

Research Article

Impact of the Covid-19 Pandemic on Awareness, Risk Level, Hand Washing, and Water Consumption for Hospital Staff in Sulaimaniyah City of Iraq

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Article Info	Abstract
Article History	Covid-19 impacted several sectors such as economic, political, social, sports and art activities, etc. On the other hand, it influenced handwashing times, awareness, and risk levels for the hospital staff in Sulaimaniyah city. In this study, the effects of Covid-19 on awareness, risk level, and hand cleaning have been focused on by hospital staff in Sulaimaniyah City hospitals. A qualitative method using an electronic questionnaire was applied for data collection. The total number of participants was 404 hospital staff. The percentage ratio of female employees is higher than males in the health sector in the Sulaimaniyah Hospitals. Awareness by the hospital staff has increased during the Covid-19 pandemic. Participants aged more than 55 years were more at risk because of their age and females more than 55 years had the most threat. Covid-19 impacted the increasing rate of washing hands by 38% and using materials for cleaning hands by 46% for the hospital staff in Sulaimaniyah City. The average grand total change percentage was 41%. Water consumption increased by 135% in the Sulaimaniyah Hospitals throughout the Covid-19 pandemic. On the other hand, fewer working hours in the hospitals led to a high-water consumption ratio among the employees in the hospitals.
Received Mar 15, 2023	
Revised May 29, 2023	
Accepted Jun 02, 2023	
Keywords	
Covid-19	
Hand washing	
Hospitals	
Water consumption	
Awareness	
Risk level	



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1. Introduction

The Coronavirus-19 disease (Covid-19) is responsible for the global pandemic that was announced on March 11, 2020, by the World Health Organization (WHO). It is caused by the coronavirus 2 that causes severe acute respiratory syndrome (SARS-COV-2) [1]. According to Huang, on December 31, 2019, the

first case reported was from Wuhan, China. Also, on February 24, 2020, the first confirmed case in Iraq was reported from Al-Najaf City [2]. Other cases were reported from other Iraqi governorates; this had been alarming for Iraq. On March 1, 2020, the Covid-19 disease was confirmed by the Kurdistan Region Government (KRG) for the first time. Therefore, the KRG has raised awareness in the general population and tried to dispatch health measures for travelers [3]. Since vaccinations are still being developed, additional methods of preventing transmission have become important [4, 5]. Individuals should wash their hands frequently with water and soap or use hand-sanitizing gel, according to the WHO and the Polish Chief Sanitary Inspectorate [6]. The first action they should take is to protect themselves and others [1]. Similarly, a statement released by United Nations International Children's Emergency Fund (UNICEF) during the global pandemic states that frequent handwashing with soap and water is one of the cheapest, easiest, and most important ways to prevent the spread of a virus [7]. Furthermore, national organizations such as the Centers for Disease Control and Prevention (CDC) of the United States of America have stated that keeping hands clean is especially important to prevent the virus from spreading during the Covid-19 pandemic and that hand washing with soap and water should last at least 20 seconds, or that alcohol-based hand sanitizers should be used when soap and water are not available [8].

In Iraq, from January 3, 2020, to April 24, 2021, there have been 1,018,321 confirmed cases of Covid-19 with 15,174 deaths [9]. As of April 19, 2021, 190,264 vaccine doses have been administered, while in Kurdistan, there have been 138,222 confirmed cases with 3,869 deaths, according to the Ministry of Health in KR.

