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Hand hygiene and mask-wearing behaviors and the related factors during the COVID-19 pandemic: A cross-sectional study with secondary school students in Turkey

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\section*{Abstract}

Purpose: The research was conducted to determine the hand hygiene and mask-wearing behaviors and related factors of secondary school students in the COVID-19 pandemic process.

Design and methods: This descriptive cross-sectional study was conducted between March 02–April 02 2021 with 1284 students who continued their secondary education in a province in the east of Turkey. The data were collected face-to-face through the Descriptive Characteristics Form, the Mask-Wearing Behavior Form, and the Hand Hygiene Behavior Form. Percentage, mean, \textit{t}-test in independent groups, Mann Whitney \textit{U} test and Multiple Regression analysis were used in the evaluation of the data. Ethical principles were observed at all stages of the study.

Results: It was determined that 80.1\% of the students used disposable medical masks, 62.1\% of their parents chose a mask suitable for the age of the student, and 52.1\% used the mask they wore all day long. It was found that 41.4\% of the students washed their hands before wearing a mask, and 51.9\% after wearing a mask. It was determined that there was a significant relationship between students’ mask-wearing behavior and gender, and hand hygiene behavior and gender, grade level, previous training on hand-washing and mask-wearing. As a result of multiple regression analysis, it was found that mask-wearing behavior, while gender and previous training on mask-wearing had a statistically significant effect on hand-washing behavior.

Conclusions/practice implications: Students exhibited correct behaviors regarding hand hygiene and mask-wearing, but some misbehaviors suggest that training is necessary, especially in the COVID-19 pandemic period.

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Keywords: COVID-19, Hand hygiene, Hand-washing, Mask-wearing behavior, Secondary school student

\section*{Introduction}

Children under the age of 15 constitute 6.4\% of all SARS-CoV-2 cases recorded in Turkey. This age group constitutes 22.3\% of the entire population in Turkey. It has been found that the frequency of COVID-19 infections in children is lower than it is in adults, and that the clinical course of the infection is milder in Turkey than it is in other countries (Köktürk & İtil, 2020). Moreover, children aged 0–1 years are at a high risk of having severe symptoms (Wei et al., 2020).

The rapid spread and the life-threatening consequences of COVID-19 open up both pharmaceutical and non-pharmaceutical measures against the spread of the infection. Although pharmaceutical measures such as vaccines and antiviral drugs are the most effective strategy, these measures cannot take another pandemic under control, as they are specifically designed to respond to a certain type of virus and symptoms. Therefore, alternative actions that can reduce the spread of the virus become important such as non-pharmaceutical measures. In this context, mask-wearing and handwashing can be considered among the non-pharmaceutical measures (Chen et al., 2020).

In response to the pandemic conditions, the World Health Organization (WHO, 2020a, 2020b, 2020c) stated that individuals should wash their hands frequently using water and soap, or use a hand sanitizing gel as the first action in order to protect both themselves and others.
United Nations International Children’s Emergency Fund (UNICEF, 2020) also stated that washing hands is the cheapest, easiest, and most important way to prevent the spread of a virus during a global pandemic. Recommendations have been made by WHO and UNICEF showing how, for how long, and when hands should be washed, not only to reduce the spread of COVID-19, but also to reduce the risk of other infections (Głabska et al., 2020; UNICEF, 2020a, 2020b; WHO, 2020a, 2020b, 2020c). Studies show that there are still false behaviors related to hand washing (Chen et al., 2020; Głabska et al., 2020).

Handwashing behaviors are known to be affected by factors such as age (Suen et al., 2019; Wong & Lee, 2019), gender (Dajaan et al., 2018), socioeconomic status (Qorbani et al., 2016), and education level (Wong & Lee, 2019). In the current state of the COVID-19 threat, permanent hand hygiene combined with mask-wearing is an approach that has been proven to slow the spread of the virus (Ma et al., 2020).

