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Hand Hygiene Behaviors in Adult Individuals During the COVID-19 Pandemic: What Changed?

COVID-19 Pandemisi Sırasında Yetişkin Bireylerde El Hijyen Davranışları: Ne Değişti?

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Abstract

Background: Hand washing is vital to prevent the spread of the agent from person to person during epidemic periods and to reduce the impact of the pandemic on people's lives, health, livelihoods and health system.

Objective: This study was conducted to examine the hand hygiene behavior of adults during the COVID-19 pandemic period.

Methods: This descriptive and cross-sectional study was completed between 15 October 2020 and 30 November 2020 via Google Forms with 627 adult individuals. The data were collected with a questionnaire form created by the researchers as a result of the relevant literature review.

Results: During the pandemic period, 91.4% of the participants stated that the habit of hand washing increased. It was observed that handwashing status of participants during the pandemic process changed in terms of age group, gender and those who considerg hand hygiene important in combating the epidemic ($p<.05$). When handwashing behavior of the participants during the COVID-19 pandemic was examined, it was found that only 14.5% of the participants washed their hands before entering a toilet. Nearly all of the participants (96.7%) stated that they wash their hands after using a toilet, 92.7% after coming from outside, 84.1% after shopping, and more than half (52.2%) after meeting with friends or relatives.

Conclusions: During the COVID-19 pandemic, awareness of adult individuals about the importance of proper hand hygiene has changed. Handwashing behaviors of individuals in the society change during the pandemic period and this requires the attention of health professionals in particular.

Keywords: COVID-19 Pandemic, Hand Hygiene, Outbreak, Adult Individuals, Nursing

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Öz

Giriş: El yıkama, salgın dönemlerinde etkenin kişiden kişiye yayılmasını önlemek ve pandeminin bireylerin yaşamı, sağlığı, geçim kaynakları ve sağlık sistemi üzerindeki etkisini azaltmak için hayati önem taşımaktadır.

Amaç: Bu çalışma, COVID-19 pandemi döneminde yetişkinlerin el hijyeni davranışlarını incelemek amacıyla yapılmıştır.

Yöntem: Tanımlayıcı ve kesitsel tipteki bu araştırma 15 Ekim 2020 - 30 Kasım 2020 arasında Google Forms aracılığıyla 627 yetişkin birey ile tamamlanmıştır. Veriler, ilgili literatür taraması sonucunda araştırmacılar tarafından oluşturulan anket formu ile toplanmıştır.

Bulgular: Pandemi döneminde katılımcıların %91.4'ü el yıkama alışkanlığının arttığını belirtmektedir. Katılımcıların pandemi sürecinde el yıkama durumlarının yaş grubu, cinsiyet ve salgınla mücadelede el hijyenine önem verenlere göre değiştiği görülmektedir ($p<.05$). Katılımcıların COVID-19 pandemisi sırasında el yıkama davranışları incelendiğinde, katılımcıların sadece %14.5'inin tuvalete girmeden önce ellerini yıkadığı tespit edilmiştir. Katılımcıların %96.7'si tuvaleti kullandıktan sonra, %92.7'si dışarıdan geldikten sonra, %84.1'i alışveriş yaptıktan sonra ve yarısından fazlası (%52.2) arkadaş veya akraba ile görüştükten sonra ellerini yıkadığını belirtmiştir.

Sonuç: COVID-19 pandemisi sırasında yetişkin bireylerin uygun el hijyeninin önemine ilişkin farkındalıkları değişmiştir. Pandemi döneminde toplumdaki bireylerin el yıkama davranışları değişmekte ve bu durum özellikle sağlık profesyonellerinin dikkatini gerektirmektedir.