Doctors, nurses, and physiotherapists are among the Healthcare Workers (HCWs) responsible for patients' direct care, facilitation, service, treatment, or assistance. Laboratory respiratory therapists, technicians, housekeepers, and possibly medical waste handlers are all instances [5, 10]. HCWs are at a high risk of contracting the virus since they are forced to work near virus-infected patients and their work-contaminated environments. As a result, hand hygiene is critical for HCWs to avoid Covid-19 interference [11]. This purpose can be achieved by washing hands properly with soap and water, alcohol-based hand rubs, and alternative antiseptic agents. However, regular hand hygiene may even be difficult, as the result of detergents, disinfectants, and water may dispose HCWs' hand dermatitis, or not having proper and sufficient hand washing equipment at their workplace may be challenging to the health workers [12]. However, while

the soap is scraped, washing hands for 15 to 20 seconds would take around two liters of water if the faucet is open or one liter if the tap is turned off [13]. If everyone washes their hands at least ten times daily to avoid Covid-19 infection, they will use about 10 to 20 liters of water daily [13]. As a result of the Covid-19 pandemic, a family of five would require nearly 50 to 100 liters of water per day for hand washing, resulting in a 20 to 25% increase in water demand [13].

Water shortages could occur because of such rapid growth in demand; however, the increased water demand will be much more observable in hospitals among health workers due to the frequent touch with patients; evidence suggests that the frequency of hand washing enhanced throughout the co-current pandemic situation [14]. As a result, during the concurrent pandemic, people have been washing their hands more frequently. Also, in India, during this Covid-19 pandemic, due to the tap open during hand washing, the water demand has increased by 20 to 25% [15]. Additionally, water demand increased by 40% after the government ordered people to remain home as part of a nationwide curfew, claimed by an official water sector in Jordan [13]. Therefore, water poses another possible problem of water loss during hand washing because of increased water demand.

This increase in demand might put a lot of strain on already overstretched water resources as they try to fill current shortages in the system. When the water supplies dry up in the summer, the situation will become even worse. Though water loss during hand washing could be a serious issue, no previous study could evaluate water loss during hand washing globally.

Water stress affects over 2 billion people worldwide, and the number is growing daily [13]. This is especially noticeable in small and medium-sized countries around the world, which could be attributed to several factors, including 1) a limitation of water in those places, 2) water loss owing to drought or climate change, 3) water that is unfit for human use due to contamination of local water supplies, and 4) the nearest water source may be a long distance away [16]. Simultaneously, worldwide water demand is increasing at around 1% per year, and demand has been unexpectedly boosted because of the Covid-19 pandemic and is projected to worsen with time [17]. Such an unforeseen worldwide demand for water would greatly strain finite water resources, aggravating the current water supply shortage. Two solutions are raising awareness about closing taps or adopting sensor taps that turn off automatically while cleaning hands with soap. Alternatively, suppose the cost is low; alcohol-based hand sanitizer could be a viable option to avoid water

loss. In that case, keeping the water supplies safe is also important during the pandemic even though. Based on current evidence, The Covid-19 virus has not been discovered in drinking water supplies since the risk to water supplies is low [18]. Many individuals leave their faucets running while lathering and cleaning their hands, wasting much water [19].

Covid-19 impacted several environmental parameters in the literature, including water consumption [20-22]. There are no published documents on water consumption throughout the Covid-19 pandemic in the hospitals in Sulaimaniyah City. Consequently, the authors designed a questionnaire to examine the frequency and the water loss or the demand for water throughout the Covid-19 pandemic. Also, they wanted to illustrate the anxiety and awareness of health workers in Sulaymaniyah City-Iraq. The author's hypothesis and assumption are that there will be an increase in the frequency and duration of handwashing during the pandemic and the amount of time spent washing hands before Covid-19.

2. Research Methodology

The authors of this study surveyed several major questions to understand more about the impact of Covid-19 on practices for personal hygiene in the Kurdish Regions of Iraq. The study site, participants, sample sizing, and other specific details about the investigation are illustrated in separate sub-sections.

2.1. Study Site

The largest Governorate in Iraqi Kurdistan is Sulaymaniyah Province, located in southern Kurdistan (northeastern Iraq) (Kurdistan Regional Government). Sulaymaniyah City, the administrative center of the Sulaymaniyah Governorate, is located at $35^{\circ}33'40''N$ and $45^{\circ}26'14''E$, with an elevation of about 830 m above sea level. Sulaymaniyah Province covers 17,023 km² in total [23].

