

Parental Awareness about Use of Mask and Hand Hygiene Practice of Their Children during COVID-19 Pandemic

Parvin R¹, Akter J², Mahmud S³, Khan M⁴, Mowla MG⁵, Mridha MA⁶

Abstract

A descriptive, cross-sectional study was carried out in the Department of Pediatrics, Shaheed Suhrawardy Medical College Hospital, Dhaka, Bangladesh, between January and August of 2021, to assess the awareness of parents regarding wearing mask and hand washing behavior of their children to prevent COVID-19 infection. A total of 378 parents whose children were admitted in the hospital (aged 2 years to 12 years) due to several diseases other than COVID-19, participated in this study. There was a face-to-face interview for each participant. Data were collected through semi-structured questionnaire. The majority of the participants (66.4%) were male and their income was within BDT.10000-20000 per month. Among the fathers, majority belonged to the age group of >30 years. Regarding their educational background most of them (45.2%) completed education up to secondary level and most of them were service holders (33.9%). Among the mothers, the majority belonged to the age group of 20-30 years and mostly completed their education up to primary level (40.9%) and 75.6% of them were housewives. 83.3% of participants knew that COVID-19 is a contagious disease and 85.2% knew the mode of transmission. A total 72.8% of respondent believed that hand washing can prevent COVID-19, in which 40.5% follow the six steps of hand washing. Only 12% of their children wash hands for at least 20 seconds. 60.8% participants thought that face mask can prevent COVID-19, but only 45.2% participants used to wear face mask. Among them, 73% used to wear surgical face mask. About 33.6% answered that they always reused their face masks. About 59.3% participants noted that their children sometimes wear face mask and 57.1% of their children felt suffocation and discomfort while using face mask. Our study suggests that most of the parents have sufficient knowledge regarding COVID-19 including its mode of transmission and appropriate preventive measures. We also found a positive relationship of maternal education with a consolidated knowledge and awareness as well as practices of hand washing and mask wearing behavior among their children.

CBMJ 2022 January: vol. 11 no. 01 P: 33-40

Keywords: COVID-19, hand washing, mask wearing

Introduction

Severe Acute Respiratory Syndrome Corona virus (SARS CoV-2) is the causative agent of corona virus disease 2019 (COVID-19) which was declared as a global pandemic by the World Health Organization (WHO) on 11th March, 2019.¹ Although Bangladesh detected the first case later than many countries (8th March, 2020), to date (10th October, 2021), 1.5 million cases have been identified including total 27,713 deaths.² The virus is transmitted from person-to-person, primarily through the mouth, nose or eyes via respiratory droplets, aerosols, or fomites.³⁻⁵ It can survive on surfaces for up to 72 hours and touching a contaminated surface

1. *Dr. Rukhsana Parvin; Assistant Professor, Department of Pediatrics, Shaheed Suhrawardy Medical College, Dhaka.*
2. *Dr. Jesmin Akter; Assistant Professor (Neonatology), Sir Salimullah Medical College, Dhaka.*
3. *Dr. Shahabuddin Mahmud; Assistant Professor (Pediatric Nephrology), Shaheed Suhrawardy Medical College, Dhaka.*
4. *Dr. Mohammad Monirul Islam Khan; Assistant Professor, Department of Pediatrics, Shaheed Syed Nazrul Islam Medical College, Kishoreganj.*
5. *Dr. Md Golam Mowla; Associate Professor, Department of Pediatrics, Shaheed Suhrawardy Medical College, Dhaka.*
6. *Prof. Dr. Md Al-Amin Mridha; Professor and Head, Department of Pediatrics, Shaheed Suhrawardy Medical College, Dhaka.*

Address of Correspondence:

Email: rukhsana7498@gmail.com
Mobile: +8801716827470

followed by face touching is another possible route of transmission.^{6,7} Face mask is a plausible mean to reduce transmission of respiratory viruses by minimizing the risk that respiratory droplets will reach wearer's nasal or oral mucosa. Face mask and hand washing are considered as extremely important to slow the spread of infection especially for the time being when vaccines and specific medical treatments are not available.