Anahtar Kelimeler: COVID-19 Pandemisi, El Hijyeni, Salgın, Yetişkin Bireyler, Hemşirelik

INTRODUCTION

The coronavirus disease 2019 (COVID-19), which emerged in Wuhan, China in December 2019, affected more than 222 million people, killed 4.592.934 people and spread to approximately 224 countries and regions as of September 9, 2021 (World Health Organization [WHO], 2021). COVID-19, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is an enveloped, undivided, positive sense RNA virüs (Guo et al., 2020). According to the Centers for Disease Control and Prevention (CDC), it is stated that the virus spreads through direct contact, indirect contact and droplet. In order to prevent the transmission of the virus, it is recommended to wash hands with soap and water for 20 seconds frequently; Alternatively, if soap and water are not available, the importance of using hand sanitizer containing at least 60% alcohol is emphasized (Centers for Disease Control and Prevention [CDC], 2021). Hand hygiene reduces colonization of the temporary flora on the hand and is essential in preventing contamination (Pascarella et al., 2020).

Hand washing is vital to prevent the spread of the pandemic from person to person and to reduce the impact of the pandemic on people's lives, health, livelihoods and health system, since vaccination has not yet been fully implemented in the whole society under the control of the pandemic. Frequent and thorough hand washing with soap and water is one of the cheapest, easiest best ways to prevent the spread of infectious diseases and

is the first line of defense against COVID-19 (Guo et al., 2020; CDC, 2021). Saunders-Hastings et al. (2017), in the systematic review examining the effectiveness of personal protective measures in preventing pandemic influenza transmission, it was stated that the use of a face mask provided a non-significant protective effect, while regular hand hygiene provided an important protective effect (Saunders-Hastings, Crispo, Sikora and Krewski, 2017). Hand hygiene is a widely accepted principle in the prevention of infectious diseases, and proper hand hygiene is likely to reduce the spread of infectious diseases by 24-31% (Kantor, 2020; Rundle et al., 2020). However, sufficient studies on this subject could not be reached during the current epidemic period in our country.

Aim

This study was conducted to examine the hand hygiene behavior of adults during the COVID-19 pandemic process.

Research Questions

• What are the hand washing behaviors of adults during the COVID-19 pandemic period?

• How did the frequency of handwashing behaviors change during the pandemic period?

• What are the factors affecting the handwashing behaviors of adults during the COVID-19 pandemic period?

METHODS

The Type of the Research

This was a cross-sectional type of study.

The Place of the Research

The research sample consisted of individuals who were over the age of 18, who were literate, who used Google Forms by electronic communication (WhatsApp Twitter, Facebook, Instagram) between 15 October 2020 - 30 November 2020, who agreed to take part in the research.

The Universe/Sample of the Research

It was completed with 627 individuals who agreed to participate in the study. In the study, individuals under the age of 18, repeated questionnaire filling (according to IP and basic information) and a known history of psychiatric disease were excluded. It has been prepared in such a way that the questions of those who filled out the form will be answered again and that the related question will not proceed without an answer. This research was conducted by sharing an online Google Form link with different social media sources (eg Twitter, Whatsapp, Instagram and Facebook) using a virtual snowball sampling (connection was established with the researchers' own circle, then with the help of the contact person, contact was made with someone else, then again in the same way) approach using electronic communication tools. The survey was conducted using an online platform that can be accessed from any device with an internet connection, between the specified dates. The survey was announced through private social networks (Whatsapp, twitter, facebook, instagram) and mailing lists. The population of the study consisted of adult individuals over the age of 18 throughout the country. In calculating the size of the research sample, a minimum number of 530 individuals was calculated for a Type I error of 0.05 and a test power of 85%.

Data Collection Instrument-Validity and Reliability Information

The data were collected with a questionnaire form created by the researchers as a result of the relevant literature review (Saunders-Hastings et al., 2017; Assefa, Melaku, Bayisa and Alemu, 2021; Guzek, Skolmowska and Głąbska, 2020; Chen at al., 2020). This questionnaire form consists of three parts. In the first part, there are

nine questions that include socio-demographic variables such as age, gender, educational status, marital status, economic status, the person they live with and the presence of chronic illness. In the second part, there are fourteen questions about COVID-19 and hand hygiene practices, such as the participants' COVID-19 status, contact history, regular hand washing, change of hand washing status during the pandemic process, the material used in hand hygiene and drying, and the importance of hand washing during the pandemic process. In the last section, there are nine questions to determine how often and in what condition she washes her hands.

