



Evaluation of the effect of Covid-19 pandemic on hand washing habits in pregnant women

Recep ERİN*^{ORCID}, Deniz KULAKSIZ^{ORCID}, Kübra BAKİ ERİN^{ORCID}, Yeşim BAYOĞLU TEKİN^{ORCID}

Department of Obstetrics and Gynecology, University of Health Sciences, Trabzon Kanuni Health Practice and Research Center, Trabzon, Turkey

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Abstract

We aimed to investigate the change in hand washing habits of pregnant women before and during the COVID-19 pandemic. This study was designed prospectively and observationally. Two questionnaire forms were administered to each participant to determine their pre-pandemic and during pandemic habits relating to handwashing. The total score of handwashing attitude before and during the pandemic was calculated by summing the answers to the 25 questions in the survey. Independent t-tests were performed for data. P-values of <0.05 were considered statistically significant. The mean age of the 392 pregnant women participating in the study was 30.29±5.92. The values of gravidity, BMI and gestational age were estimated as 1.89±1.05, 27.08±4.26 kg/m², 27.08±4.26 weeks, respectively. The frequency of the participants washing their hands more than 10 times a day increased from 32.2% before the pandemic to 75.8% during the pandemic. While the answer to the question "Is hand washing important in the prevention of diseases causing pandemics?" was 65.1% before the pandemic, it was 93.7% during the pandemic. Although the answer to the question on "How many seconds should the hand washing time be at least?" was 20 seconds at a rate of 42.9% before the pandemic, it was 84.1% during the pandemic. The total handwashing habit score was calculated as 79.25±11.92 before the COVID-19 pandemic and 94.42±5.58 during the pandemic (p<0.05). This study demonstrated that the pregnant population was affected by the COVID-19 pandemic and experienced a great change in hand hygiene.

Keywords: Covid-19 pandemi, hand hygiene, handwashing habit score, pregnant population

1. Introduction

The new type of coronavirus was first detected towards the end of 2019 in Wuhan, Hubei Province, China. COVID-19 stands for "2019 coronavirus disease" and is used to refer to an acute respiratory infection epidemic caused by a novel coronavirus. It was originally called 2019-nCoV (2019 novel coronavirus). The coronavirus strain recently started to be called SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2). Coronavirus spread rapidly to neighboring countries (South Korea, Japan, and Iran) after being first detected in Wuhan, China (1). Later, due to the fact that the disease continued to spread to Europe and the United States, the World Health Organization (WHO) declared COVID-19 disease a global epidemic in March 2020. Countries were encouraged to take effective measures to reduce transmission (2).

While there was no vaccine at the beginning of the Covid-19 pandemic, vaccines have been developed recently. However, due to the presence of new mutant variants and the fact that the entire world population has not yet been vaccinated, the epidemic has still not been brought under

control (3). In this case, personal protective measures, non-pharmaceutical measures such as wearing surgical masks and washing hands are important to reduce transmission risk by creating a barrier to prevent aerosol spread and protect susceptible populations (4, 5). In this context, public health action to prevent transmission is critical in slowing the spread of the disease. One of the main recommendations published by the WHO for communities is to wash their hands frequently and correctly.

Evidence from the literature has shown that frequent handwashing can reduce the risk of viral transmission by 55% (6, 7). Given the widespread population vulnerability to COVID-19 infection, hand hygiene is repeatedly emphasized in the entire population (8). Pregnant women constitute one of the most vulnerable groups in society. In this study, we aimed to investigate the change in handwashing habits of pregnant women at risk of epidemic diseases.

2. Materials and Methods

This study was designed prospectively and observationally. It

* Correspondence: erinrecep@gmail.com

was conducted between April 2020 and June 2020, at the Gynecology and Obstetrics Polyclinics of Kanuni Training and Research Hospital in Trabzon, Turkey. All participants signed informed written consent before being enrolled in the study. The study was reviewed and approved by the ethics committee of Trabzon Kanuni Health Practice and Research Center (Ethics approval reference number: 2020/36 date 23.07.2020). All procedures were performed according to the Declaration of Helsinki.

