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# Personal Hygiene Concept, Knowledge, and Awareness Regarding COVID-19 among Bangladeshi People

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## Abstract

**Aim:** Novel coronavirus disease 2019 (COVID-19) has emerged as an unknown fallacy that forced into a global pandemic. Only a few vaccines are available for a limited number of people, and most of the population are not vaccinated yet. So, social distancing, proper personal hygiene, and sanitization concepts are the main factors to prevent the spread of this disease. For a densely populated country like Bangladesh, the concepts of social distancing are unpopular, and people are reluctant to follow community health guidelines. This study aimed to understand the personal hygiene concept, knowledge, and awareness of Bangladeshi people against COVID-19. **Subject and Methods:** This cross-sectional study was conducted from March to June 2020 through an online Google survey. Those who answered all the questions were finally included for result calculation (n = 182). The chi-square test was applied to evaluate the correlations among the groups based on education, income level, and occupation. **Results:** The results showed that education level and occupational status play a vital role in awareness about the general symptoms of COVID-19. Students have a lower rate of washing hands for 20 sec than people of other occupations (p = 0.037). The rate of using masks while going outside is not common in the low-income group (p = 0.010). A significant variation was also observed in wearing a mask when income level, education, and occupation were considered to compare among the groups. There was a noteworthy distinction in handwashing frequency and duration of handwashing in different occupation groups of the participants (p = 0.044 and 0.008, respectively). On the other hand, graduates were found comparatively more concerned about maintaining home quarantine and isolation

firmly than others. They know the differences and significance of these two interventions properly. **Conclusion:** More comprehensive education programs could be helpful to enhance the concept of personal hygiene, knowledge, and awareness level of the people for a country like Bangladesh.

## Keywords

Personal Hygiene Concept, Coronavirus, COVID-19, Coronavirus Awareness, Bangladesh

## 1. Introduction

Coronavirus disease 2019 (COVID-19) has risen as an unpredictable and esoteric infectious disease caused by a newly emergent virus, which was outbreak in Wuhan, China, in December 2019 [1] [2]. The novel infection already called 2019-novel coronavirus (2019-nCoV), is assigned as the severe acute respiratory syndrome coronavirus-2 or SARS-CoV-2 shortly [3]. This novel infection is additionally getting to be a mounting risk to the whole world. Genetic sequencing of the virus suggests that SARS-CoV-2 is a betacoronavirus closely linked to the SARS virus [4]. The causative pathogen was identified as a new coronavirus (2019-nCoV), followed by gene sequence analysis and the development of detection methods. Even though the infection is comparable to SARS-CoV and MERS-CoV, it is distinctive. Early cases indicate that it may not be as severe as SARS-CoV and MERS-CoV [4]. However, the rapid increase in incidence and increasing evidence of interpersonal transmission suggest that the virus is more contagious than SARS-CoV and MERS-CoV. Most individuals with COVID-19 create a mild or uncomplicated sickness, including fever, weakness, cough, diarrhea, loss of taste and smell [5] [6]. Roughly 14% develop serious illnesses requiring hospitalization, and they may need medicated oxygen support. Besides, 5% may, too, require admission to an intensive care unit [4].

Coronavirus disease 2019 (COVID-19) virus is spreading rapidly, and scientists are endeavoring to discover drugs for its efficacious treatment. Chloroquine phosphate, an old drug for the treatment of malaria, is shown to have apparent efficacy and acceptable safety against COVID-19 associated pneumonia in multicenter clinical trials conducted in China [7]. First-line therapy for fevers incorporates antipyretic treatment such as Paracetamol, while expectorants such as guaifenesin may be utilized for a non-productive cough [8]. One of the most important commitments we can make to abating down the transmission of COVID-19 and keeping ourselves and our communities secure to wash our hands. Hand cleanliness is presently respected as one of the critical components of disease control exercises [9] [10]. Appropriate handwashing and individual cleanliness practices are fundamental for all, particularly in healthcare settings, where it secures patients and healthcare specialists. Also, it provides specific recommendations to promote improved hand-hygiene practices and reduce the

transmission of pathogenic microorganisms to patients and personnel in healthcare settings [11]. However, when the facility for hand wash is not available, alcohol-based hand sanitizers can play a vital role as an alternative in disinfecting the hands instantly [12] [13]. According to the world health organization (WHO), these hand rubs should contain either 80% (v/v) pharmacopoeial grade or food standard ethanol or 75% (v/v) pharmacopoeial standard isopropyl alcohol to work effectively against this virus. Othercritical pieces of protective equipment are the facemask. The principal function of the mask is to prevent the spread of respiratory particles from the source, such as splashes, saliva, or mucus. Medical or surgical facial masks are characterized as loose-fitting, expendable devices that make a physical boundary between the mouth and nose of the wearer and potential contaminants within the immediate environment [14]. Masks are suggested to be worn by sick people to avoid onward transmission, known by source control [15] [16] [17]. It is also possible that COVID-19 infected patients could transmit the virus before symptoms develop. Moreover, complete vaccination coverage is still challenging due to the availability of vaccines as well as the mutating nature of the virus. Considering these facts, applying nonpharmaceutical intervention and proper self-hygiene practice might be the best possible way to limit the spread of this disease.

