free			

6.0   Summary, conclusion and recommendation

This research attempted to dip into Dhaka metropolis slum dwellers' perception regarding different aspects of COVID-19. Specifically, this study tried to explore slum residents' view about COVID-19, its causes, prevention measures, potential high-risk groups, self-awareness, preventing disease transmission, orthodox beliefs, and effect of vaccines. This study also aims to investigate to what extent the slum households' perception corresponds to facts. The study identified 56 simple variables in this respect which is grouped into eight complex variables. For that purpose, a survey has been conducted among 434 slum dwellers with different demographic features. A combination of convenience, quota, and judgmental sampling was adopted for sample selection. The responses are found reliable and valid.

The slum residents view COVID-19 as a fatal and chronic disease brought by Chinese people. They perceive that direct contact with infected persons, cough and sneeze droplets, and

Regarding preventive measures, they think that they must wear masks, frequently wash hands, face, and feet, use soap or hand sanitizer to wash hands. Furthermore, they assume that hot water gargle, taking more lime/lemon, exposure to sunlight, and more physical activities can reduce the risk of getting infected. Largely, they believe that people of any age bear the risk of catching the disease; but asthmatic, heart and diabetic patients fall in the possible high-risk group.

People living in the slums of Dhaka city are found to follow some techniques of self-protection, e.g., covering nose and mouth while sneezing and coughing, taking precaution if tested positive, maintaining social distancing, etc. They also agree that this disease must be taken seriously to prevent unpleasant occurrence in the future. As such, they consented that they would wear masks, avoid guests and friends at home, and avoid travelling in mass transports. They subscribed that if affected they will be in self-quarantine and abide by government decision of movement control or lockdown to prevent community transmission. However, they believe that home quarantine is not for all rather for the infected persons only.

Even though, slum inhabitants are observed to know preventive mechanism and self-awareness tactics, they are not free from some orthodox religious belief like this disease is all Allah's will, a curse from Allah, results of all our misdeeds, and Allah alone will save COVID-affected people. Because of their perception that vaccine will have side-effects and its effectiveness is questionable, they are not found to be quite confident about taking COVID-19 vaccine. Overall, the respondents do not think that they are risk-free. It is found that some of their views are not factual. Some of these misconceptions include COVID-19 is a chronic disease brought by Chinese; sunrays, hot water gargle can reduce risks; taking lime/lemon can prevent this disease; or diabetic, asthmatic, and heart patients are at more risks.

Based on few demographic parameters (gender, marital status, family type, education, profession) slum dwellers vary in some of their opinion regarding different aspects of COVID-19. Most of the perceptional differences are observed with different family types. Female slum members are observed to believe firmly the myth that Chinese has brought the disease than their male counterparts. On the other hand, males are noted to be more self-aware than females. Married slum residents foster stronger belief than the single ones that exposure to sunlight and more physical activities can prevent the disease which is not actually true. Married group also holds the misconception that COVID-19 is a curse from Allah and results of all our evil deeds.

Slum inhabitants from nuclear family, believe that cold weather is a cause of COVID-19 which is untrue. Compared to joint family members, conjugal family holders also perceive strongly that asthmatic patients are more susceptible to be infected than others which is a common myth. It is to be realized that all have the similar risk of being affected by COVID-19 if exposed to a diseased person. However, after getting infected elderly people having comorbidities are more prone to develop serious illness relative to others without having such complications. Slum dwellers living in nuclear family also blindly perceive that COVID-19 is all Allah's will. Based on education, the participants differ in their opinion in almost all the variables. Nevertheless, irrespective of their literacy level all respondents believe that Allah will save COVID-affected people. Remarkably, slum dwellers of different occupation have similar viewpoint about preventing the disease and curbing community transmission.

Slum residents' perceptions are found to be weakly correlated to age and monthly income. In fact, their opinion related to causes of the disease and vaccination has no association with age and monthly income, respectively. Interestingly, in comparison to younger generation, older slum residents are found to be more self-aware and cautious in limiting disease transmission though they possess stronger orthodox religious views and more dubious about vaccination in fear of side effects. Though weak, slum dwellers' perception related to several aspects of COVID-19 are noticed to be positively associated with income. This in turn indicates that even when the relatively higher income groups retain views closer to reality, their tendency

anism to reduce risk and control spread of the disease is lower as opposed to insolvent slum inhabitants.

The factor analysis has found that the initial grouping of variables made from the schema and the variables found under the factors are quite consistent. It is noted that "self-awareness" is the most important factor containing six of the eight variables. The next important factor is risk reduction followed by perception regarding COVID-19 vaccine. In short, slum dwellers of Dhaka city are not observed to have a very clear idea about COVID-19, its causes, prevention mechanism etc. They are aware of some methods of self-protection and deterrence of transmission. However, it is to be ensured that they strictly follow the methods to protect themselves and avoid community spread of the disease.

Notes

1 A nuclear family, elementary family or conjugal family is a family group consisting of a man and a woman and their children (one or more). It contrasts with a single-parent family, the larger extended family, or a family with more than two parents.