According to the WHO global surveillance database of laboratory-confirmed cases provided to WHO by member states and other studies, 1-7% of COVID-19 cases are reported to be among children, with relatively few deaths compared to other age groups.^{8,9} The European Centre for Disease Prevention and Control (ECDC) has recently reported the age distribution of COVID-19 among children in the European Union (EU), European Economic Area (EEA) and the United Kingdom (UK); they reported that as of 26 July 2020, 4% of all cases in the EU/EEA and the UK were among children.⁶⁻⁸ According to DGHS in Bangladesh, so far among the confirmed COVID-19 cases, 3% belongs to age < 10 years and 8% belongs to 11-20 years. Among the confirmed COVID-19 cases, 0.82% deaths belong to age <10 years and 1.49% deaths belong to age group 11-20 years.^{9,10,14} This lends concern that children, who may be asymptomatic, may play a role in community transmission of the virus. The fact that children frequently do not display notable disease symptoms, raises the possibility that children could be facilitators of viral transmission.¹⁰

It is recommended by CDC that children younger than 2 years of age having very small airways are not required to wear any type of mask may struggle to breath and are unable to remove the

mask without assistance, therefore at increased risk of suffocation.¹⁵

CDC recognizes that wearing masks may not be possible for some people such as children with certain disabilities, including cognitive, intellectual, developmental, sensory and behavioral disorders.^{11,15} They recommend non-valved, multilayer cloth masks or non-medical disposable masks for community use. Face mask use is most important in indoor spaces and outdoors when physical distance of ≥ 6 feet cannot be maintained.¹¹ For infants, particularly the youngest, social distancing remains together with washing hands and avoiding licking things, the measures of choice to reduce risk of SARS-CoV-2 infection as highlighted by the American Academy of Pediatrics.^{12,13} As wearing mask and hand washing are crucial for preventing COVID-19 amid the pandemic and a few studies regarding children's performance about mask and hand washing are found in our country, the present study aims to analyze the parental awareness about the aforementioned practices.

Methods

This descriptive, cross-sectional study was conducted at inpatient Pediatric Department of Shaheed Suhrawardy Medical College Hospital, Dhaka, Bangladesh, over a period of 8 months between January and August of 2021. A total of 378 parents whose children were admitted in the hospital (aged 2 years to 12 years) due to several diseases other than COVID-19, participated in this study. There was a face-to-face interview for each participant and a written pretested questionnaire with checklist was applied for data collection. Data were collected from parents (father or mother). Parents of children with developmental delay with or without mental

retardation were excluded from the study. The questionnaire contains parental age, education, occupation, monthly income, knowledge about COVID-19 and knowledge regarding mask use and hand washing of themselves as well as their children.

Data were presented as mean \pm SD for continuous variables, while frequency and percentages were used for categorical variables. Chi-square test was performed. P value <0.05 was considered statistically significant. Statistical analysis was done using SPSS version 16.0 for Windows (SPSS Inc, Chicago, IL, USA). The study was approved by the Ethical Review Committee of Shaheed Suhrawardy Medical College Hospital, Dhaka, Bangladesh.

Results

A total of 378 participants were included in this study. The mean age of the participants was 5.4 ± 2.6 yrs. The majority of the participants (66.4%) were male and 66.1% participants were urban residents. The most of the participant's income was within Tk. 10000 – 20000. Among parental participants, the majority belonged to the age group of >30 years (Table-I). In the educational background of fathers, most of the participants (45.4%) completed up to secondary level. For father's occupation, service holders were the most (33.9%), with 19.9% unemployed currently and 18.7% were driver or rickshaw puller. Among maternal participants, the majority belonged to the age group of 20-30 years and most (40.9%) completed their education up to primary level. Most of the mothers were housewife (75.6%) followed by 24.4% service holder. Regarding the knowledge, 83.3% knew that covid-19 is a contagious disease and 85.2% knew about the mode of transmission of COVID-19 (Table-III). Approximately 73% participants reported that hand washing can prevent covid-19,

in which 40.5% follow the six steps of hand washing.