Several cross-sectional studies had been performed in Canada, Australia, Ethiopia, India and many other places that have come out with a varying degree of perceptions among the participants [18] [19] [20] [21]. It is evident that, awareness and adherence to basic health measures (hand hygiene, social distancing, avoiding traveling, etc.) are more common among healthcare professionals [22]. Other studies have identified the education level of the subjects as a significant factor for knowledge scores [23]. But, there are limited observations on personal hygiene, knowledge, and awareness concepts among the Bangladeshi population regarding COVID-19. So, this study aimed at finding the scenario in Bangladesh's context. The final result may help to gather information gaps regarding this issue, which may further contribute to understand the present condition of the people of Bangladesh and develop national hygiene policies.

## 2. Methods and Materials

### 2.1. Study Design and Area

An online survey was conducted using Google form to understand the consciousness level among Bangladeshi people on the current outbreak of COVID-19. Only the participants whose residing location is within the geographical area of Bangladesh were enrolled for this study. The survey questionnaire consisted of 21 questions. The study questions were created based on pertinent literature and the international guidelines [5] [24] [25] [26]. Strict adherence to the Helsinki Declaration as changed in 2014 and the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) guidelines were maintained while conducting this study [27] [28]. The online questionnaire form contained the title and narrated

aim of the survey at the start. Participants were communicated to participate in this survey via Facebook messenger, email, WhatsApp, etc. Any individuals from Bangladesh aged 18 years or older who can understand the language of English or Bengali, have internet access, and engage in the study were invited. A total of 182 agreed and participated in this study. The demographic distribution of participants is presented in Table 1.

## 2.2. Time of Study and Question Types

The first COVID-19 patient was identified on March 08, 2020, and the first COVID-19 infection-associated death was reported on March 18, 2020, in Bangladesh. This online survey started on March 27, 2020, and ended on June 5, 2020, which was the very beginning of the pandemic situation in the country. Moreover, the government of Bangladesh declared a countrywide lockdown at this time. People started to change their aseptic or hygiene behavior. The questionnaire was formulated to assess their hygiene concept and perception regarding the COVID-19 situation. All the questions were close-ended except one question that was unstructured open-ended. In close-ended questionnaires, 15 questionnaires were multiple-choice, and two questionnaires were in closed-ended Likert scale format. The questionnaire was constructed to evaluate the people's knowledge regarding this virus and their perception of hygiene necessary to prevent this contagious disease. An attempt was made to assess the knowledge of the Bangladeshi people regarding the common symptoms of COVID-19, technical terminologies used in local and international authorities like "Quarantine" and "Isolation", and management of infants or pregnant women. Six questions were also put in the questionnaire to get an idea about the perception of the people regarding COVID-19 management. The questions were also prepared to measure the implementation of the hygiene guidelines suggested by WHO and local

Table 1. Participants' demographic distribution.

| Variables | Groups | Frequency (%) |
|---|---|---|
| Gender | Female | 69 (38%) |
| | Male | 113 (62%) |
| Monthly Income | <BDT 10,000 | 116 (64%) |
| | ≥BDT 10,000 | 66 (36%) |
| Education | Non-graduated | 80 (44%) |
| | Graduated | 102 (56%) |
| Age | 18 - 25 yrs. | 140 (77%) |
| | 26 - 30 yrs. | 33 (18%) |
| | 31 - 40 yrs. | 9 (5%) |
| Occupation | Students | 116 (64%) |
| | Others | 66 (36%) |

authorities in their daily lives. The questions were in Bangla (the native language of the country), and also, an English translation was provided for the proper understanding of the scientific terminologies.

### 2.3. Ethical Approval

The present survey was conducted following the Declaration of Helsinki and its later amendments or comparable ethical standard. Additionally, before the study was conducted, it received ethical approval from the Jagannath University Research Cell, Bangladesh (reference No. JnURes-002/2020). The objectives, potential benefits, risks, the confidentiality of given responses, etc., were communicated with participants prior to starting the online survey.

### 2.4. Statistical Analysis

M.S. Excel was used as the primary data analysis tool. The response was taken from each responder of a particular question to the questionnaire form, and final results were presented with absolute numbers and percentages. The chi-square test was done by using IBM SPSS Statistics software (version 23).