Face masks have become a very important part of daily life around the world since COVID-19 was declared a pandemic (Eberhart et al., 2021). Mask-wearing has especially been proposed as an important risk reduction strategy against virus transmission (Cheng et al., 2020; Esposito & Principi, 2020) since it can prevent direct hand-mouth or hand-nose contact and the transmission of respiratory droplets from an infected person, and filter airborne particles (Bartoszko et al., 2020; Maclntyre & Chughtai, 2020; Sivaraman et al., 2020). It has been found that mask-wearing is associated with demographic characteristics such as age, gender, education level, ethnic origin, and place of residence (Chen et al., 2020; Tan et al., 2021; Zhang et al., 2020). In a study conducted by Ma et al. (2020) it was revealed that N95 masks block almost all viruses, medical masks block approximately 97% of viruses, and homemade masks block approximately 95% of the virus.

In terms of the relation between mask-wearing behavior and age, children under the age of 2 have a higher risk of suffocation as they may have difficulty breathing because their relatively smaller airways. In addition, they cannot remove their mask without assistance because their fine motor coordination is not developed, so it is recommended that children do not wear a mask. (Centers for Disease Control and Prevention, 2020). WHO (2020) recommends that children over the age of 5 wear a mask; however, it is not recommended for children under the age of 5 as they cannot wear or remove a mask on their own. Nevertheless, it is useful for children under 5 years of age to wear it if they are under the supervision of an adult. WHO (2020) and UNICEF (2020a, 2020b) recommend wearing a mask to children aged between 6 and 11 only under certain conditions. Accordingly, children between the ages of 6 and 11 should wear a mask if they can wear and remove the mask on their own, if they live in a area where the contamination rate is high, if they have contact with a high-risk age group, if they have access to a clean mask when their mask gets dirty, and if the mask does not harm their learning ability and psychology. Moreover, if it is not possible for children over the age of 12 to keep a distance, the method implemented to adults will apply, especially in areas with high contamination rates (WHO, 2020a, 2020b, 2020c). As a general rule, children are recommended to wash their hands with soap or apply a disinfectant for 20 s before wearing their mask. The mask should cover the chin and nose area, be kept in a bag or container, and not be shared with others (Köktürk & İtil, 2020).

This study was carried out to determine the hand hygiene and mask-wearing behaviors of students in secondary school between the ages of 11 and 14 during the COVID 19 pandemic in order to help identify the obstacles in acquiring appropriate knowledge and practice regarding handwashing habits and mask-wearing behaviors.

Method

Type of the research

The research was conducted in a descriptive cross-sectional manner in order to determine the hand hygiene and mask-wearing behaviors, and the related factors in secondary school students during the COVID-19 pandemic.

The location and date of the study

The research was conducted face-to-face with students between the ages of 11 and 14 who were attending to a secondary school in the city center of Erzincan, under the Provincial Directorate of National Education between March 2nd and April 2nd of 2021.

Population and sample of the study

The population of the study consists of 5678 students in 15 secondary schools studying in the 5th, 6th, 7th and 8th grades, located in the city center of Erzincan. The sample from 4 of the 15 schools in the study consisted of the 1284 students who were selected by the lottery method among the schools in the city center of Erzincan. The selection was determined by the simple random sampling method, and the selected students were allowed to participate in the research.

Data collection tools

Descriptive Characteristics Form: Seven questions were asked related to the socio-demographic characteristics of the students (age, gender, class level, educational status, and employment status of the parents). Before the data collection phase, a pilot study was conducted with 15 students to evaluate the applicability of the questionnaires and the comprehensibility of the questionnaire questions. As a result of the pilot application, no changes were made in the survey questions, and the students who were taken into the pilot application were not included in the research sample.

Hand Hygiene Behavior Form: There are 21 questions regarding hand hygiene in the Hand Hygiene Behavior Form, which was prepared in line with the literature (Chen et al., 2020; Skolmowska et al., 2020; WHO, 2009; WHO, 2020a, 2020b, 2020c). Answers given to questions are evaluated as “Always = 2 Points”, “Sometimes = 1 Point” and “Never = 0 Point”. The score obtained from the form ranges from 0 to 42 points. After the Hand Hygiene Behavior Form was prepared, it was presented to the opinions of five experts (Three Experts in Pediatric Nursing, One Experts in Nursing Fundamentals, One Experts in Internal Medicine Nursing) to be evaluated and was finalized after the expert opinion. The internal consistency coefficient of the Hand Hygiene Behavior Form was found to be 0.79.