Participants also reported only 12% of their children wash hands for at least 20 seconds (Table-IV). A total 60.8% participants reported that face mask can prevent COVID-19 but regarding mask use 45.2% participants always wear face mask and about 54.8% sometimes and 73% of them wear surgical face mask. About 34% participants answered that they always reuse face mask. 59.3% participants noted that their children sometimes wear face mask but only 35.4% always wear mask (Table-V). Table-VI shows mothers who completed higher secondary or above significantly (52.2% vs. 13.8%, $P < 0.001$) followed hand hygiene rules. The same sequence was observed in mother's who were completed higher secondary or above. Similarly, it also showed mothers who completed at least primary significantly always used mask 31.6% vs. 50.2%; $P < 0.001$ (Table-VI).

Table-I: Demographic characteristics of study respondents (n-378)

Characteristics	Number	Percentage
Age		
Mean \pm SD	5.4 \pm 2.6 years	
Sex		
Male	251	66.4
Female	127	33.6
Residence		
Urban	250	66.1
Rural	128	33.9
Monthly income (BDT)		
>20000	140	37.0
10000 – 20000	199	52.6
<10000	39	10.3

Table-II: Demographic characteristics of parental (n=251) and maternal (n=127) respondents

Characteristics	Number	Percentage
Paternal age in years		
>30	154	61.4
20-30	97	38.6
Paternal educational level		
No education	31	12.4
Primary	87	34.7
Secondary	114	45.4
Higher secondary or above	19	7.6
Paternal working status		
Unemployed	50	19.9
Day labor	35	13.9
Driver or Rickshaw puller	47	18.7
Service holder	85	33.9
Business	34	13.5
Maternal respondent (n=127)		
Maternal age in years		
>30	40	31.5
20-30	87	68.5
Maternal educational level		
No education	16	12.6
Primary	52	40.9
Secondary	51	40.2
Higher secondary or above	8	6.3
Maternal working status		
House wife	96	75.6
Service holder	31	24.4

Table-III: Responses to questions assessing knowledge about COVID-19 (n=378)

Questions	Number	Percentage
Do you know that COVID-19 is a contagious disease?		
Yes	315	83.3
No	63	16.7
Do you know mode of transmission of COVID-19?		
Yes	322	85.2
No	56	14.8

Table-IV: Responses to questions assessing practice of hand hygiene during COVID-19 pandemic (n=378)

Questions	Number	Percentage
Do you know hand washing can prevent COVID-19?		
Yes	275	72.8
No	103	27.2
Do you follow 6 steps of hand washing?		
Yes	153	40.5
No	225	59.5
Does your child practice washing of hands for at least 20 sec?		
Yes	45	11.9
Sometimes	200	52.9
No	133	35.18

Table-V: Responses to questions assessing practice of mask wearing during COVID-19 pandemic (n=378)

Questions	Number(n)	Percentage
Do you use mask?		
Yes	171	45.2
Sometimes	207	54.8
Do you think face mask can prevent COVID-19?		
Yes	230	60.8
Sometimes	144	38.1
No	4	1.1
What type of mask do you use?		
Surgical	276	73.0
Cotton	102	27.0
Do you reuse mask?		
Yes	127	33.6
Sometimes	179	47.4
No	72	19.0
Does your child use mask?		
Yes	134	35.4
Sometimes	224	59.3
No	20	5.3
Does your child feel discomfort wearing mask?		
No	162	42.9
Suffocation or discomfort	216	57.1

Table VI. Comparison of hand hygiene and maternal education (n-378)