2 Joint families are composed of sets of siblings, theirs spouses, and their dependent children. Extended families include at least three generations: grandparents, married offspring, and grandchildren.

3 For ANOVA, first the results of the Levene statistic are analyzed. If a variable satisfies homogeneity of variance, then it is tested for equality of means. For the variables that do not satisfy homogeneity of variance, the Brown-Forsythe and Welch robust tests for the equality of means are conducted. Usually, both of them yield results in the same direction. If Brown-Forsythe and Welch tests do not yield the same results regarding equality of means, the Post Hoc multiple comparisons (Games-Howell) are checked to ensure the difference in means values. There are many Post Hoc multiple comparison tests. One group is for variables that satisfy homogeneity of variance. Another for those that do not satisfy the condition. One commonly used test for the first group is "Turkey" and one such test for the second group is "Games-Howell".

4 Factor Analysis is a type of analysis used to discern the underlying dimensions or regularity in phenomenon. Its general purpose is to summarize the information contained in a large number of variables into a smaller number of factors. It is an interdependence technique in which all variables are simultaneously considered.

5 Factor is a linear combination of the original variables. Factors also represent the underlying dimensions (constructs) that summarize or account for the original set of observed variables.

6 'Factor Loading' is a measure of the importance of the variable in measuring each factor. It is used for interpreting and labeling a factor. It is the correlation between the original variables and the factors, and key to understanding the nature of a particular factor.

7 Orthogonal refers to the mathematical independence of factor axes to each other (i.e., at right angles, or 90 degrees). Factor rotation is the process of manipulating or adjusting the factor axes to achieve a simpler and pragmatically more meaningful factor solution.

8 Ideally the sample size should be at least 150 (subject to variable ratio greater than 5). The factor analysis of 56 variables with 434 sample is found adequate (KMO test result = 0.881 $\geq$ 0.5) and valid (Bartlett's test of sphericity indicates a significance level of 0.000).

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Appendix 1: Coordination Schema

Parameter	Complex variables	Simple variables
Slum dwellers perception regarding COVID-19	A. Understanding of COVID-19	1. A fatal disease.
		2. Just a mental illusion.
		3. Chinese has brought this disease.
		4. Our enemies are responsible for this.
		5. Chronic disease.
		6. Another form of pneumonia.
	B. Causes of COVID-19	1. Cough and sneeze droplets cause it.
		2. Preexisting allergic reaction causes it.
		3. Exposure to smoke, dust pollution triggers it.
		4. Being near to stove/fire causes it.
		5. Physical closeness causes it.
		6. Cold weather causes it.
		7. Direct contact with infected person.
	C. Prevention measures (Risk reduction) of COVID-19	1. Exposure to sunlight reduces the risk.
		2. More physical labor can reduce the risk of it.
		3. Homeopathic treatment can prevent it.
		4. Frequently washing hands, face, and feet can prevent COVID-19.
		5. Wearing a mask can help not to be infected.
		6. Washing hands with soap water can reduce the risk.
		7. Hand sanitizer can reduce the risk.
		8. Taking more lime/lemon can prevent it.
		9. Hot water gargle reduces the risk
	D. People with potential risk of being infected by COVID-19	1. Males are at more risk.
		2. Apprehension of getting infected increases the chances of being infected.
		3. Persons of any age are at risk.
		4. Only the aged persons are at risk.
		5. Diabetic patients are at more risk.
		6. Asthmatic patients are at more risk.
		7. Heart patients are at more risk.
		8. Mainly the rich get infected.
	E. Self-awareness related to COVID-19	1. Nothing to worry about/ No precaution needed.
		2. Strong mental state can prevent death of COVID affected people.
		3. Must be taken seriously for future.
		4. We must follow the precautions at home also.
		5. Must take vaccine.
		6. Take precautions (quarantine) if tested positive.
		7. Cover nose and mouth while sneezing and coughing.
		8. Need to maintain social distancing.
	F. Preventing spread/ transmission of COVID-19	1. If affected go for self-quarantine.
		2. Home quarantine for affected people.
		3. Need for lockdown when announced.
		4. Always wearing a mask.
		5. Avoid guests, friends at home.
		6. Avoid travelling in mass transports.
	G. Some orthodox religious belief regarding COVID-19	1. Only bad people are infected.
		2. Is all Allah's will.
		3. It's a curse from Allah.
		4. Result of all our misdeeds.
		5. Allah will save COVID affected people.
		1. Vaccine will not protect us from this disease.
		2. No need to take COVID-19 vaccine.

		...ause harm to people taking it.
	regarding Covid-19 vaccine	4. Vaccine for rich people.
		5. Vaccines will have side effects.
		6. Effectiveness of the COVID vaccine is questionable.
	I. Overall perception regarding COVID-19	1. Slum dwellers are risk-free.