## 3. Result

A total of 182 participants completed all the questionnaires, among which around two-thirds were Male (62%). Most of the participants were young, aged between 18 - 25 years (77%) and were students in occupation (64%). In case of monthly income, the low income group (<BDT 10,000 monthly income) was predominant and there was almost similar distribution in education level. Among these 182 participants, 85% of responders understand all the common symptoms of COVID-19 properly compared to 15% who did not know about it. Also, participants' overall response to the knowledge and awareness on COVID-19 showed demonstrated that although the situation is new, they are conscious of the impact of this pandemic. The overall response is illustrated in Table 2. Alongside, the distribution of responses about understanding all the common symptoms of COVID-19 by gender, monthly income, education, and occupation are demonstrated in Table 3. There were around 80% of people who believed that they know all the common symptoms of COVID-19. However, Table 3 suggested significant differences ($\chi^2$ = 7.674, p = 0.006) in this understanding between participants regarding education level (below graduation vs. graduated and above). There were no significant differences in gender ($\chi^2$ = 1.020, p = 0.313), monthly income ($\chi^2$ = 0.847, p = 0.357), and occupation ($\chi^2$ = 3.151, p = 0.076) in this understanding.

The distribution of participants' responses to the personal hygiene level in terms of occupation is enlisted in Table 4. In this observation, around 90% of participants use masks when they go outside. Regarding the frequency of hand wash in a day, most of them wash hands 6 - 10 times a day (students 40.5% and others 59.1%). Table 4 showed significant differences in handwashing behavior

**Table 2.** Participants' overall response to the COVID-19 knowledge and awareness.

| Variables | Response | Frequency | Percentage |
|---|---|---|---|
| Do you believe that you understand all the common symptoms of COVID-19 properly? | Yes | 154 | 84.6 |
| | No | 28 | 15.4 |
| When do you use mask? | While going outside | 167 | 91.8 |
| | When meet with someone | 8 | 4.4 |
| | I don't use mask | 7 | 3.8 |
| | Total | 182 | 100 |
| Why do you use mask? | To avoid contamination from any infected person | 34 | 18.7 |
| | To stop spreading infection from me | 11 | 6 |
| | To avoid dust and air pollution | 19 | 10.4 |
| | All of the above | 118 | 64.8 |
| How many times do you wash your hand in a day? | Less than 5 times | 33 | 18.1 |
| | 6 - 10 times | 86 | 47.3 |
| | 11 - 15 times | 25 | 13.7 |
| | More than 15 times | 38 | 20.9 |
| How much time do you take while washing your hand? | 10 sec | 32 | 17.6 |
| | 20 sec | 129 | 70.9 |
| | 30 sec | 21 | 11.5 |
| For hand sanitization, which one should you prefer below? | Normal soap | 60 | 33 |
| | Hand sanitizer | 83 | 45.6 |
| | Anti-bacterial soap | 31 | 17 |
| | Others | 8 | 4.4 |
| How should you feel after washing hand? | Satisfied | 89 | 48.9 |
| | Very satisfied | 83 | 45.6 |
| | Not satisfied | 10 | 5.5 |
| Hand wash and mask are only solution to protect against COVID-19? | Agree | 79 | 43.4 |
| | Neither agree or disagree | 70 | 38.5 |
| | Disagree | 33 | 18.1 |
| What do you think, infants born to mothers with suspected or confirmed COVID-19 infection, should be feed according to standard infant feeding guidelines? | Yes | 69 | 37.9 |
| | May be | 80 | 44 |
| | No | 33 | 18.1 |
| Do you or your family member use any disinfectant while cleaning your room or house? | Yes | 116 | 63.7 |
| | No | 66 | 36.3 |

**Continued**

| | | | |
|---|---|---|---|
| Do you know about Home Quarantine? | Yes | 157 | 86.3 |
| | No | 25 | 13.7 |
| Do you know the difference between the Home Quarantine and Isolation? | Yes | 139 | 76.4 |
| | No | 43 | 23.6 |
| Which of the following should not be done during quarantine? | Going outside | 26 | 14.3 |
| | Not sure | 40 | 22 |
| | Meeting with friends and family member closely | 16 | 8.8 |
| | All of the above | 100 | 54.9 |
| Do you think that you can properly maintain social distancing from other person properly (6 feet from each other)? | Yes | 106 | 58.2 |
| | No | 76 | 41.8 |
| To protect yourself from COVID-19, how many days you should prefer to stay at home quarantine? | 14 days | 65 | 35.7 |
| | 21 days | 13 | 7.1 |
| | Until removal of COVID-19 | 104 | 57.1 |
| Govt. providing information regarding to personal hygiene is enough to prevent COVID-19? | Agree | 80 | 44 |
| | Agree | 39 | 21.4 |
| | Neither agree or disagree | 41 | 22.5 |
| | Disagree | 12 | 6.6 |
| | Strongly disagree | 10 | 5.5 |