Evaluation of the Data

Data were analyzed with the Statistical Package for Social Sciences 22.0 (SPSS, IBM Corp., Armonk, NY, USA). Whether the data were normally distributed or not was evaluated with the Kolmogorov-Smirnov test. The data obtained from the data collection forms were evaluated as numbers, percentages, arithmetic means, standard deviations, minimum and maximum. Chi-square test was used for comparison of categorical data. Results were assessed to a confidence interval of 95% and a significance level of $p<.05$.

Ethical Aspect of the Research

This study was conducted in accordance with the principles of the Declaration of Helsinki. Permission to conduct the research was obtained from the Commission for Scientific Research Studies on COVID-19 from the internet site of the Ministry of Health. Ethical approval was also obtained from a university medical research ethics committee (ref:20-10T/25; date:13/10/2020). All participants were given full information on the requirements of the study, and before participating in the research, they were asked to agree to the data sharing and confidentiality policy. The participants responded anonymously directly to the questionnaire on the Google platform. The anonymous nature of the web questionnaire does not allow sensitive personal information to be viewed in any way. On completion, each questionnaire was forwarded to the Google platform and the final database was downloaded as a Microsoft Excel page.

RESULTS

Table 1. Socio-Demographic Characteristics of the Participants (n = 627)

Variables	Mean ± SD	Min-Max
Age (years)	34.03±11.26	18-82
	n	**%**
Gender		
Female	476	75.9
Male	151	24.1
Marital status		
Married	340	54.2
Single	287	45.8
Educational status		
Literate / Primary school	17	2.7
Middle school	6	1.0
High school	154	24.6
University	337	53.7
Master's degree or above	113	18.0
Occupation		
Academician	48	7.7
Health professionals	94	15.0
Teacher	51	8.1
Student	143	22.8
Officer	104	16.6
Worker	60	9.6
Self-employment	41	6.5
Retired	32	5.1
Not working	54	8.6
Income situation during COVID-19		
Less than income	179	28.5
Income is equal to expenses	308	49.2
More than income	140	22.3
People lived with		
With wife and children	261	41.6
With wife	78	12.4
Family (mother, father or sibling)	204	32.5
Housemate	32	5.1
Alone	52	8.4
Chronic illness status		
Yes	79	12.6
No	548	87.4
Total	**627**	**100**

The mean age of the participants was 34.03±11.26 (min: 18 max: 82), and a majority of them were women (75.9%). More than half of the participants (54.2%) are married and 41.6% live with their spouses and children. Half of the individuals (53.7%) in the study are university graduates, 22.8% of them are students, and 49.1% of them are found to be equal to their income expense during the pandemic period (Table 1).

Majority of the participants (96%) stated that they had no history of COVID-19 and 14.2% stated that they had no history of contact with someone infected with COVID-19. Most of the participants (98.6%) stated that they had the habit of regular hand washing during the pandemic period, 91.4% of them increased the habit of hand washing during the pandemic process and 96.2% of them stated that hand hygiene is important in combating the epidemic. However, 82.1% of the participants stated that they wash their hands with water and soap and 13.1% use hand disinfectant. It was found that the rates of the participants who used normal cotton towels (49.3%) and disposable paper towels (47.7%) to dry their hands were close to each other (Table 2).