Variables	Mean (μ_M, μ_F)	Variables	Mean (μ_M, μ_F)
A. Understanding of COVID-19		**B. Causes of COVID-19**	
1. A fatal disease.	2.07, 2.24	1. Cough and sneeze droplets cause it.	2.08, 2.15
2. Just a mental illusion.	3.57, 3.38	2. Preexisting allergic reaction causes it.	3.22, 3.07
3. Chinese has brought this disease.*	2.69, 2.34	3. Exposure to smoke, dust pollution triggers it.	3.09, 3.08
4. Our enemies are responsible for this.	3.64, 3.42	4. Being near to stove/fire causes it.	3.71, 3.70
5. Chronic disease.	2.84, 2.79	5. Physical closeness causes it.	2.34, 2.49
6. Another form of pneumonia.	3.01, 2.94	6. Cold weather causes it.	2.92, 2.89
		7. Direct contact with infected person.	2.01, 2.06
C. Prevention measures (Risk reduction) of COVID-19		**D. People with potential risk of being infected by COVID-19**	
1. Exposure to sunlight reduces the risk.	2.76, 2.75	1. Males are at more risk.	3.01, 3.00
2. More physical labor can reduce the risk of it.	2.76, 2.88	2. Apprehension of getting infected increases the chances of being infected.	3.24, 3.31
3. Homeopathic treatment can prevent it.	3.34, 3.35	3. Persons of any age are at risk. *	2.18, 2.40
4. Frequently washing hands, face, and feet can prevent COVID-19.	2.15, 2.30	4. Only the aged persons are at risk.	3.00, 2.83
5. Wearing a mask can help not to be infected.	2.16, 2.24	5. Diabetic patients are at more risk.	2.65, 2.61
6. Washing hands with soap water can reduce the risk.	2.23, 2.18	6. Asthmatic patients are at more risk.	2.34, 2.33
7. Hand sanitizer can reduce the risk.	2.22, 2.17	7. Heart patients are at more risk.	2.58, 2.60
8. Taking more lime/lemon can prevent it.	2.39, 2.38	8. Mainly the rich get infected.	3.52, 3.34
9. Hot water gargle reduces the risk.	2.36, 2.36		
E. Self-awareness related to COVID-19		**F. Preventing spread/transmission of COVID-19**	
1. Nothing to worry about/ No precaution needed.	3.82, 3.67	1. If affected go for self-quarantine.	1.94, 2.13
2. Strong mental state can prevent death of COVID affected people.	3.07, 3.06	2. Home quarantine for affected people.	2.20, 2.35
3. Must be taken seriously for future.*	2.07, 2.30	3. Need for lockdown when announced	2.13, 2.27
4. We must follow the precautions at home also.	2.21, 2.37	4. Always wearing a mask.	2.38, 2.43
5. Must take vaccine.	2.35, 2.52	5. Avoid guests, friends at home.	2.58, 2.52
6. We will take precautions if tested positive.*	1.89, 2.18	6. Avoid travelling in mass transports.	2.44, 2.56
7. Cover nose and mouth while sneezing & coughing.*	1.82, 2.03		
8. Need to maintain social distancing.	2.13, 2.15		
G. Some orthodox religious belief regarding COVID-19		**H. Perception regarding Covid-19 vaccine**	
1. Only bad people are infected.	3.72, 3.50	1. Vaccine will not protect us from this disease.	3.00, 2.97
2. Is all Allah's will.	2.03, 1.92	2. No need to take COVID-19 vaccine.*	3.61, 3.34
3. It's a curse from Allah.	2.81, 2.74	3. Vaccine can cause harm to people taking it.	3.08, 2.89
4. Result of all our misdeeds.	2.72, 2.58	4. Vaccine for rich people.	3.45, 3.34
5. Allah will save COVID affected people.	2.09, 1.99	5. Vaccines will have side effects.	2.55, 2.49
		6. Effectiveness of the COVID vaccine is questionable.*	2.64, 2.44
Mean index of the 55 variables in 8 areas (A-H) (2.69)	2.67, 2.68		
I. Overall perception regarding COVID-19:			
1. Slum dwellers are risk-free.	3.85, 3.63		
* Male and female means are significantly different at α= 5%			

...ference based on marital status.