**Table 3.** Socio-economic demographic distribution of participants on knowledge of common symptoms of COVID-19.

| | Do you believe that you understand all the common symptoms of COVID-19 properly? | | $\chi^2$ (p-value) |
|---|---|---|---|
| | Yes | No | |
| Gender | | | |
| Female | 56 (81.2%) | 13 (18.8%) | 1.020 (0.313) |
| Male | 98 (86.7%) | 15 (13.3%) | |
| Monthly Income | | | |
| <10,000 | 96 (82.8%) | 20 (17.2%) | 0.847 (0.357) |
| ≥10,000 | 58 (87.9%) | 8 (12.1%) | |
| Education | | | |
| Below graduation | 61 (76.3%) | 19 (23.8%) | 7.674 (0.006)** |
| Graduated and above | 93 (91.2%) | 9 (8.8%) | |
| Occupation | | | |
| Students | 94 (81.0%) | 22 (19.0%) | 3.151 (0.076) |
| Others | 60 (90.9%) | 6 (9.1%) | |

**$p < 0.01$; statistically significant.

**Table 4.** Occupation differences in personal hygiene parameters during the COVID-19 pandemic.

| Question | Occupation (%) | | $\chi^2$ (p value) |
|---|---|---|---|
| | Students | Others | |
| **When do you use a mask?** | | | |
| While going outside | 93.1 | 89.4 | 2.625 (0.269) |
| When meeting with someone | 2.6 | 7.6 | |
| I don't use a mask | 4.3 | 3.0 | |
| **How many times do you wash your hand in a day?** | | | |
| Less than 5 times | 22.4 | 10.6 | |
| 6 - 10 times | 40.5 | 59.1 | 8.084 (0.044)* |
| 11 - 15 times | 12.9 | 15.2 | |
| More than 15 times | 24.1 | 15.2 | |
| **How much time do you take while washing your hand?** | | | |
| 10 sec | 24.1 | 6.1 | 9.597 (0.008)** |
| 20 sec | 64.7 | 81.8 | |
| 30 sec | 11.2 | 12.1 | |
| **For hand sanitization, which one should you prefer below?** | | | |
| Normal soap | 30.2 | 37.9 | |
| Hand sanitizer | 44.8 | 47.0 | 5.567 (0.135) |
| Anti-bacterial soap | 18.1 | 15.2 | |
| Others | 6.9 | 0.0 | |
| **How should you feel after washing your hand?** | | | |
| Satisfied | 52.6 | 42.4 | 1.742 (0.419) |
| Very satisfied | 42.2 | 51.5 | |
| Not satisfied | 5.2 | 6.1 | |
| **Do you or your family member use any disinfectant while cleaning your room or house?** | | | 4.945 (0.026)* |
| Yes | 57.8 | 74.2 | |
| No | 42.2 | 25.8 | |

**p < 0.01, *p < 0.05; statistically significant.

between students and participants from other occupations ($\chi^2$ = 8.084, p = 0.044). Most of the participants spend a minimum of 20 seconds washing their hands (students 64.7% and others 81.8%). However, students significantly spent less time on handwashing ($\chi^2$ = 9.597, p = 0.008). Regarding preference for hand sanitization, around 45% preferred hand sanitizer (students 44.8% and others 47.0%), and roughly one-third chose regular soap (students 30.2% and others 37.9%). After washing hands, almost 94% felt satisfied. Regarding using disinfectants by family members, a significant difference ($\chi^2$ = 4.945, p = 0.026) is observed between students (57.8%) and other occupations (74.2%).

Table 5 shows the participants' responses to the personal hygiene level regarding monthly income (participants had monthly income <10,000 BDT vs.

Table 5. Differences in personal hygiene parameters in income groups.

| Question | Income (%) | | $\chi^2$ (p value) |
|---|---|---|---|
| | <10,000 BDT | ≥10,000 BDT | |
| **When do you use a mask?** | | | |
| While going outside | 92.2 | 90.9 | 9.184 (0.010)* |
| When meeting with someone | 1.7 | 9.1 | |
| I don't use a mask | 6 | 0 | |
| **How many times do you wash your hand in a day?** | | | |
| Less than 5 times | 22.4 | 10.6 | 5.836 (0.120) |
| 6 - 10 times | 41.4 | 57.6 | |
| 11 - 15 times | 14.7 | 12.1 | |
| More than 15 times | 21.6 | 19.7 | |
| **How much time do you take while washing your hand?** | | | |
| 10 sec | 22.4 | 9.1 | 6.533 (0.038)* |
| 20 sec | 64.7 | 81.8 | |
| 30 sec | 12.9 | 9.1 | |
| **For hand sanitization, which one should you prefer below?** | | | |
| Normal soap | 30.2 | 37.9 | 5.318 (0.150) |
| Hand sanitizer | 45.7 | 45.5 | |
| Anti-bacterial soap | 17.2 | 16.7 | |
| Others | 6.9 | 0 | |
| **How should you feel after washing your hand?** | | | |
| Satisfied | 54.3 | 39.4 | 3.982 (0.137) |
| Very satisfied | 41.4 | 53 | |
| Not satisfied | 4.3 | 7.6 | |
| **Do you or your family member use any disinfectant while cleaning your room or house?** | | | |
| Yes | 59.5 | 71.2 | 2.504 (0.114) |
| No | 40.5 | 28.8 | |

*$p < 0.05$; statistically significant.