As a result of the sample size analysis, 400 pregnant women were included in the study. Pregnant women who consulted antenatal outpatient clinics were included in the study. Pregnant women who could not give importance to personal hygiene, who were mentally ill, or who were allergic

to personal cleaning agents were not included in the study.

Demographic data of all participants included in the study were recorded. These are age, BMI, gravida, parity, personal history, family history, operation history, gestational age, and education level. Detailed physical and obstetric examinations were performed. The Ministry of Health study was taken as a reference to measure hand washing habits, and a total of 25 questions were used in the questionnaire forms. Its validation and verification has been done in the Ministry of Health study. (9). Each participant received two questionnaire forms, one containing pre-pandemic habits and the other questioning during pandemic habits. Hand washing habit survey questions are shown in Table 1. In addition, the participants were asked in the following five questions.

Table 1. A total of 25 questions were asked before and during the pandemic to measure the hand washing habit score

	Before COVID-19 pandemic	During COVID-19 pandemic
	Never (0) / Rarely (1) / Sometimes (2) / Often (3) / always (4)	Never (0) / Rarely (1) / Sometimes (2) / Often (3) / always (4)
I wash my hands before meals		
I wash my hands after meals		
I wash my hands before using the toilet		
I wash my hands after using the toilet		
I wash my hands after coming home from outside		
I wash my hands after shaking hands with people		
I wash my hands before going to bed		
I wash my hands after touching animals		
I wash my hands when I get up in the morning		
I was my hands before and after changing babies' diapers		
I wash my hands before eating anything		
I wash my hands when I see them dirty		
I wash my hands before preparing food		
I wash my hands after exchanging money		
I wash my hands after cleaning my nose		
I wash my hands after touching garbage		
I wash my hands before touching a sick person		
I wash my hands after touching a sick person		
I wash my hands after combing my hair		
I wash my hands after cleaning the house		
I wash my hands after washing the dishes		
I wash my hands after doing some cleaning		
I dry my hands after washing them		
When I wash my hands, I remove my ring.		
I wash my hands after touching something commonly used like a doorknob.		
Total Hand Washing Habits Score		

Are you using a hand sanitizer? How many seconds should the hand washing time be at least? Is hand washing important in the prevention of diseases causing pandemics? How often do you wash your hands? What do you often use during the hand cleaning process?

The answers to the 25 questions in the survey were taken as 5-point Likert (never, rarely, sometimes, often, and always) in order of importance. The scoring was assigned in order of importance as 0, 1, 2, 3, 4. The total score of hand washing attitude before and after the pandemic was determined by

summing the answers to these 25 questions. The lowest 25 and the highest 100 points can be obtained (9).

Statistical analysis was performed using SPSS version 23.0 (IBM Corp., Armonk, NY, USA). Means, medians, and modes were determined, and the Kolmogorov-Smirnov test was performed to determine normality. To compare responses from before and during the pandemic, normally distributed data were analyzed with independent t-tests. Pearson's correlation analysis was applied to the data conforming to a normal distribution for the relationship between education

level and handwashing habits. P-values <0.05 were considered statistically significant.

3. Results

Altogether, 400 patients were initially planned for inclusion in the study. However, the study was completed with 392 pregnant women due to 8 incomplete or incorrectly filled questionnaires. The mean of the demographic data of the participants were as follows; the mean age was found as 30.29 ± 5.92 , gravida as 1.89 ± 1.05 , BMI as 27.08 ± 4.26 kg / m², and gestational age as 27.08 ± 4.26 weeks. Education level ratios were 22.4% for primary education, 38.3% for high school, and 39.3% for university (Table 2). In parallel with the increase in the education level, the handwashing habit score increased significantly.