Variables	Mean (μ_S, μ_M)	Variables	Mean (μ_S, μ_M)
A. Understanding of COVID-19		**B. Causes of COVID-19**	
1. A fatal disease.	2.26, 2.09	1. Cough and sneeze droplets cause it.	2.18, 2.08
2. Just a mental illusion.	3.61, 3.47	2. Preexisting allergic reaction causes it.	3.25, 3.14
3. Chinese has brought this disease.	2.64, 2.55	3. Exposure to smoke, dust pollution triggers it.	3.16, 3.06
4. Our enemies are responsible for this.	3.69, 3.53	4. Being near to stove/fire causes it.	3.80, 3.67
5. Chronic disease.	2.93, 2.78	5. Physical closeness causes it.	2.42, 2.38
6. Another form of pneumonia.	3.14, 2.94	6. Cold weather causes it.	3.09, 2.85
		7. Direct contact with infected person.	2.12, 2.00
C. Prevention measures (Risk reduction) of COVID-19:		**D. People with potential risk of being infected by COVID-19:**	
1. Exposure to sunlight reduces the risk.*	3.02, 2.67	1. Males are at more risk.*	3.45, 2.87
2. More physical labor can reduce the risk of it.*	3.16, 2.69	2. Apprehension of getting infected increases the chances of being infected.*	3.49, 3.19
3. Homeopathic treatment can prevent it.	3.29, 3.37	3. Persons of any age are at risk.	2.25, 2.25
4. Frequently washing hands, face, and feet can prevent COVID-19.	2.30, 2.17	4. Only the aged persons are at risk.	3.08, 2.90
5. Wearing a mask can help not to be infected.	2.32, 2.15	5. Diabetic patients are at more risk.	2.79, 2.59
6. Washing hands with soap water can reduce the risk.	2.27, 2.19	6. Asthmatic patients are at more risk.	2.48, 2.29
7. Hand sanitizer can reduce the risk.	2.24, 2.19	7. Heart patients are at more risk.	2.62, 2.57
8. Taking more lime/lemon can prevent it.	2.51, 2.34	8. Mainly the rich get infected.*	3.75, 3.36
9. Hot water gargle reduces the risk.	2.45, 2.33		
E. Self-awareness related to COVID-19		**F. Preventing spread/ transmission of COVID-19**	
1. Nothing to worry about/ No precaution needed.	3.98, 3.70	1. If affected go for self-quarantine.	2.08, 1.98
2. Strong mental state can prevent death of COVID affected people.	3.14, 3.05	2. Home quarantine for affected people.	2.21, 2.26
3. Must be taken seriously for future.	2.02, 2.19	3. Need for lockdown when announced.	2.18, 2.17
4. We must follow the precautions at home also.	2.22, 2.27	4. Always wearing a mask.	2.33, 2.42
5. Must take vaccine.	2.35, 2.43	5. Avoid guests, friends at home.	2.50, 2.58
6. We will take precautions if tested positive.	1.85, 2.03	6. Avoid travelling in mass transports.	2.45, 2.49
7. Cover nose and mouth while sneezing & coughing.	1.93, 1.87		
8. Need to maintain social distancing.	2.23, 2.10		
G. Some orthodox religious belief regarding COVID-19:		**H. Perception regarding Covid-19 vaccine:**	
1. Only bad people are infected.	3.80, 3.59	1. Vaccine will not protect us from this disease.	3.13, 2.94
2. Is all Allah's will.	2.19, 1.93	2. No need to take COVID-19 vaccine.	3.60, 3.49
3. It's a curse from Allah.*	3.15, 2.66	3. Vaccine can cause harm to people taking it.	3.12, 2.98
4. Result of all our misdeeds.*	2.90, 2.60	4. Vaccine for rich people.*	3.69, 3.32
5. Allah will save COVID affected people.*	2.31, 1.97	5. Vaccines will have side effects.	2.66, 2.49
		6. Effectiveness of the COVID vaccine is questionable.	2.66, 2.55
Mean index of the 55 variables in 8 areas (A-H) (2.69)	2.80, 2.66		
I. Overall perception regarding COVID-19:			
1. Slum dwellers are risk-free.	3.62, 3.83		
* Single and married means are significantly different at α= 5%			