Mask-Wearing Behavior Form: In this form prepared in line with the literature, there are 18 questions on mask-wearing behaviors and 3 questions about mask selection and frequency of use (Chen et al., 2020; Tan et al., 2021; WHO, 2020a, 2020b, 2020c). Answers given to questions are evaluated as “Always = 2 Points”, “Sometimes = 1 Point” and “Never = 0 Point”. The score obtained from the Mask-Wearing Behavior Form range from 0 to 36 points. After the Mask-Wearing Behavior Form was prepared, it was presented to five experts (Three Experts in Pediatric Nursing, One Experts in Nursing Fundamentals, One Experts in Internal Medicine Nursing) for evaluation, and was finalized after the expert opinion. The internal consistency coefficient of the Mask-Wearing Behavior Form was found to be 0.72.

Data collection

The research data were collected between March 2nd and April 2nd of 2021, when schools across Turkey started face-to-face education during the COVID-19 pandemic. Before starting the data collection process, the “Informed Consent Form” was delivered to the parents, via the students, in a closed envelope to get the written consent of the parents. The consent form signed by one of the parents was returned to the researcher by the students. An appropriate work program was established with the school administrator to implement the data collection forms. It
was stated that participation was voluntary, the students were informed about the study, and their verbal assent was obtained. According to the specified timetable, the data were collected face-to-face in the classroom environment. It took 10–15 min on average for the survey to be filled in.

Analysis and evaluation of the data

The SPSS 25.0 package program was used for the statistical analysis of the data. Percentage, mean, independent samples t-test, Mann Whitney U test, and Multiple Regression analysis were used to evaluate the data. The statistical significance level was taken as 0.05 in all tests. In order to obtain statistical results, the suitability of the data to a normal distribution was evaluated using the Shao method. Accordingly, skewness value was 0.123, kurtosis value was −1.307, and the graph was found to have a normal distribution between −3 and +3.

The ethical principles of the study

In order to conduct the study, first of all, the ethics committee permission dated 26/02/2021 and numbered 03/17 from the Human Research Ethics Committee, and the legal permissions of the Provincial Directorate of National Education were obtained. After the parents’ written consent included in the study was obtained, students were informed about the research, and it was explained that they were free to participate in the research. Students who accepted to participate in the study were assured that their personal information would not be used anywhere else, and that they had the right to leave the study whenever they wanted. Students who refused to participate in the study were assured that it would not affect their grades or school status.

Results

The distribution of students regarding their descriptive characteristics is presented in Table 1. The findings showed that the mean age of the students was 12.36 ± 1.09, 52.1% were male, 26.9% were in the 6th grade, 78.8% had housewife mothers, 34.7% had civil servant fathers, 35.1% had high school graduate mothers, 36.7% had fathers with university or postgraduate degree, 63.6% were trained on handwashing before, and 50.3% were not trained on mask-wearing before.

According to the descriptive characteristics of the students participating in the study, the mean scores of mask-wearing behavior and hand hygiene behavior were compared. Among the descriptive features, the variables of gender, age group, and grade level had an effect on the mean score of mask-wearing behavior. On the other hand, the variables of gender, previous training about handwashing, and previous training about mask-wearing affected the mean score of handwashing behavior (p < 0.05) (Table 1).

The distribution of the mask-wearing behavior of the students is presented in Table 2. When the mask type used by the students was...
Table 2
The Distribution of the Characteristics of the Students on Mask-Using Behaviors (n = 1284).