≥10,000 BDT). There were significant differences in using mask ($\chi^2 = 9.184$, $p = 0.010$) and time spent on washing hands ($\chi^2 = 6.533$, $p = 0.038$). Although the proportion of using masks was almost the same between these groups, 6% of participants in the lower-income group didn't use masks. Similarly, 81.8% of participants in the higher-income group washed their hands for 20 seconds, but this ratio was only 64.7% for participants from the lower-income group.

Table 6 depicts the proportion of personal hygiene levels between participants from two groups regarding their education level (below graduation vs. graduated and above). A significantly large percentage of participants having graduated or completed an above degree (78.4%) spent more time on handwashing in compliance with WHO and government instructions that were 17% higher than non-graduated participants ($\chi^2 = 6.577$, $p = 0.037$).

**Table 6.** Differences in personal hygiene parameters in education groups.

| Question | Education (%) | | $\chi^2$ (p value) |
|---|---|---|---|
| | Below graduation | Graduated and above | |
| **When do you use a mask?** | | | |
| While going outside | 91.3 | 92.2 | 3.316 (0.191) |
| When meeting with someone | 2.5 | 5.9 | |
| I don't use a mask | 6.3 | 2 | |
| **How many times do you wash your hand in a day?** | | | |
| Less than 5 times | 23.8 | 13.7 | 4.247 (0.236) |
| 6 - 10 times | 47.5 | 47.1 | |
| 11 - 15 times | 10 | 16.7 | |
| More than 15 times | 18.8 | 22.5 | |
| **How much time do you take while washing your hand?** | | | |
| 10 sec | 22.5 | 13.7 | 6.577 (0.037)* |
| 20 sec | 61.3 | 78.4 | |
| 30 sec | 16.3 | 7.8 | |
| **For hand sanitization, which one should you prefer below?** | | | |
| Normal soap | 26.3 | 38.2 | 2.924 (0.403) |
| Hand sanitizer | 50 | 42.2 | |
| Anti-bacterial soap | 18.8 | 15.7 | |
| Others | 5 | 3.9 | |
| **How should you feel after washing your hand?** | | | |
| Satisfied | 52.5 | 46.1 | 1.12 (0.571) |
| Very satisfied | 41.3 | 49 | |
| Not satisfied | 6.3 | 4.9 | |
| **Do you or your family member use any disinfectant while cleaning your room or house?** | | | |
| Yes | 57.5 | 68.6 | 2.402 (0.121) |
| No | 42.5 | 31.4 | |

*$p < 0.05$; statistically significant.

In Table 7, the variations in the perception and knowledge of participants regarding COVID-19 in different groups are observed. A significant difference was observed in the income group on the understanding of why participants use masks ($\chi^2 = 9.203$; $p = 0.027$). There was a substantial difference in the occupation group of participants regarding the difference between the Home Quarantine and Isolation ($\chi^2 = 5.727$; $p = 0.017$). Respondents from other occupations were more aware than the students in this regard. The level of education also played a vital role among the participants in this particular topic ($\chi^2 = 15.227$; $p < 0.001$). Participants whose education level was graduation or more tend to know the difference of nearly 40% more than those of below graduation. Also, a vast difference was observed in participants' knowledge of the activities that they