Table 2. COVID-19 and Hand Hygiene Behaviors of Participants (n = 627)

Variables	n	%
COVID-19 history		
Yes	25	4.0
No	602	96.0
History of contact with someone infected with COVID-19		
Yes	89	14.2
No	538	85.8
Regular hand washing		
Yes	618	98.6
No	9	1.4
Handwashing in the COVID-19 outbreak		
Increased	573	91.4
No change	54	8.6
Material used in hand washing		
Water and soap	515	82.1
Disinfectant	82	13.1
Cologne	30	4.8
Material used when drying		
Normal cotton towel	309	49.3
Paper towel	299	47.7
Any material	11	1.8
The clothes he wears	8	1.3
Considering hand hygiene important in combating the epidemic		
Yes	603	96.2
No	4	0.6
Unstable	20	3.2
Complying with the hand hygiene rule in all conditions		
Yes	434	69.2
No	44	7.0
Sometimes	149	23.8
Total	**627**	**100**

Table 3. Handwashing Behavior of Participants in the COVID-19 Pandemic (n = 627)

Hand washing condition	Never		Sometimes		Often		Most of the time		Always	
	n	%	n	%	n	%	n	%	n	%
Before toilet	94	15.0	245	39.1	101	16.1	96	15.3	91	14.5
After toilet	-	-	4	0.6	6	1.0	11	1.8	606	96.7
After shopping	-	-	9	1.4	32	5.1	59	9.3	527	84.1
Before cooking	-	-	9	1.4	32	5.1	48	7.7	538	85.8
After coming from outside	-	-	4	0.6	5	0.8	37	5.9	581	92.7
After touching dirty objects	-	-	4	0.6	22	3.5	82	13.1	519	82.8
When I feel or see my hands are dirty	1	0.2	6	1.0	20	3.2	57	9.1	543	86.5
Before meeting my friends or relatives	28	4.5	117	18.7	102	16.3	135	21.4	245	39.1
After meeting with my friends or relatives	21	3.3	73	11.6	64	10.2	142	22.6	327	52.3

When the handwashing behavior of the participants during the COVID-19 pandemic was examined, it was found that only 14.5% of the participants washed their hands before entering the toilet. Nearly all of the participants (96.7%) stated that they wash their hands after using the toilet, 92.7% after coming from outside, 84.1% after shopping, and more than half (52.2%) after meeting with friends or relatives (Table 3).

The comparison of the hand hygiene of the participants and the rates of different groups is shown in Table 4. During the pandemic process, a statistically significant difference was observed between hand washing status, age group (p = .006), gender (p = .031) and considering hand hygiene important in combating the epidemic (p = .000). However, there was no statistically significant difference between hand washing status and educational status (p = .518), presence of chronic disease (p = .896), COVID-19 history (p = .229), and history of contact with someone infected with COVID-19 (p = .891) (Table 4).

Table 4. Distribution of Participants' Handwashing by Characteristics during the Pandemic Process

Variables	Handwashing in the COVID-19 outbreak				*Test values*
	Increased (n=573)		No change (n=54)		
	n	%	n	%	*(χ2 ve p)*
Age group (years)					
18-40	436	93.4	31	6.6	10.271
41-64	131	86.2	21	13.8	
≥65	6	75.0	2	25.0	**0.006**
Gender					
Female	442	92.9	34	7.1	4.676
Male	131	86.8	20	13.2	**0.031**
Educational status					
Literate / Primary school	17	100.0	-	-	-
Middle school	5	83.3	1	16.7	3.240
High school	138	89.6	16	10.4	0.518
University	311	92.3	26	7.7	-
Master's degree or above	102	90.3	11	9.7	-
Chronic illness status					
Yes	73	92.4	6	7.6	0.017
No	500	91.2	48	8.8	0.896
COVID-19 history					
Yes	25	100	-	-	1.447
No	548	91.0	54	9.0	0.229
History of contact with someone infected with COVID-19					
Yes	81	91.0	8	9.0	0.019
No	492	91.4	46	8.6	0.891
Considering hand hygiene important in combating the epidemic					
Yes	556	92.2	47	7.8	26.206
No	1	25.0	3	75.0	**0.000**
Unstable	16	80.0	4	20.0	