|                          | n   | %    |
|--------------------------|-----|------|
| What kind of mask are you using? |     |      |
| Cotton cloth masks       | 228 | 17.8 |
| Disposable medical mask  | 1028| 80.1 |
| N95 respirators          | 28  | 2.2  |
| Does your parent choose a mask suitable for your age for you? |     |      |
| Always                   | 798 | 62.1 |
| Sometimes                | 376 | 29.3 |
| Never                    | 106 | 8.3  |
| My parent didn’t buy a mask | 4   | 0.3  |
| How often do you change your mask? |     |      |
| 2–4 Hours                | 360 | 28.0 |
| 1 day                    | 676 | 52.6 |
| 2–5 Days                 | 169 | 13.2 |
| more than 5 days         | 35  | 2.7  |
| I continue to use it after cleaning the contaminated mask | 44  | 3.4  |
| How often do you wear a mask when you go out? |     |      |
| Always                   | 1181| 92.0 |
| Sometimes                | 93  | 7.2  |
| No                       | 10  | 0.8  |
| Do you wear multiple masks at the same time? |     |      |
| Always                   | 226 | 17.6 |
| Sometimes                | 570 | 44.4 |
| No                       | 488 | 38.0 |
| Did you pull the mask down to expose your mouth? |     |      |
| Always                   | 228 | 17.8 |
| Sometimes                | 596 | 46.4 |
| No                       | 460 | 35.8 |
| Did you pull the mask down to expose your nose? |     |      |
| Always                   | 191 | 14.9 |
| Sometimes                | 470 | 36.6 |
| No                       | 623 | 48.5 |
| Do you open your mouth and/or nose to breathe while using the mask? |     |      |
| Always                   | 262 | 20.4 |
| Sometimes                | 656 | 51.1 |
| No                       | 366 | 28.5 |
| Do you touch the mask with your hand while the mask is on your face? |     |      |
| Always                   | 226 | 17.6 |
| Sometimes                | 624 | 48.6 |
| No                       | 434 | 33.8 |
| Do you lower the mask under your chin while using it? |     |      |
| Always                   | 240 | 18.7 |
| Sometimes                | 519 | 40.4 |
| No                       | 525 | 40.9 |
| Can you take off and put on the mask over and over? |     |      |
| Always                   | 158 | 12.3 |
| Sometimes                | 331 | 25.8 |
| No                       | 795 | 61.9 |
| Do you take off other people's masks? |     |      |
| Always                   | 134 | 10.4 |
| Sometimes                | 43  | 3.3  |
| No                       | 1107| 86.2 |
| Do you wash your hands with soap and water after touching the mask? |     |      |
| Always                   | 874 | 68.1 |
| Sometimes                | 316 | 24.6 |
| No                       | 94  | 7.3  |
| Can you take off the used mask by holding your laces? |     |      |
| Always                   | 973 | 75.8 |
| Sometimes                | 183 | 14.3 |
| No                       | 128 | 10.0 |
| Can you remove the used mask by holding it from the front? |     |      |
| Always                   | 206 | 16.0 |
| Sometimes                | 324 | 25.2 |
| No                       | 754 | 58.7 |
| Before putting on the mask, would you wash your hands with soap and water? |     |      |
| Always                   | 558 | 43.5 |
| Sometimes                | 466 | 36.3 |
| No                       | 260 | 20.2 |
| Can you distinguish the front and back of the mask? |     |      |
| Always                   | 1090| 84.9 |
| Sometimes                | 137 | 10.7 |
| No                       | 57  | 4.4  |
| Do you wear the mask with the metal strip on the top of the nose bridge, with the folded part on the outside? |     |      |
| Always                   | 1068| 83.2 |
| Sometimes                | 148 | 11.5 |
| No                       | 68  | 5.3  |
| If the mask is elastic, do you wear the elastics on the sides of the mask by passing it through the earlobe? |     |      |
| Always                   | 1010| 78.7 |
| Sometimes                | 207 | 16.1 |
| No                       | 67  | 5.2  |
| Do you place the metal strip on the top of the mask by pressing it lightly over the bridge of the nose? |     |      |
| Always                   | 1028| 80.1 |
| Sometimes                | 189 | 14.7 |
| No                       | 67  | 5.2  |
| Do you wear the mask in such a way that it completely covers the nose, mouth and chin and does not allow air passage from the sides? |     |      |
| Always                   | 969 | 75.5 |
| Sometimes                | 244 | 19.0 |
| No                       | 71  | 5.5  |
The Durbin-Watson value was between 1.5 and 2.5 (DW = 1.797).

**Discussion**

Although there is currently insufficient data on treatments for COVID-19 in children, the information obtained from cases in many different countries shows that supportive treatment approaches in children are still sufficient in many cases (Republic of Turkey, Ministry of Health, 2020). In terms of preventive strategies, approaches towards protection against COVID-19 include hand hygiene, adequate nutrition, strategic recommendations to reduce possible viral transmission, reduction of contact in the general community (protection of physical or social distance), and droplet and contact precautions that ensure the isolation of those with symptoms, and mask-wearing in crowded environments have been the leading ones (Pars, 2020). Handwashing and mask-wearing are two of the most effective strategies to reduce the COVID-19 transmission during the pandemic (Esposito & Principi, 2020; Pars, 2020; Skolmowska et al., 2020; Tan et al., 2021).