**Table 7.** Variations in perception and knowledge of participants regarding COVID-19.

| Question | Occupation | | | Income Level | | | Education | | |
|---|---|---|---|---|---|---|---|---|---|
| | Students | Others | $\chi^2$ (p value) | <10,000 | ≥10,000 | $\chi^2$ (p value) | Below graduation | Graduated and above | $\chi^2$ (p value) |
| Perception | | | | | | | | | |
| Which media help you to aware you of the most? | | | | | | | | | |
| Online news/Facebook/other social media | 83 (71.6%) | 52 (78.8%) | | 89 (76.7%) | 46 (69.7%) | | 60 (75.0%) | 75 (73.5%) | |
| Friends and Family | 11 (9.5%) | 5 (7.6%) | 4.897 (0.180) | 8 (6.9%) | 8 (12.1%) | 4.928 (0.177) | 7 (8.8%) | 9 (8.8%) | 5.139 (0.162) |
| Newspaper | 6 (5.2%) | 6 (9.1%) | | 5 (4.3%) | 7 (10.6%) | | 2 (2.5%) | 10 (9.8%) | |
| Govt. sources | 16 (13.8%) | 3 (4.5%) | | 14 (12.1%) | 5 (7.6%) | | 11 (13.8%) | 8 (7.8%) | |
| Why do you use a mask? | | | | | | | | | |
| To avoid contamination from any infected person | 24 (20.7%) | 10 (15.2%) | | 23 (19.8%) | 11 (16.7%) | | 17 (21.3%) | 17 (16.7%) | |
| To stop spreading infection from me | 8 (6.9%) | 3 (4.5%) | 6.427 (0.093) | 11 (9.5%) | 0 (0.0%) | 9.203 (0.027)* | 6 (7.5%) | 5 (4.9%) | 7.751 (0.051) |
| To avoid dust and air pollution | 16 (13.8%) | 3 (4.5%) | | 14 (12.1%) | 5 (7.6%) | | 13 (16.3%) | 6 (5.9%) | |
| All of the above | 68 (58.6%) | 50 (75.8%) | | 68 (58.6%) | 50 (75.8%) | | 44 (55.0%) | 74 (72.5%) | |
| Hand wash and mask are the only solutions to protect against COVID-19? | | | | | | | | | |
| Agree | 51 (44.0%) | 28 (42.4%) | | 55 (47.4%) | 24 (36.4%) | | 41 (51.3%) | 38 (37.3%) | |
| Neither agree or disagree | 44 (37.9%) | 26 (39.4%) | 0.047 (0.977) | 40 (34.5%) | 30 (45.5%) | 2.500 (0.286) | 27 (33.8%) | 43 (42.2%) | 3.619 (0.164) |
| Disagree | 21 (18.1%) | 12 (18.2%) | | 21 (18.1%) | 12 (18.2%) | | 12 (15.0%) | 21 (20.6%) | |
| Do you think that you are maintaining social distancing from other person properly (6 feet from each other)? | | | | | | | | | |
| Yes | 72 (62.1%) | 34 (51.5%) | 1.927 (0.165) | 71 (61.2%) | 35 (53.0%) | 1.156 (0.282) | 47 (58.8%) | 59 (57.8%) | 0.015 (0.902) |
| No | 44 (37.9%) | 32 (48.5%) | | 45 (38.8%) | 31 (47.0%) | | 33 (41.3%) | 43 (42.2%) | |
| To protect yourself from COVID-19, how many days should you prefer to stay at home quarantine? | | | | | | | | | |
| 14 days | 38 (32.8%) | 27 (40.9%) | | 37 (31.9%) | 28 (42.4%) | | 28 (35.0%) | 37 (36.3%) | |
| 21 days | 7 (6.0%) | 6 (9.1%) | 2.257 (0.323) | 8 (6.9%) | 5 (7.6%) | 2.257 (0.323) | 3 (3.8%) | 10 (9.8%) | 2.742 (0.254) |
| Until removal of COVID-19 | 71 (61.2%) | 33 (50.0%) | | 71 (61.2%) | 33 (50.0%) | | 49 (61.3%) | 55 (53.9%) | |
| Govt. providing information regarding personal hygiene is enough to prevent COVID-19 | | | | | | | | | |
| Agree | 77 (64.7%) | 42 (35.3%) | | 80 (67.2%) | 39 (32.8%) | | 57 (47.9%) | 62 (52.1%) | |
| Disagree | 14 (63.6%) | 8 (36.4%) | 0.184 (0.912) | 10 (45.5%) | 12 (54.5%) | 3.810 (0.149) | 8 (36.4%) | 14 (63.6%) | 2.170 (0.338) |
| Neither agree or disagree | 25 (61.0%) | 16 (39.0%) | | 26 (63.4%) | 15 (36.6%) | | 15 (36.6%) | 26 (63.4%) | |
| Knowledge | | | | | | | | | |
| What do you think infants born to mothers with suspected or confirmed COVID-19 infection should be feed according to standard infant feeding guidelines? | | | | | | | | | |