Maternal education	Do you follow 6 steps of hand washing?		Total	P value	Do you use mask		Total	P value
	Yes	No			Yes	Sometimes		
No education	19 (12.4%)	49 (21.8%)	68 (18.0%)	0.02 ^s	23 (13.5%)	45 (21.7%)	68 (18.0%)	0.04 ^s
Primary	23 (15.0%)	135 (60.0%)	158 (41.8%)	<0.001 ^s	54 (31.6%)	104(50.2%)	158 (41.8%)	<0.001 ^s
Secondary	89 (52.2%)	31 (13.8%)	120 (31.7%)	<0.001 ^s	73 (42.7%)	47 (22.7%)	120 (31.7%)	0.002 ^s
Higher secondary or above	22 (14.4%)	10 (4.4%)	32 (8.5%)	<0.001 ^s	21 (12.3%)	11 (5.3%)	32 (8.5%)	0.02 ^s
Total	153 (100.0%)	225 (100.0%)	378 (100%)		191 (100.0%)	187 (100.0%)	378 (100%)	

s=significant ($p < 0.05$); Chi-square test was applied to find out the level of significance.

Discussion

Among paternal participants, the majority (61.4%) belonged to the age group of >30 years and they mostly (45.4%) completed their education up to secondary level. About maternal participants, the majority (68.5%) belonged to the age group of 20-30 years and most of them completed their education up to primary level (40.9%) and they were housewife (75.6%) mainly. According to the responses of the participants we found 83.3% of respondent know that covid-19 is a contagious disease and 85.2% of them know the modes of transmission of covid-19. In a Chinese study it was found, most respondents agreed that "COVID-19 virus transmits via respiratory droplets of infected patients" (99.2%) and most (94.3%) believed that uncovered sneezing or cough could spread the virus.¹⁷

Regarding hand washing, approximately 72.8% participants of our study reported that hand washing can prevent covid-19 that is a good practice, in which 40.5% follow the six steps of hand washing. Unfortunately, participants reported that only 12% of their children wash hands for at least 20 seconds. On the other hand in a Chinese study, most respondents (95.7%)

strongly agreed with the statement: "A good handwashing should last for at least 10 seconds." Additionally, most (92.2%) strongly agreed or agreed with the statement: "People should cover their mouth with hands while sneezing and coughing."^{16,17}

Regarding mask use, 45.2% participants of our study always wear face mask and about 54.8% sometimes wear face mask and among them 73% wear surgical face masks. About 33.6% participants answered that they always reuse face mask and about 47.4% sometimes do it. About 59% participants noted that their children sometimes wear face mask and 57% of them experienced suffocation.

A study found that younger people are less willing to comply with wearing face masks than older persons.²² At the same time, in some culture and ethnic groups, e.g., Asians are more likely to wear facemasks than others.²² One study was carried out among primary school children during COVID-19 and reported 51.6% compliance which is nearly consistent with our study,¹⁸ where maternal educational, children's grade, residence i.e. urban were significantly associated with better

mask-wearing behavior. They also showed hand hygiene and mask-wearing behavior education are remarkably beneficial in preventing infectious diseases.¹⁸

In our study, it was shown the mothers who completed the education up to higher secondary or above significantly (52.2% vs. 13.8%, $p < 0.001$) followed hand hygiene rules. A similar trend was observed by Shabbir *et al* regarding hand hygiene (HH); lower the education, higher the odds (AOR = 2.33; CI: 2.11–2.57).¹⁹ Similar findings had been shown that higher wealth index status had a major impact on the handwashing practice. Poorest hand hygiene had 20.4 times high likelihood (AOR = 20.41; CI: 17.68–23.57) not to practice handwashing comparing to the richest HH.¹⁹ Chen *et al* showed only 42.05% of the pupils showed an excellent hand-washing behavior that was influenced by gender, father's occupation and mother's educational background.¹⁸