fference based on family type

Variables	Mean (μ_N, μ_J)	Variables	Mean (μ_N, μ_J)
A. Understanding of COVID-19		**B. Causes of COVID-19**	
1. A fatal disease.	2.08, 2.16	1. Cough and sneeze droplets cause it.	2.06, 2.12
2. Just a mental illusion.*	3.69, 3.36	2. Preexisting allergic reaction causes it.*	3.30, 3.04
3. Chinese has brought this disease.	2.57, 2.58	3. Exposure to smoke, dust pollution triggers it.*	3.27, 2.92
4. Our enemies are responsible for this.*	3.84, 3.35	4. Being near to stove/fire causes it.	3.81, 3.64
5. Chronic disease.	2.84, 2.81	5. Physical closeness causes it.*	2.25, 2.50
6. Another form of pneumonia.	3.00, 2.98	6. Cold weather causes it.*	2.75, 3.07
		7. Direct contact with infected person.*	1.90, 2.12
C. Prevention measures (Risk reduction) of COVID-19	**2.38, 2.45**	**D. People with potential risk of being infected by COVID-19**	**2.72, 2.72**
1. Exposure to sunlight reduces the risk.	2.76, 2.75	1. Males are at more risk.	3.09, 2.94
2. More physical labor can reduce the risk of it.	2.92, 2.71	2. Apprehension of getting infected increases the chances of being infected.*	3.44, 3.12
3. Homeopathic treatment can prevent it.	3.43, 3.30	3. Persons of any age are at risk.	2.20, 2.30
4. Frequently washing hands, face, and feet can prevent COVID-19.*	2.07, 2.31	4. Only the aged persons are at risk.	2.99, 2.91
5. Wearing a mask can help not to be infected.	2.14, 2.23	5. Diabetic patients are at more risk.	2.59, 2.68
6. Washing hands with soap water can reduce the risk.*	2.11, 2.31	6. Asthmatic patients are at more risk. *	2.23, 2.44
7. Hand sanitizer can reduce the risk.*	2.01, 2.36	7. Heart patients are at more risk.	2.51, 2.65
8. Taking more lime/lemon can prevent it.	2.46, 2.32	8. Mainly the rich get infected.*	3.79, 3.16
9. Hot water gargle reduces the risk.	2.36, 2.35		
E. Self-awareness related to COVID-19	**2.64, 2.58**	**F. Preventing spread/ transmission of COVID-19**	**2.12, 2.37**
1. Nothing to worry about/ No precaution needed.*	4.07, 3.54	1. If affected go for self-quarantine.*	1.83, 2.16
2. Strong mental state can prevent death of COVID affected people.*	3.20, 2.96	2. Home quarantine for affected people.*	2.10, 2.38
3. Must be taken seriously for future.	2.07, 2.22	3. Need for lockdown when announced.*	2.05, 2.29
4. We must follow the precautions at home also.	2.19, 2.32	4. Always wearing a mask.*	2.22, 2.56
5. Must take vaccine.	2.47, 2.34	5. Avoid guests, friends at home.	2.52, 2.61
6. We will take precautions if tested positive.*	1.85, 2.10	6. Avoid travelling in mass transports.*	2.35, 2.61
7. Cover nose and mouth while sneezing & coughing.*	1.79, 1.96		
8. Need to maintain social distancing.	2.07, 2.20		
G. Some orthodox religious belief regarding COVID-19		**H. Perception regarding Covid-19 vaccine**	
1. Only bad people are infected.*	4.04, 3.30	1. Vaccine will not protect us from this disease.	3.04, 2.96
2. Is all Allah's will.*	1.87, 2.11	2. No need to take COVID-19 vaccine.	3.59, 3.46
3. It's a curse from Allah.	2.79, 2.78	3. Vaccine can cause harm to people taking it.	3.06, 2.99
4. Result of all our misdeeds.	2.66, 2.70	4. Vaccine for rich people.*	3.80, 3.08
5. Allah will save COVID affected people.*	1.92, 2.17	5. Vaccines will have side effects.	2.51, 2.55
		6. Effectiveness of the COVID vaccine is questionable.	2.59, 2.57
Mean index of the 55 variables in 8 areas (A-H) (2.69)	2.71, 2.68		
I. Overall perception regarding COVID-19:			
1. Slum dwellers are risk-free.*	4.01, 3.59		
* Neutral and joint means are significantly different at α= 5%			

Table 5: Perceptional difference based on education

Variables	μ_1	μ_2	μ_3	μ_4	μ_5	μ_T	σ_1	σ_2	σ_3	σ_4	σ_5	σ_T
A. Understanding of COVID-19												
2. A fatal disease.	2.51	2.20	1.67	2.02	1.93	**2.12**	1.277	1.092	0.761	1.083	0.985	**1.113**
3. Just a mental illusion.	3.31	3.32	3.84	3.60	3.79	**3.51**	1.290	1.296	1.072	1.391	1.226	**1.271**
4. Our enemies are responsible for this.	3.09	3.32	4.01	4.04	4.09	**3.57**	1.269	1.224	0.908	0.980	1.019	**1.200**
B. Causes of COVID-19												
1. Cough and sneeze droplets cause it.	2.28	2.18	1.96	1.91	1.91	**2.10**	1.035	1.054	1.005	0.946	0.921	**1.02**
2. Preexisting allergic reaction causes it.	2.90	2.99	3.48	3.23	3.63	**3.16**	1.125	1.243	1.041	1.187	0.976	**1.164**
3. Being near to stove/fire causes it.	3.50	3.38	4.08	4.02	4.07	**3.71**	1.134	1.238	0.802	1.152	0.884	**1.124**
4. Physical closeness causes it.	2.80	2.43	2.04	2.17	2.09	**2.38**	1.100	1.102	1.005	1.189	0.947	**1.113**
5. Direct contact with infected person.	2.23	2.11	1.80	1.94	1.81	**2.03**	1.045	1.025	0.952	1.082	0.824	**1.015**
C. Prevention measures (Risk reduction) of COVID-19												
3. Exposure to sunlight reduces the risk.	2.68	2.61	3.02	3.11	2.44	**2.76**	1.097	1.134	1.038	1.121	0.934	**1.101**
4. More physical labor can reduce the risk of it.	2.74	2.59	3.07	2.89	3.00	**2.81**	1.155	1.164	1.046	1.138	1.215	**1.149**
5. Frequently washing hands, face, and feet can prevent COVID-19.	2.57	2.19	1.97	2.09	1.86	**2.20**	0.989	0.862	0.875	0.925	0.710	**0.926**
6. Wearing a mask can help not to be infected.	2.48	2.25	2.03	2.00	1.79	**2.19**	1.080	0.959	0.983	1.074	0.675	**1.010**
7. Washing hands with soap water can reduce the risk.	2.44	2.24	2.12	1.98	2.00	**2.21**	1.046	0.912	0.664	0.866	0.690	**0.892**
8. Hand sanitizer can reduce the risk.	2.44	2.24	2.21	1.92	1.81	**2.21**	1.078	0.849	0.792	0.829	0.664	**0.907**
9. Hot water gargle reduces the risk.	2.62	2.16	2.33	2.40	2.30	**2.36**	1.007	0.811	0.853	0.862	1.124	**0.929**
D. People with potential risk of being infected by COVID-19												
6. Apprehension of getting infected increases the chances of being infected.	2.92	2.96	3.84	3.42	3.72	**3.27**	1.084	1.167	1.269	1.232	1.098	**1.228**
7. Persons of any age are at risk.	2.56	2.33	1.89	2.13	2.09	**2.25**	1.109	1.162	0.943	0.962	0.996	**1.087**
8. Only the aged persons are at risk.	2.79	2.81	3.13	3.25	3.00	**2.95**	1.043	1.207	1.073	1.175	1.291	**1.150**
9. Asthmatic patients are at more risk.	2.45	2.13	2.51	2.21	2.37	**2.33**	0.996	0.912	1.053	1.063	1.215	**1.024**
10. Heart patients are at more risk.	2.81	2.40	2.75	2.26	2.56	**2.59**	1.121	1.021	0.968	0.923	1.161	**1.057**
11. Mainly the rich get infected.	3.02	3.42	3.67	3.77	3.91	**3.46**	1.408	1.455	1.196	1.187	1.130	**1.358**
E. Self-awareness related to COVID-19												