**Continued**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Yes | 51 (44.0%) | 18 (27.3%) | 4.980 (0.083) | 48 (41.4%) | 21 (31.8%) | 1.770 (0.413) | 29 (36.3%) | 40 (39.2%) | 0.380 (0.827) |
| May be | 46 (39.7%) | 34 (51.5%) | | 49 (42.2%) | 31 (47.0%) | | 35 (43.8%) | 45 (44.1%) | |
| No | 19 (16.4%) | 14 (21.2%) | | 19 (16.4%) | 14 (21.2%) | | 16 (20.0%) | 17 (16.7%) | |
| Do you know about Home Quarantine? | | | | | | | | | |
| Yes | 98 (84.5%) | 59 (89.4%) | 0.856 (0.355) | 99 (85.3%) | 58 (87.9%) | 0.228 (0.633) | 67 (83.8%) | 90 (88.2%) | 0.761 (0.383) |
| No | 18 (15.5%) | 7 (10.6%) | | 17 (14.7%) | 8 (12.1%) | | 13 (16.3%) | 12 (11.8%) | |
| Do you know the difference between Home Quarantine and Isolation? | | | | | | | | | |
| Yes | 82 (70.7%) | 57 (86.4%) | 5.727 (0.017)* | 84 (72.4%) | 55 (83.3%) | 2.780 (0.095) | 50 (62.5%) | 89 (87.3%) | 15.227 (<0.001)** |
| No | 34 (29.3%) | 9 (13.6%) | | 32 (27.6%) | 11 (16.7%) | | 30 (37.5%) | 13 (12.7%) | |
| Which of the following should not be done during quarantine? | | | | | | | | | |
| Going outside | 12 (10.3%) | 14 (21.2%) | 20.419 (<0.001)** | 13 (11.2%) | 13 (19.7%) | 12.410 (0.006)** | 12 (15.0%) | 14 (13.7%) | 2.633 (0.452) |
| Not sure | 33 (28.4%) | 7 (10.6%) | | 30 (25.9%) | 10 (15.2%) | | 19 (23.8%) | 21 (20.6%) | |
| Meeting with friends and family member closely | 4 (3.4%) | 12 (18.2%) | | 5 (4.3%) | 11 (16.7%) | | 4 (5.0%) | 12 (11.8%) | |
| All of the above | 67 (57.8%) | 33 (50.0%) | | 68 (58.6%) | 32 (48.5%) | | 45 (56.3%) | 55 (53.9%) | |

**p < 0.01, *p < 0.05; statistically significant.

think should not be done during the quarantine. Participants other than students were twice more concerned about not going outside during quarantine ($\chi^2$ = 20.419; p < 0.001). Nearly similar results were observed in income groups where participants of higher-income groups were almost twice more concerned about not going outside during quarantine than those of lower-income groups ($\chi^2$ = 12.410; p = 0.006).

## 4. Discussion

The principal objective of this study was to understand the awareness level, personal hygiene, and sanitization regarding the current outbreak of COVID-19 and what type of knowledge we are conveying about COVID-19 at the first months of the pandemic. In a densely populated country like Bangladesh, this study may determine how knowledgeable the general people are regarding COVID-19, which can act as a prime factor to fight against this disease. The final result may help gather information regarding this issue, which may further contribute to understanding the present condition of the people of Bangladesh and develop our sanitization policies. After screening the online survey, we found a battery of data representing the current perception of personal sanitization regarding COVID-19. The online study was carried out to determine the personal sanitization, knowledge and awareness of the people against COVID-19. Family and govt. sources helped to spread the awareness of COVID-19, but govt. sources may find more scope for information dissemination. Recent studies estimated that this novel coronavirus might stay in the air and on surfaces, which is highly similar to that of SARS. Generally, in Bangladesh, a few people were

used to wear face masks to avoid air pollution before. Still, after the COVID-19 pandemic outbreak, the use of masks to prevent contamination from an infected person has been moderately increased. But the percentage was comparatively low, which could be a potential threat to trigger the rapid transmission of COVID-19. Our study reveals that knowledge and perception of the importance and reason behind wearing a mask depend significantly on the occupational variations, educational level, and monthly earning. There was a significant difference in handwashing frequency and duration of handwashing in different occupation groups of the participants ($p = 0.044$ and 0.008, respectively). Both students and participants of other occupations have a higher proportion of handwashing of 6 - 10 times a day, which is an excellent indication of personal hygiene. Coronavirus can be spread through different particles and objects besides live carriers [29]. It has been highly recommended that cleaning the most frequently used portions of a house and regular household chores are very important in preventing COVID-19. After the Chi-square test, the result depicts that students or their family members were significantly less active in using disinfectants while cleaning rooms or everyday house chores than participants of other occupational categories ($p < 0.05$).

Intending to prevent the spread of this infection, using different hand sanitizers and soaps has started to become familiar. Still, the general people have been ambiguous regarding the effectiveness of these materials to get protection against the virus. They had no clear idea of why they choose those. Both hand sanitizers and soaps are sufficient to kill viruses in distinct ways. In general, soap or detergents contain surfactants, emulsifying agents, and other excipients [30] [31]. Several studies confirmed that surfactants and emulsifying agents are capable of deactivating viruses by entrapping viruses or rupturing the virus envelop or following a simple elution mechanism [32] [33] [34]. Hand sanitizers containing a high concentration of alcohol are also capable of exerting their virucidal activity against enveloped viruses as well as the majority of clinically essential viruses [35] [36]. When handwashing with cleanser and water is inaccessible, applying an adequate sanitizer is suggested to ensure hand cleanliness [37]. This study found that a more significant portion of the participants prefers hand sanitizers over soap water for their hand hygiene. Nevertheless, there are scopes of encouraging people to wash their hands properly with normal soap water more frequently, which is cheap and readily available in their homes and workplaces. Also, personal hygiene knowledge is additionally crucial for those who are living below the poverty level or have low health literacy, perceptions of own risk and the ability to prevent infection may be limited [38]. Urban peoples also fall behind in their basic knowledge of personal sanitization. Unfortunately, People still are oblivious about maintaining social distance.