As a result of the research, it was found that 50.3% of the students had not received any training on mask-wearing before. When the mask-wearing behavior of children is examined in the literature, it has been reported that they generally do not like to wear masks. There are findings that the use of masks may support the development of the infection, as children will probably try to remove them in addition to touching their faces more (Centers for Disease Control and Prevention, 2020; Esposito & Principi, 2020). Hence, it is concluded in line with these results that if the problems are to be eliminated, it is necessary to prepare a healthy child to use the mask, to clearly explain the reasons for wearing a mask without trying to take it off, and to provide educational and training appropriate for the age of the children for maximum adaptation.

Comparing the average score of the mask-wearing behavior according to the descriptive characteristics of the students participating in the study. It was found that the variables of gender, age group, and grade level were effective on the mean score of mask-wearing behavior (Table 1). Similarly, in the studies conducted during the COVID-19 process, the grade level of the students was found to have an effect on their mask-using behaviors (Chen et al., 2020; Mickells et al., 2021). This may be due to the increase in students’ awareness with increasing age and grade level, the emphasis on hygiene, and the effectiveness of the training given. Our regression analysis also found that the gender variable was effective on the mask-wearing behavior (Table 4). In other studies, a significant relationship was similarly found between gender and mask-wearing behavior (Guzek et al., 2020; Tan et al., 2021).

When the mask type used by the students was examined, it was determined that 80.1% used disposable medical masks, 17.8% used cloth masks, and 2.2% preferred N95 masks. In a study conducted with university students in Vietnam, it was found that 57.6% of the students used medical masks (Duong et al., 2021). While the effectiveness of homemade cloth masks is discussed in the literature, it is known that surgical/medical and N95 masks can prevent the inhalation of large droplets well, although their ability to filter sub-micron-sized particles in the air is poor (Esposito & Principi, 2020).

The results from our study further showed that the parents of 62.1% of the students chose a mask suitable for the age of the student, and parents of 0.3% of the students did not buy a mask. In addition to the availability of masks in different sizes that can adapt perfectly to the face, it is important to consider parents' behavior to facilitate mask-wearing in children, to ensure child cooperation, and to increase parents' awareness of the size and necessity of masks (Esposito & Principi, 2020). In line with these results, it can be stated that parental behaviors are important in improving the mask-wearing behaviors of children.

In the current study, it was found that 28% of the students changed their masks every 2–4 h, 52.1% after a day, 13.2% after 2–5 days, 2.7% after more than 5 days, and 3.4% continued to use the contaminated mask after cleaning it. The study conducted by Chao (2020) determined that the majority of students used a single mask over and over again for a long time. Although there is no evidence to support the disinfection of disposable masks, most people hang the used mask in well-ventilated places for further use. It is stated in the literature that, in China, other ways of use are also used by some of the people such as using alcohol, steaming, boiling, and placing a gauze cloth inside the disposable mask, or wearing a cloth mask which can easily be washed with soap and water or laundry detergent when it becomes polluted (Desai & Aronoff,
In this direction, it is seen that there are different options preferred for the general population in the face of mask shortage, especially in countries with low socioeconomic level. In addition, it is thought that the reason for parents not choosing masks suitable for children's faces, and the findings about the duration of mask use may be due to the extra economic burden they impose on the family.

According to our results, 63.6% of the students were found to have handwashing training before. Looking at the literature on handwashing, one study found that 89% of students had good knowledge about handwashing (Alam et al., 2020), in a study conducted in Ghana, 46.67% of students received training on handwashing (Dajaan et al., 2018). Furthermore, Hadem and Bahvani (2018) found that 45% of the students had knowledge about handwashing. In this context, personal hygiene practices may vary from individual to individual, depending on cultural characteristics and the education at home. Therefore, it can be argued that the fact that the education level of nearly half of the mothers included in the study is primary and secondary school may have had an effect on the low level of knowledge we found.