DISCUSSION

The rate of spread of COVID-19 and the alarming mortality rates have made it necessary to take various isolation measures to prevent this rapid spread in many countries, and the strong side of hand washing has emerged in this process. Handwashing, which has received great attention during the COVID-19 pandemic, is a simple, cheap and easily applicable primary preventive measure that most people can do independently (CDC, 2020'a). In this study conducted to examine the hand hygiene behavior of adults during the COVID-19 pandemic process; The majority of the participants (98.6%) stated that they regularly wash their hands, 91.4% of them increased the habit of hand washing during the pandemic process, and 96.2% of them stated that hand hygiene is important in combating the epidemic. In another study conducted during the pandemic process in our country, it was found that 89.4% of the participants had an increased hand washing frequency (Uğurlu, Durgun, Nemutlu and Kurd, 2020). In the study examining hand hygiene and wearing a mask among primary school students in Wuhan, China, it was found that 42.05% of the participants showed good hand washing behavior, while 51.60% had a good mask-wearing behavior (Chen at al., 2020). In the literature, there are studies evaluating hand hygiene behaviors of healthcare workers on this subject (Assefa, 2021; Deepak et al., 2020). In 1860, Florence Nightingale demonstrated the effectiveness of this simple procedure in the early years by writing that nurses should wash their hands frequently throughout the day (Hillier, 2020). It was stated that the rate of alcohol-based hand sanitizer use is high among healthcare professionals and most of the participants have good knowledge on this issue (Assefa et al., 2021). When looking at different populations, it was found that hand washing compliance varied between 1.80% and 78.00% (Chen, 2020; Ali, Verrill and Zhang, 2014; Hirai et al., 2016), and in this study, hand washing rate was quite high. It is stated that hand washing is a simple and effective but easily overlooked way to reduce cross-contamination and transmission of foodborne pathogens (Ali et al., 2014). There are studies evaluating handwashing compliance in different populations (Chen, 2020; Hirai et al., 2016). This situation is thought to be due to the fact that the time of the study was approximately nine to ten months after the emergence of the pandemic and a certain level of awareness and consciousness in the society on this issue (hand washing, distance, isolation, etc.). At the same time, it is thought that the high level of education (71.7% university and above) and the occupational group distribution of the participants who make up the study sample are effective.

Handwashing with soap and water for at least 20 seconds or using alcohol-based hand sanitizers in the absence of soap and water is defined as the first line of defense in stopping the spread of infection (CDC, 2021; CDC, 2020'a). Hand hygiene with alcohol-based hand rub (ABHR) is widely used around the world as one of the most effective, simple and low-cost procedures against COVID-19 cross-over (World Health Organization [WHO], 2020; Lotfinejad, Peters and Pittet, 2020). Alcohol denatures proteins, inactivating enveloped viruses, including coronaviruses, and therefore ABHR formulations containing at least 60% ethanol have proven effective for hand hygiene (Kamming, Gardam and Chung, 2003). In the study conducted by Assefa et al. (2020) in order to evaluate the knowledge, attitude and compliance with the use of alcohol-based hand disinfectants in hand hygiene among healthcare professionals in this

regard, it was stated that 95.8% of the participants used alcohol-based hand disinfectants (Assefa et al., 2021). In this study, it was determined that 82.1% of the participants washed their hands with water and soap and 13.1% used hand disinfectant. Uğurlu et al. (2020) In the study evaluating the social handwashing knowledge and attitude of Turkish society during the COVID-19 epidemic, it was found that the participants mostly used water 92.4% and liquid soap (77.4%) (Uğurlu et al., 2020). It is stated that using soap to wash hands is more effective than using water alone. Because the surfactants in soap lift soil and microbes from skin, and people tend to scrub hands more thoroughly when using soap, which further removes germs (Luby, Halder, Huda, Unicomb and Johnston, 2011; Burton et al., 2011; CDC, 2020b). It is thought that the low rate of disinfectant use in our study may be due to the fact that these products are more costly and less accessible than washing with water and soap. In addition, it is thought that the fact that the research population consists of individuals other than healthcare professionals will also be a factor.