		52	4.23	4.32	4.19	**3.77**	1.252	1.435	1.065	1.052	1.160	**1.308**
2.	Strong mental state can prevent death of COVID affected people.	3.08	2.83	3.52	2.94	2.98	**3.07**	1.115	1.164	1.187	1.082	1.080	**1.160**
3.	Must be taken seriously for future.	2.57	2.19	1.88	1.89	1.77	**2.15**	1.003	0.817	0.929	0.870	0.782	**0.942**
4.	We must follow the precautions at home also.	2.64	2.20	2.09	2.17	1.91	**2.26**	1.062	0.929	0.968	1.069	0.781	**1.006**
5.	Must take vaccine.	2.80	2.41	2.11	2.34	2.07	**2.41**	1.069	0.954	1.162	1.143	1.078	**1.097**
6.	We will take precautions if tested positive.	2.38	2.01	1.75	1.77	1.63	**1.99**	1.049	0.863	0.933	0.933	0.817	**0.970**
7.	Need to maintain social distancing.	2.29	2.19	2.10	2.00	1.81	**2.14**	0.938	0.915	0.878	1.010	0.794	**0.921**
8.	Cover nose and mouth while sneezing & coughing.	2.21	1.86	1.85	1.68	1.47	**1.89**	0.943	0.763	0.645	0.779	0.592	**0.810**
F.	**Preventing spread/ transmission of COVID-19**												
1.	If affected go for self-quarantine.	2.40	1.94	1.87	1.87	1.53	**2.00**	1.026	0.823	0.854	0.921	0.667	**0.924**
2.	Home quarantine for affected people.	2.58	2.19	2.20	2.02	1.95	**2.25**	1.108	0.931	1.030	1.047	0.785	**1.023**
3.	Need for lockdown when announced.	2.50	2.20	2.01	2.06	1.72	**2.17**	1.111	0.938	0.845	1.117	0.734	**1.000**
4.	Always wearing a mask.	2.70	2.44	2.28	2.15	2.05	**2.40**	1.011	1.008	1.009	1.099	0.844	**1.025**
5.	Avoid guests, friends at home.	2.78	2.60	2.42	2.43	2.30	**2.56**	1.060	1.147	0.929	1.118	1.124	**1.081**
6.	Avoid travelling in mass transports.	2.75	2.50	2.37	2.28	2.19	**2.48**	0.986	1.021	0.934	1.007	1.097	**1.013**
G.	**Some orthodox religious belief regarding COVID-19**												
1.	Only bad people are infected.	3.24	3.42	4.04	3.92	4.26	**3.65**	1.311	1.535	1.078	1.371	1.002	**1.365**
2.	Is all Allah's will.	2.11	1.72	2.28	1.94	1.93	**2.00**	1.024	0.940	1.295	1.247	1.163	**1.121**
3.	It's a curse from Allah.	2.67	2.42	2.95	3.25	3.23	**2.78**	1.185	1.231	1.270	1.343	1.192	**1.270**
4.	Result of all our misdeeds.	2.72	2.27	2.75	2.96	3.23	**2.68**	1.283	1.151	1.183	1.427	1.306	**1.276**
H.	**Perception regarding Covid-19 vaccine**												
1.	Vaccine will not protect us from this disease.	2.84	2.93	3.17	2.87	3.42	**3.00**	1.042	1.203	1.219	1.241	1.277	**1.187**
2.	No need to take COVID-19 vaccine.	3.09	3.47	3.87	3.57	3.95	**3.51**	1.111	1.164	1.179	1.083	1.090	**1.172**
3.	Vaccine can cause harm to people taking it.	2.84	2.60	3.48	3.21	3.51	**3.02**	1.106	1.078	1.172	1.081	1.077	**1.161**
4.	Vaccine for rich people.	2.91	3.19	3.85	3.79	4.02	**3.41**	1.265	1.372	1.374	1.199	1.123	1.362
5.	Vaccines will have side effects.	2.53	2.31	2.82	2.66	2.35	**2.53**	0.934	0.932	0.983	1.108	0.923	**0.980**
I.	**Overall perception regarding COVID-19**												
	1. Slum dwellers are risk-free.	3.42	3.68	4.08	4.04	4.12	**3.78**	1.254	1.356	0.963	1.270	1.005	**1.236**