When the mean scores of handwashing behavior were compared according to the descriptive characteristics of the students participating in the study, it was found that the variables of gender, and previous training on handwashing and mask-wearing were effective on the mean scores of Hand Washing Behavior (Table 1). In the study conducted by Chen et al. (2020) during the pandemic, it was found that the gender had an effect on handwashing behavior. Similar results were found in other studies in the literature (Guzek et al., 2020; Suen et al., 2019). In our regression analysis, it was found that the effect of gender was significant in terms of handwashing behavior (Table 5). This may have resulted from many factors such as the gender responsibilities of the students in the society they live, parental behaviors, whether they had received education before, their socioeconomic levels and the education level of their parents. It can be concluded that these results are compatible with the literature, and that students' mask-wearing behaviors and handwashing during the pandemic can be improved by education.

In terms of the characteristics of students included in the study regarding handwashing behavior, it was determined that 79% of the students always washed their hands before and after eating, 96.5% always washed their hands after the toilet, and 72.8% always washed their hands after waking up in the morning (Table 3). In a study conducted with adolescents in Poland, Glabska et al. (2020) stated that the rate of handwashing after the pandemic was high (84.5%) before and after meals. They found that 95.7% of the participants washed their hands after using the toilet, and 46.1% after waking up in the morning. Dajaan et al. (2018) found that 32.33% of the students wash their hands before and after meals, 43% after the toilet, and 2.33% after playing with their friends.

In our study, we found that 94.3% of the students always washed their hands after returning home, 86.7% always washed their hands when their hands are visibly dirty, 89.8% washed their hands with soap, and 73% dried their hands with a paper towel. In a study by Glabska et al. (2020), 96.6% of adolescents stated that they washed their hands when they were visibly dirty, 90.1% washed their hands after returning home, 94.7% washed their hands by using soap, and 81.4% dried their hands with a towel. Guzek et al. (2020) reported that the majority of secondary school students stated that they always washed their hands after returning home, used more soap while washing their hands, and dried their hands with a towel. Moreover, Skolmowska et al. (2020) found that the behavior of washing hands before and after eating, before and after using the toilet, and drying hands with a towel was significantly more prevalent in adolescents living in places with high COVID-19 morbidity compared to adolescents living in places with low COVID-19 morbidity. Hence, that our results are compatible with the literature (Glabska et al., 2020; Guzek et al., 2020; Skolmowska et al., 2020). According to these results, it can be concluded that when hand hygiene, which has a very important position in the pandemic process, is transferred to children with the right resources, it can be applied correctly and the percentage of the application can increase.

| Table 4 | Multiple Regression Results on the Effect of Descriptive Characteristics on Mask-Using Behavior (n = 1284). |
| --- | --- |
| Model | β | Std. Error | Beta | t | p | Partial | Part | Tolerance | VIF |
| Constant* | 12.378 | 5.000 | | | | | | | |
| Gender | 1.417 | 0.269 | 0.146 | 5.262 | 0.000* | 0.146 | 0.145 | 0.988 | 1.012 |
| Age | 0.543 | 0.497 | 0.123 | 1.144 | 0.270 | 0.031 | 0.030 | 0.662 | 16.218 |
| Grade | −0.346 | 0.487 | −0.079 | −0.712 | 0.477 | −0.020 | −0.020 | 0.062 | 16.215 |
| Mother’s Profession | −0.295 | 0.143 | −0.059 | −2.066 | 0.039* | −0.058 | −0.057 | 0.919 | 1.088 |
| Father’s Profession | 0.255 | 0.132 | 0.054 | 1.927 | 0.054 | 0.054 | 0.053 | 0.975 | 1.026 |
| Educational Status of the Mother | 0.103 | 0.152 | 0.022 | 0.677 | 0.499 | 0.019 | 0.019 | 0.699 | 1.430 |
| Educational Status of the Father | 0.090 | 0.161 | 0.018 | 0.558 | 0.577 | 0.016 | 0.015 | 0.741 | 1.349 |
| Status of Receiving Training on Hand Washing Before | 0.359 | 0.357 | 0.036 | 1.007 | 0.314 | 0.028 | 0.028 | 0.607 | 1.648 |
| Status of Receiving Training on Mask Use Before | −0.164 | 0.344 | −0.017 | −0.479 | 0.632 | −0.013 | −0.013 | 0.606 | 1.651 |

Dependent Variables: Mask Use Behavior R: 0.179 R²: 0.32 F: 4.661.