Table 2. Demographic variables of the study population

		Mean	P
Age (year)		30,29±5,92	
Gravida		1,89±1,05	
BMI (kg/m ²)		27,08±4,26	
Gestational age (week)		24,37±11,74	
Education (%)	Elementary school	22,4	
	High school	38,3	
	University	39,3	
Total hand washing habits score	Before Covit-19 pandemic	79,25±11,92	0.001
	During Covit-19 pandemic	94,42±5,58	

Independent t test, data is presented as frequency and percentages or mean ± SD, p<0.05

It was determined that the frequency of hand washing 1-2 times a day before the pandemic was 3.2%, while this value decreased to 1.6% during the pandemic, and the frequency of washing more than 10 times per day increased from 32.2% before the pandemic to 75.8% during the pandemic.

While the answer to the question "Is hand washing important in the prevention of diseases causing pandemics?" was 65.1% before the pandemic, it was 93.7% during the pandemic. Although the answer to the question "How many seconds should the hand washing time be at least?" was 20 seconds before the pandemic at a rate of 42.9%, it was at 84.1% during the pandemic. Most participants (72.1%) answered "liquid soap" to the question "What do you use frequently in hand washing?". The use of hand disinfectant increased during the pandemic (Table 2). The total hand washing habit score was 79.25 ± 11.92 before the COVID-19 pandemic and 94.42 ± 5.58 during the pandemic. This difference was statistically significant ($p=0.001$) (Table 3).

4. Discussion

Hand hygiene is a widely accepted principle in preventing disease transmission because proper hand hygiene is likely to reduce the spread of infectious diseases by 24-31% (10). According to the Center for Disease Control (CDC), the virus is currently believed to be spreading through direct contact,

indirect contact, and droplet contact. To avoid virus transmission, the CDC recommends washing hands frequently for 20 seconds with soap and water; alternatively, if soap and water are not available, a hand sanitizer containing at least 60% alcohol can be used (11). Although hand washing is very important, it is very difficult to maintain the habit. Due to different populations and contexts, compliance with hand washing ranges from 1.80% to 78.00% (12).

Table 3. The answers of pregnant women about COVID-19 and hand washing before and during the pandemic.

		Before COVID-19 pandemic (%)	During COVID-19 pandemic (%)
Count of hand washing per day.	1-2	3,2	1,6
	3-5	24,2	3,2
	6-10	40,3	19,4
	More than 10	32,3	75,8
Is hand washing important in the prevention of diseases causing pandemics?	Little matter	7,9	3,2
	Important	15,9	0,0
	Highly important	11,1	3,2
	Very highly important	65,1	93,7
Minimum hand washing (sec.)	5	1,6	0,0
	10	36,5	7,9
	15	19,0	7,9
	20	42,9	84,1
What do you use often for hand cleaning?	Water	6,6	3,3
	Solid soap	18,0	13,1
	Liquid soap	72,1	65,6
	Hand Sanitizer	3,3	18,0

Data are given as percentages.

The pandemic is still not under control, as the entire world is unvaccinated and new mutant viruses are emerging (3). For these reasons, hand washing is very important in preventing COVID-19 infection (13). There are serious campaigns all over the world about the importance of hand washing. In fact, it would be very appropriate to name 2020 as "the year in which human beings reinvented hand washing". Special attention should be paid to pregnant women, who are among the most vulnerable populations to the COVID-19 pandemic. This is why hand washing is so important for this group. For this reason, in this study, we aimed to investigate the extent to which pregnant women view the COVID-19 epidemic and their hand washing attitude during the pandemic period.

The results of this study demonstrated that the hand-washing habit of the pregnant population was in good condition in the pre-epidemic period. It was determined that the total hand washing score was 79.25 ± 11.92 before the pandemic and that this score increased to 94.42 ± 5.58 during

the pandemic. A maximum of 100 points can be obtained from the hand-washing questionnaire. Accordingly, the hand washing score of 79.25 before the pandemic was considered good. The hand washing score measured during the pandemic was at a much better level.