Moreover, young people have an increased tendency to ignore the care to eliminate the chance of infection. According to the Institute of Epidemiology, Disease Control and Research (IEDCR) in Bangladesh, around 24% of young people are affected by COVID-19 in Bangladesh due to unawareness and lack of

social distancing [15]. This study may help communicate that we need more effort to fight the lack of awareness against COVID-19.

As the pandemic situation is new to the people and available authentic information was also limited, people were reluctant to participate in this study. Moreover, this survey data solely represents the scenario of the participants who have access to the internet. But internet facilities are not still available for the mass number of people living in Bangladesh. It wasn't possible to get the responses of those people who were out of internet facilities. As a result, the observed effect may not be generalizable to the entire population of Bangladesh.

## 5. Conclusion

This survey result depicts that, a significant percentage of people are lack of personal sanitization and hygiene concept, knowledge, and awareness against COVID-19. This study was conducted at the very beginning of the pandemic situation when people were unaware of the broad spectrum symptoms as well the severity of the disease. However, the situation might be changed now, as we have new variants of the virus, which are much more virulent and many people got sick, and died from our surroundings. A proper guideline and self-awareness may control the spreading of COVID-19. Also, the necessity to make people understand more about personal sanitization and knowledge is crucial while developing and implementing national policies. After all, still, personal sanitization and awareness are vital remedies to combat COVID-19.

## Conflicts of Interest

The authors declare that they have no conflict of interest.

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## Appendix

**Personal hygiene concept, knowledge and awareness regarding COVID-19 among Bangladeshi people**

**Please provide the information:**

a) Name: _____

b) Gender: Male/Female/Others (put a tick mark) Email: _____

c) Age: i) 18 - 25 Yrs. ii) 26 - 30 Yrs. iii) 31 - 40 Yrs. iv) 41 - 50 Yrs. v) More than 50 Yrs.

d) Occupation: _____

e) Approximate amount of income (monthly): a) <BDT 10,000 b) BDT 10,000 - 20,000 c) BDT 21,000 - 40,000 d) BDT 41,000 - 60,000 e) BDT 41,000 - 60,000 f) More than BDT 60,000

f) Level of education: a) <S.S.C b) >S.S.C c) >H.S.C d) ≥Graduated

**Please put tick mark on your answers to the following questions:**

1) Do you believe that you understand all the common symptoms of Covid-19 properly?

a) Yes b) No

2) When do you use mask?

a) While going outside

b) When meet with someone

c) I don't use mask

3) Why do you use mask?

a) To avoid contamination from any infected person

b) To stop spreading infection from me

c) To avoid dust and air pollution

d) All of the above

4) How many times do you wash your hand in a day?

a) Less than 5 times

b) 6 - 10 times

c) 11 - 15 times

d) More than 15 times

5) How much time do you take while washing your hand?

a) 10 sec

b) 20 sec

c) 30 sec

6) For hand sanitization, which one should you prefer below?

a) Normal soap

b) Hand sanitizer

c) Anti-bacterial soap

d) Others

7) How should you feel after washing hand?

a) Satisfied

b) Very satisfied

c) Not satisfied

8) Hand wash and mask are only solution to protect against COVID-19?

a) Agree

b) Neither agree or disagree

c) Disagree

9) What do you think, infants born to mothers with suspected or confirmed COVID-19 infection, should be feed according to standard infant feeding guidelines?

a) Yes

b) May be

c) No

10) Do you or your family member use any disinfectant while cleaning your room or house?

a) Yes

b) No

11) Do you know about Home Quarantine?

a) Yes

b) No

12) Do you know the difference between the Home Quarantine and Isolation?

a) Yes

b) No

13) Which of the following should not be done during quarantine?

a) Go outside

b) Not sure

c) Meet with friends and family member closely

d) All of the above

14) Do you think that you are maintaining social distancing from other person properly (6 feet from each other)?

a) Yes

b) No

15) To protect yourself from COVID-19, how many days you should prefer to stay at home quarantine?

a) 14 days

b) 21 days

c) Until removal of COVID-19

16) Govt. providing information regarding to personal hygiene is enough to prevent COVID-19?

a) Agree

b) Disagree

c) Neither agree or disagree

17) Which media help you to aware you the most?

a) Online news/Facebook/other social media

b) Friends and Family

c) Newspaper

d) Govt. sources