| Table 5 | Multiple Regression Results on the Effect of Descriptive Characteristics on Hand Washing Behavior (n = 1284). |
| --- | --- |
| Model | β | Std. Error | Beta | t | p | Partial | Part | Tolerance | VIF |
| Constant* | 34.419 | 5.574 | | | | | | | |
| Gender | −1.823 | 0.300 | −0.166 | −6.073 | 0.000* | −0.168 | −0.165 | 0.988 | 1.012 |
| Age | 0.572 | 0.548 | 0.114 | 1.044 | 0.297 | 0.029 | 0.028 | 0.062 | 16.218 |
| Grade | −0.069 | 0.543 | −0.175 | −1.602 | 0.109 | −0.045 | −0.044 | 0.062 | 16.215 |
| Mother’s Profession | 0.191 | 0.159 | 0.034 | 1.198 | 0.231 | 0.034 | 0.033 | 0.919 | 1.088 |
| Father’s Profession | 0.117 | 0.147 | 0.022 | 0.794 | 0.428 | 0.022 | 0.022 | 0.975 | 1.026 |
| Educational Status of the Mother | −0.010 | 0.170 | −0.002 | −0.061 | 0.951 | −0.002 | −0.002 | 0.699 | 1.430 |
| Educational Status of the Father | −0.238 | 0.179 | −0.042 | −1.329 | 0.184 | −0.037 | −0.036 | 0.741 | 1.349 |
| Status of Receiving Training on Hand Washing Before | −0.366 | 0.398 | −0.032 | −0.920 | 0.358 | −0.026 | −0.025 | 0.607 | 1.648 |
| Status of Receiving Training on Mask Use Before | −1.481 | 0.383 | −0.135 | −3.867 | 0.000* | −0.108 | −0.105 | 0.606 | 1.651 |

Dependent Variables: Hand Washing Behavior R: 0.241 R²: 0.58 F: 8.748.

* p<0.000 Durbin-Watson:1.730.
COVID-19 is an important problem due to its globally continuing and severe consequences, and contagiousness characteristics. The knowledge of correct hand washing and mask-wearing plays an important role in reducing the burden of the infectious disease, especially in childhood. In this context, having knowledge on hand washing, mask-wearing, and the factors affecting these two are critical in helping children acquire the right behaviors. Nurses have an active role in promoting healthy behaviors, and may contribute to raising awareness on this matter by determining risk groups, conducting new research with children of different ages and larger samples, and planning training programs for these groups. The results of the current research reveal that almost all secondary school students use masks, and further show that the hand washing behavior in the context of the COVID-19 pandemic in Turkey involve deficiencies in exhibiting the right behaviors. Therefore, the results of the research will be essential in guiding future research, and the organization of education programs in attempts to raise awareness on hand hygiene and mask-wearing behaviors.

Limitations of the research

The results of the research are limited only to the students aged 11–14, on whom study was conducted. In addition, the mask-wearing behaviors of the students were limited to the structures included in the Mask-Wearing Behavior Form, and their hand hygiene behaviors were limited to the structures included in the Hand Hygiene Behavior Form.

Conclusion

It was found that the gender of the students had an effect on the mask-wearing behavior while gender, grade level, previous training on handwashing, and mask-wearing were found to be effective on the hand hygiene behavior. Overall, it was concluded that the students exhibited correct behaviors in terms of hand hygiene and mask use; however, there were deficiencies in some of the behaviors.

In order to minimize the spread of COVID-19, it is important to raise the awareness (i.e., correct hand washing technique, hand washing time and frequency, selection of appropriate masks, mask-wearing behaviors and the disposal of used masks, etc.) of parents and school-age children, especially in countries where face-to-face education continues. In line with these results, risk groups for COVID-19 can be identified through research, and future studies may be conducted with these groups on hand hygiene and mask-wearing behaviors. In addition to research, training programs can be organized for these groups. This way, the studies that aim to increase the awareness about mask-wearing and hand hygiene behaviors would increase the performance of children in this regard.

Contributors

GA, SK, AS and AÇ conceptualized the study and organized the data collection. GA wrote the first draft of the manuscript. GA, SK AS and AÇ ran the analyses and wrote the results section. AÇ contributed to revision of the final version of the manuscript.

Funding sources

No competing financial interests exist.

Declaration of Competing Interest

Authors declare no competing interests.

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