It is recommended to dry hands after washing, as microbes multiply and transfer more easily in wet environments (Luby et al., 2011; CDC, 2020b). However, it remains unclear what is the best way to dry hands, because there are few studies on hand drying and the results of these studies are conflicting. Nonetheless, studies suggest that using a clean towel or air drying hands are best (Burton et al., 2011; Todd, Michaels, Smith, Greig and Bartleson, 2010; Gustafson et al., 2000). In this study, it was found that 49.3% of the participants used normal cotton towels to dry their hands and 47.7% used disposable paper towels. In another study conducted in the Turkish community during the COVID-19 outbreak, it was determined that most of the participants (63.8%) were dried with a cloth towel after washing their hands (Uğurlu et al., 2020). Published in 2012 by the Ministry of Health, Turkey, according to the results of research handwashing; while the use of paper towels is 2.7% in rural areas and 7.6% in urban areas, 63.3% of them use normal cotton towels (Huang, Ma and Stack, 2012). According to this study conducted before the pandemic and with a very large sample group, it is seen that the use of disposable paper towels increased considerably during the pandemic period.

It was observed that the handwashing of the participants during the pandemic process changed in terms of age group, gender, and the status of seeing hand hygiene as important in combating the epidemic. It was observed that handwashing behavior increased more especially among the young adults aged 18-40 (93.4) and then between the ages of 41-64 (86.2), which we can call the middle adult age group. It is thought that this situation is due to the fact that these age groups are more active in working life compared to the older age. At the same time, it can be said that the majority of the participants in this study were young and female. Guzek et al. (2020), in a study evaluating gender-dependent hand hygiene and personal protective behaviors of Polish adolescents, it was found that the level of knowledge of women was higher. In the same study, it is also stated that women wash their hands more frequently daily and always wash their hands more often when necessary (Guzek et al., 2020). In a study conducted among primary school students in Wuhan, China, gender, grade, out-going history father's occupation, mother's education, and the time filling out the survey were significantly associated with hand hygiene (Chen et al., 2020). In the study findings, it was

observed that hand washing status during the pandemic process did not change in terms of educational status, presence of chronic disease, COVID-19 disease and contact status. In a study examining the knowledge, attitudes and practices of nurses regarding hand washing, it is stated that awareness and education on hand hygiene will increase the attitudes and practices of healthcare workers towards minimizing hospital infection (Deepak et al., 2020). The findings show that hand washing behaviors are affected by various socio-demographic and other factors. It is thought that it is especially important to identify the groups at risk in this matter and to make the necessary effort to remove obstacles in this regard.

Nearly all of the participants stated that they always wash their hands after using the toilet, 92.7% after coming from outside, 84.1% after shopping, and more than half (52.2%) after meeting with my friends or relatives. Women's socialization, they do not always specify the steps recommended by their more frequent hand-washing and hand-washing procedure is in contact with other people and health-related condition (Guzek et al., 2020). As a result, behaviors that require hand washing are similar. The striking situation in this regard is that hands are washed more after an action or behavior, for example before going to the toilet and before meeting with my friends or relatives, the rate of hand washing is lower. The results of this study are thought to be important in terms of showing hand washing behaviors and some related factors during the pandemic process.

CONCLUSION

The importance of hand hygiene to prevent transmission of microorganisms and reduce the spread of infection has become a focus again after the global coronavirus (COVID-19) pandemic. Hand hygiene is an important factor in reducing potentially disease-causing germs. Hand hygiene continues to be one of the most important and effective methods of reducing cross-infection among patients and healthy individuals that can cause disease. In the COVID-19 outbreak, effective hand hygiene is a vital intervention that can be used to prevent the spread of the disease. For this reason, it is important to increase the public's knowledge and raise awareness on this issue, especially during pandemic periods, for possible future pandemics. However, it is recommended that new studies be conducted in a wider population in order to identify possible barriers and facilitators to handwashing and tools that objectively evaluate handwashing behavior.

Limitations

Some limitations of this study need to be taken into account in order to be evaluated correctly. Although the study was conducted during the pandemic period, the findings discussed in the literature belong to the pre-pandemic period. This may cause some data not to be compared sufficiently. In addition, the other limitation of the study is that it is collected online in pandemic conditions.

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