Variables		μ_1	μ_2	μ_3	μ_4	μ_5	μ_6	μ_7	μ_8	μ_T	σ_1	σ_2	σ_3	σ_4	σ_5	σ_6	σ_7	σ_8	σ_T
A.	**Understanding of COVID-19**																		
1.	Just a mental illusion.	3.36	3.86	3.24	3.39	3.52	3.19	3.20	3.62	**3.51**	1.225	1.086	1.234	1.358	1.312	1.250	1.508	1.277	**1.270**
2.	Chinese has brought this disease.	2.64	2.78	2.65	2.47	2.81	2.23	2.04	2.63	**2.57**	0.985	1.338	1.147	1.207	1.360	1.104	1.170	1.164	**1.227**
3.	Our enemies are responsible for this.	3.34	3.84	3.33	3.19	3.63	3.23	3.24	4.05	**3.57**	1.062	1.054	1.191	1.508	1.079	1.104	1.440	0.982	**1.197**
B.	**Causes of COVID-19**																		
1.	Preexisting allergic reaction causes it.	2.86	3.25	2.86	3.03	3.41	2.90	3.18	3.59	**3.17**	1.107	1.088	1.041	1.267	1.152	1.274	1.335	1.069	**1.165**
2.	Cold weather causes it.	2.62	3.13	2.90	2.89	3.22	2.45	2.91	2.82	**2.91**	1.048	1.076	1.016	1.410	1.340	1.060	1.337	1.214	**1.179**
C.	**Prevention measures (Risk reduction) of COVID-19**																		
	No variable has significantly different mean																		
D.	**People with potential risk of being infected by COVID-19**																		
1.	Apprehension of getting infected increases the chances of being infected.	3.12	3.48	2.81	3.28	3.59	2.87	3.07	3.52	**3.27**	1.130	1.151	1.227	1.386	1.185	1.258	1.317	1.142	**1.228**
2.	Persons of any age are at risk.	2.02	2.20	2.67	2.11	2.26	1.87	2.64	2.15	**2.25**	0.714	1.132	1.191	0.979	1.095	0.763	1.324	0.971	**1.086**
3.	Only the aged persons are at risk.	2.71	3.25	2.78	2.69	3.37	2.71	2.53	3.07	**2.94**	0.979	1.065	0.985	1.132	1.182	1.296	1.230	1.216	**1.149**
4.	Asthmatic patients are at more risk.	2.28	2.60	2.51	2.06	2.30	2.00	2.13	2.22	**2.33**	0.904	1.125	0.869	0.955	0.823	0.966	1.001	1.091	**1.027**
5.	Diabetic patients are at more risk.	2.40	3.00	2.63	2.46	2.78	2.26	2.45	2.47	**2.64**	0.700	1.051	0.859	0.950	1.050	0.965	1.051	1.104	**1.015**
6.	Mainly the rich get infected.	3.30	3.86	3.18	3.53	3.30	2.90	3.02	3.70	**3.46**	1.344	1.205	1.439	1.362	1.436	1.248	1.509	1.225	**1.356**
E.	**Self-awareness related to COVID-19**																		
1.	Must take vaccine.	2.28	2.31	2.24	2.39	2.59	2.58	2.93	2.20	**2.41**	0.757	1.156	0.778	1.076	1.083	1.232	1.289	1.070	**1.097**
F.	**Preventing spread/ transmission of COVID-19**																		
	No variable has significantly different mean																		
G.	**Some orthodox religious belief regarding COVID-19**																		
1.	Only bad people are infected.	3.72	3.87	3.14	3.69	3.78	3.23	3.27	4.00	**3.65**	1.262	1.248	1.443	1.390	1.311	1.543	1.581	1.120	**1.364**
2.	Is all Allah's will.	1.98	2.30	2.02	1.83	1.81	1.68	1.58	2.05	**1.99**	1.000	1.208	1.010	1.298	1.039	0.871	0.917	1.171	**1.120**
3.	It's a curse from Allah.	2.69	3.12	2.53	2.28	2.70	2.03	2.56	3.28	**2.78**	1.140	1.170	1.157	1.162	1.325	1.169	1.450	1.223	**1.269**
4.	Result of all our misdeeds.	2.71	3.02	2.39	2.25	2.63	2.06	2.35	3.07	**2.68**	1.225	1.271	1.151	1.156	1.275	1.153	1.220	1.326	**1.275**
5.	Allah will save COVID affected people.	1.96	2.33	2.12	1.69	1.93	1.77	1.84	2.12	**2.05**	0.989	1.257	1.166	0.889	1.238	0.956	1.198	1.166	**1.161**
H.	**Perception regarding Covid-19 vaccine**																		