According to the Turkey Hand Washing Habits 2009 study, hand washing habits from 6854 people showed that; the hand washing score was higher among females, increased with education level, and a difference was found between staying in the countryside and staying in the city (9). Similarly, in our study results, as the level of education increased, the handwashing habit score also increased significantly.

Under ideal conditions, the virus can stay on different surfaces for hours or days. The surfaces most exposed to this type of transmission include door handles; the handles of public transport, light switches, and mobile phones (14). In this study, it was found that the average number of daily hand washes was 6-10 times (40.3%) most frequently before the pandemic, but this frequency changed to more than 10 times (75.8%) during the pandemic. "After touching the door handle, after shaking hands with people, before going to the toilet", it is seen that the habits of handwashing are the most striking attitudes compared to the pre-pandemic. This change can be said to occur after it has been proven that it is possible to become infected by touching surfaces or objects with the COVID-19 virus and then bringing the hands towards the mouth, nose, or eyes (15).

The answers given by pregnant women before and during the epidemic (65.1% vs. 93.7) to the question "Is hand washing important in preventing an epidemic disease such as COVID-19?" are at a satisfactory level. It has been known for many years that hand washing is effective in preventing epidemic diseases. The answer to the question "How many seconds should the hand wash be at least?" was "20 seconds" at a rate of 42.9% before the pandemic. During the pandemic, this rate increased to 84.1%. These rates show that the pregnant population in this country seriously cares about this situation. In fact, pregnant women applied to a doctor's examination to find out if the pregnancy was on the way, even on the days when curfews were imposed during a pandemic transmitted from person to person. This is the protective instinct found in all living beings. Hormonal changes during pregnancy and the instinct to protect their baby may be the reason for the importance pregnant women give to hand washing.

Hand hygiene products include liquid or bar soaps, synthetic detergents, antiseptic hand washing wipes, and alcohol-based hand sanitizers. These (alcohol-based hand lotion, povidone iodine) are highly effective against enveloped corona viruses and other agents. If alcohol-based hand rubs (gel or foam) or povidone iodine are not available, a 70% ethanol solution can be used. Correct use is very

important for these to be effective. While each formulation can be effective against COVID-19, it can increase the risk of hand dermatitis by altering the skin barrier integrity and function (15). In this study, liquid soap was highly preferred in hand hygiene products before and during the pandemic. At the same time, the use of hand disinfectants that we encounter in almost every public space after the pandemic has increased.

Considering publications on handwashing in the prevention of the COVID-19 pandemic, none report on the handwashing habits of pregnant women. The publications found are generally related to hand dermatitis due to frequent hand washing of healthcare workers and disinfectant formulations effective against COVID-19 infectious viruses (16-19). While the habit of handwashing decreased in the pre-pandemic period, it increased during the pandemic period. Although the importance of handwashing has been known for many years, in the 21st century, it is the most prominent method of protection against the pandemic in the vaccine-free period. Studies on the importance of handwashing and its correct application should always be done.

The limitations of the study are the fact that the study is a questionnaire based on subjective answers, the pregnant female population was preferred in the selection of a sensitive population, and that men and non-pregnant women were not included in the study. This work is supported by all community-based studies.

Consequently, the most serious epidemic of our century, which still affects the whole world, is the COVID-19 outbreak. While all members of the society can be affected, the most vulnerable groups are immunodeficiencies, chronic patients, the elderly and special groups like pregnant women. No studies have reported the change in hand hygiene attitudes of pregnant women on the COVID-19 outbreak. This work is the first in this area. In this study, we have demonstrated how the pregnant population has been affected by the epidemic in this period when the world experienced a serious change in attitude and hand hygiene.

Conflict of interest

The authors declare that they have no conflict of interests.

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Authors' contributions

Concept: R.E., Y.B.T., Design: R.E., Data Collection or Processing: R.E., K.B.E., D.K., Analysis or Interpretation: R.E., Literature Search: R.E., D.K., Writing: R.E., D.K., K.B.E

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