Our study showed mothers who completed at least primary education significantly always used mask 31.6% vs. 50.2%, $P < 0.001$. A multi-centered study done in Nigeria showed that mothers above 35 years of age, whose husbands are employed and who had high educational status prefer that their children should wear a face mask as a preventive measure against Corona virus infection.²⁰ Concerning the mother's education level, it may be explained as their increased awareness and better understanding of public health measures and their effectiveness, and consequently a higher perception and compliance of the benefits of mask-wearing.^{18,21} This finding is well recognized in several global studies that a good knowledge and positive attitudes towards COVID-19 leads to improve practices of safety measures.¹⁷⁻²⁴ Several factors like low earning, type of

occupation (day laborer mainly) and low status are related with poor knowledge regarding COVID-19 that were found in the studies done in Syria and China.^{16,17} Presumably, more educated, and more prosperous parents may possess more resources and access to information on COVID-19 and in turn, better hygiene practices than parents of lower education and income. These results are consistent with previous studies.^{13,17}

Unfortunately, although more than 83.3% of our study population know that covid-19 is a contagious disease and more than 85.2% have knowledge regarding mode of transmission of covid-19 and 70.8% believed hand washing, 60.8% believed mask uses can prevent COVID-19 consecutively. Among them, only 40.5% follow the six steps of hand washing and reported that about 12% of their children wash hands for at least 20 seconds always and use 35.4% of their kids always wear face mask. A total 81% (34% always and 47% sometimes) of respondents reuse masks and 73% use surgical mask which should be discarded just after use. This indicates there might be a gap between knowledge and practices and we should be aware of the actual exercises of these health hygiene.

Ensuring the handwashing practice and mask wearing may be the most practical options to reduce the COVID-19 spreads in Bangladesh. It will not only prevent the spread of COVID-19 but also highly preventative to diarrheal diseases and respiratory illness.²³ A limitation of this study is that the study findings have all been self-reported by the parents, which may introduce recall bias. Moreover, our sample size was small; hence, the results may not be generalized.

Conclusion

Our study suggests that most of the parents have a good knowledge about the new disease, COVID-19 and its mode of transmission and the preventive measures that include proper hand washing and mask wearing. But practices of proper hand washing and mask wearing behavior are not satisfactory among them including their children. But we found a positive relationship of maternal education with a good knowledge and awareness of hand washing and mask wearing behavior.

References

1. Tobaiqy M, Qashqary M, Al-Dahery S, Mujallad A, Hershan AA, Kamal MA, et al. Therapeutic management of patients with COVID-19: a systematic review. *Infect Prev Pract*. 2020;2(3):100061.
2. Worldometer. WORLD (CORONAVIRUS): COUNTRIES _ BANGLADESH. [Internet]. 2021. Available from: <https://www.worldometers.info/coronavirus/country/bangladesh/> (Accessed 11 October, 2021).
3. Li W, Liao J, Li Q, Baskota M, Wang X, Tang Y, et al. Public health education for parents during the outbreak of COVID-19: a rapid review. *Ann Transl Med*. 2020;8(10):628.
4. Anderson RM, Heesterbeek H, Klinkenberg D, Hollingsworth TD. How will country-based mitigation measures influence the course of the COVID-19 epidemic? *Lancet*. 2020;395(10228):931-4.
5. Park YJ, Choe YJ, Park O, Park SY, Kim YM, Kim J, et al. Contact Tracing during Coronavirus Disease Outbreak, South Korea, 2020. *Emerg Infect Dis*. 2020;26(10):2465-8.
6. Gudbjartsson DF, Helgason A, Jonsson H, Magnusson OT, Melsted P, Norddahl GL, et al. Spread of SARS-CoV-2 in the Icelandic population. *N Engl J Med*. 2020;382(24):2302-15.
7. Qiu H, Wu J, Hong L, Luo Y, Song Q, Chen D. Clinical and epidemiological features of 36 children with coronavirus disease 2019 (COVID-19) in Zhejiang, China: an observational cohort study. *Lancet Infect Dis*. 2020 Jun;20(6):689-96.
8. Sinaei R, Pezeshki S, Parvaresh S, Sinaei R. Why COVID-19 is less frequent and severe in children: a narrative review. *World J Pediatr*. 2021;17(1):10-20.
9. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. *N Engl J Med*. 2020;382(18):1708-20.
10. Green P. Risks to children and young people during covid-19 pandemic. *BMJ*. 2020;369:m1669.
11. Centers for Disease Control and Prevention. Coronavirus disease 2019 (COVID-19). Use of cloth face coverings to help slow the spread of COVID-19. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html> (Accessed 9 April, 2020).
12. American Academy of Pediatrics. Masks and children during COVID-19. Available from: <https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/masks-and-children-during-covid-19/> (Accessed 9 April, 2020).
13. Richard M, Kok A, de Meulder D, Bestebroer TM, Lamers MM, Okba NMA, et al. SARS-CoV-2 is transmitted via contact and via the air between ferrets. *Nat Commun*. 2020;11(1):3496.
14. Bangladesh Bureau of Statistics (BBS) and UNICEF Bangladesh. 2019. Progotir pathay, Bangladesh multiple indicator cluster survey 2019, survey findings report [Internet]. Dhaka, Bangladesh. Available from: http://bbs.portal.gov.bd/sites/default/files/files/bbs.portal.gov.bd/page/b343a8b4_956b_45a_872f_4cf9b2f1a6e0/37817b8e25d0d6c1_f442e294921ff85e.pdf (Accessed 23 June, 2020).
15. Guidance for Public Health Strategies to Address High Levels of Community Transmission of SARS-CoV-2 and Related Deaths, December 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(49):1860-7.