		3.82	3.43	3.43	3.15	3.65	3.11	3.67	**3.52**	0.895	1.141	1.291	1.119	1.231	1.112	1.329	1.068	**1.172**
2.	Vaccine can cause harm to people taking it.	3.14	3.47	2.88	2.47	2.81	2.52	2.53	3.22	**3.02**	0.990	1.184	1.201	1.082	1.001	0.962	1.103	1.059	**1.159**
3.	Vaccine for rich people.	3.46	3.84	2.96	3.17	3.04	2.77	2.93	3.92	**3.41**	1.216	1.229	1.322	1.521	1.428	1.230	1.476	1.154	**1.360**
4.	Vaccines will have side effects.	2.60	2.87	2.57	2.28	2.26	2.29	2.13	2.50	**2.53**	0.857	1.053	0.979	1.003	0.813	0.783	0.944	0.893	**0.980**
5.	Effectiveness of the COVID vaccine is questionable.	2.63	2.86	2.41	2.44	2.56	2.45	2.09	2.67	**2.58**	0.859	0.817	0.762	1.027	0.751	1.091	1.093	1.020	**0.945**
I.	**Overall perception regarding COVID-19**																		
	Slum dwellers are risk-free.	4.06	3.90	3.78	3.61	3.81	3.90	3.18	3.87	**3.78**	0.890	1.130	1.229	1.178	1.210	1.136	1.634	1.241	**1.233**

Appendix 7: Communalities (Extraction Method: Principal Component Analysis)

Variables	Extraction	Variables	Extraction	Variables	Extraction
1) Mainly the rich get infected	0.548	19) Wearing a mask can help not to be infected	0.563	37) Take precautions if tested positive	0.605
2) A fatal disease	0.487	20) Washing with soap water can reduce the risk	0.664	38) Cover nose and mouth while sneezing and coughing.	0.660
3) Just a mental illusion	0.542	21) Use of hand sanitizer can reduce the risk	0.632	39) If affected go for self-quarantine	0.732
4) Chinese has brought this disease	0.633	22) Taking more lime/lemon can prevent it	0.623	40) Home quarantine for affected people	0.489
5) Our enemies are responsible for this	0.581	23) Hot water gargle reduces the risk	0.687	41) Need for lockdown when announced.	0.661
6) A chronic disease	0.690	24) Maintain social distance (3-6 feet)	0.600	42) Always wearing a mask	0.592
7) Another form of pneumonia	0.590	25) Males are at more risk	0.629	43) Avoid guests, friends at home	0.737
8) Cough and sneeze droplets cause it	0.565	26) Apprehension of getting infected increases the chances of being infected	0.631	44) Avoid travelling in mass transports	0.676
9) Preexisting allergic reaction causes it	0.638	27) Persons of any age are at risk	0.437	45) Only bad people are infected	0.630
10) Exposure to smoke, dust pollution triggers it	0.689	28) Only the aged persons are at risk	0.568	46) Is all Allah's will	0.722
11) Being near to stove/fire causes it	0.618	29) Diabetic patients are at more risk	0.718	47) It is a curse from Allah	0.687
12) Physical closeness causes it	0.536	30) Asthmatic patients are at more risk	0.659	48) COVID-19 is the result of all our misdeeds	0.756
13) Cold weather causes it	0.509	31) Heart patients are at more risk	0.732	49) Allah will save COVID affected people	0.731
14) Avoid direct contact with infected person	0.600	32) Nothing to worry about/ No precaution needed	0.663	50) Vaccine will not protect us from this disease	0.527
15) Exposure to sunlight reduces the risk	0.607	33) Strong mental state can help prevent fatality/infection	0.535	51) No need to take COVID-19 vaccine	0.685
16) More physical labor can reduce the risk of it	0.624	34) Must be taken seriously for future	0.699	52) Vaccine can cause harm to people taking it	0.646
17) Homeopathic treatment can prevent it	0.497	35) Must follow the precautions at home also	0.643	53) Vaccine is for rich/elites	0.641
18) Frequently washing hands, face, and feet can prevent it	0.569	36) Must take vaccine	0.622	54) Corona vaccine will have side effects	0.564
				55) Effectiveness of the COVID-19 vaccine is questionable	0.545