16. Labban L, Thallaj N, Labban A. Assessing the level of awareness and knowledge of COVID 19 pandemic among Syrians. *Arch Med*. 2020;12(3):8.
17. Zhou J, Li Z, Meng H, Chang YC, Peng NH, Wei B. Chinese parental awareness of children's COVID-19 protective measures. *Am J Health Behav*. 2021;45(4):657-64.
18. Chen X, Ran L, Liu Q, Hu Q, Du X, Tan X. Hand hygiene, mask-wearing behaviors and its associated factors during the COVID-19 epidemic: a cross-sectional study among primary school students in Wuhan, China. *Int J Environ Res Public Health*. 2020;17(8):2893.
19. Ahmed MS, Yunus FM. Trend of COVID-19 spreads and status of household handwashing practice and its determinants in Bangladesh – situation analysis using national representative data. *Int J Environ Health Res*. 2022;32(5):1002-10.
20. Aronu AE, Chinawa JM, Nduagubam OC, Ossai EN, Chinawa AT, Igwe WC. Maternal perception of masking in children as a preventive strategy for COVID-19 in Nigeria: A multicentre study. *PLoS One*. 2020;15(11):e0242650.
21. Sim SW, Moey KS, Tan NC. The use of facemasks to prevent respiratory infection: a literature review in the context of the Health Belief Model. *Singapore Med J*. 2014;55(3):160-7.
22. Taylor M, Raphael B, Barr M, Agho K, Stevens G, Jorm L. Public health measures during an anticipated influenza pandemic: Factors influencing willingness to comply. *Risk Manag Healthc Policy*. 2009;2:9-20.
23. Jefferson T, Del Mar C, Dooley L, Ferroni E, Al-Ansary LA, Bawazeer GA, et al. Physical interventions to interrupt or reduce the spread of respiratory viruses: systematic review. *BMJ*. 2009;339:b3675.
24. Rabbani MG, Akter O, Hasan MZ, Samad N, Mahmood SS, Joarder T. Knowledge, Knowledge, Attitude and Practice towards COVID-19 among people in Bangladesh during the pandemic: a cross-sectional study. *medRxiv preprint*. Available from: <https://www.medrxiv.org/content/10.1101/2020.09.22.20198275v1> (Accessed 11 October, 2021).