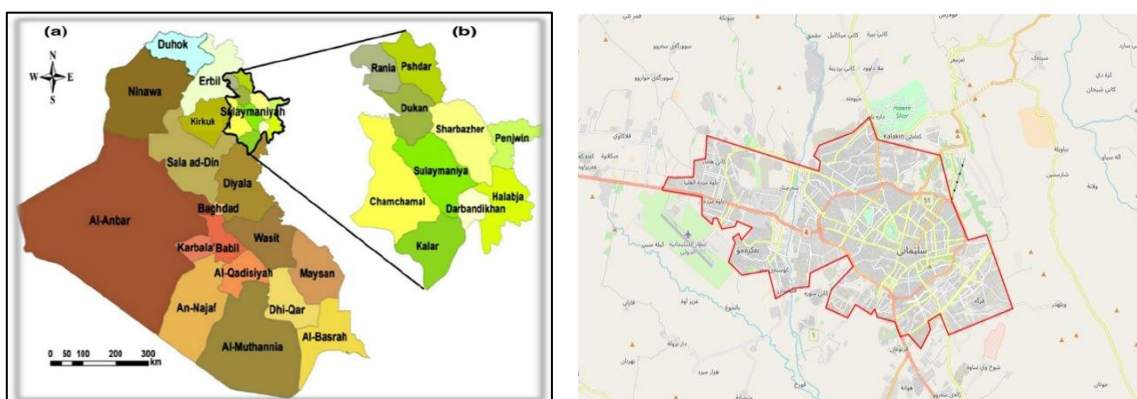


Figure 1: a) Iraq and Sulaimanyah Province b) Sulaymaniyah city center [24, 25]

The location of the study area, which includes the districts of Sulaymaniyah Province, is depicted in Figure 1. Participants had to work in the medical fields in the city's center and at least one of the hospitals as part of the exclusion criteria. Anyone who has this information is eligible to participate in this survey.

2.2. Participants and Sample Size Technique

According to estimates made in 2020, the population of Sulaymaniyah City was approximately 1.893 million individuals, constituting a portion of the overall population of Iraq [26]. In this case, the following formula for calculating the necessary sample size for this study will be sufficient [27,28]:

$$n = \frac{N}{1+Nd^2} \quad (1)$$

Where n = required sample size, N = population size, and d = margin of error (considered $d= 0.05$) [28].

$$n = \frac{2155398}{1+(2155398*0.05^2)} = 399.92 \quad (2)$$

The formula provided that for this analysis, about 400 samples would be appropriate for Sulaymaniyah. In the research, the opinion of 404 people was collected from different professions at the hospitals and health centers. To have opinions on gender equality, among the people who participated in our reach were 207 females and 197 males. This gives us a percentage of 51.23% female and 48.77% male participants. This cross-sectional and quantitative research was performed from Nov 01, 2021, to Dec 01, 2021.

The questionnaire was designed to get specific data like (age, gender, profession, days, hours spent at work, exposition to covid patients). The questionnaire was created, and later it was checked by experts. Furthermore, some opinion questions were asked to familiarize the person's anxiety and awareness. At last, some comparative questions were asked about the frequency of washing hands before and during covid. The result of the questionnaire was fascinating and was worth sharing.

2.3. Questionnaire Design and Data Collection

The current study aimed to learn more about the medical staff's opinion regarding the impact of the Covid-19 pandemic on hand washing, water consumption, awareness, and risk level for hospital staff in Sulaymaniyah City. It also shows how the results have unintended consequences. Primary data were collected using the standardized questionnaires created after a review of the literature [27]. The authors benefited from the field interview and snowballing methods via a web-based tool (i.e., google form) to gather the data from several local and private hospitals in Sulaymaniyah City. This survey consisted of 19 questions with a suggested filling time of 3-5 minutes. The authors used snowball sampling to distribute the

survey link in Sulaimaniyah city hospitals. The questions were divided into four sections. The first section is about demography; the data is about the participants' general characteristics. This data type allowed us to better recognize the responders' perspectives, including age, gender, and profession. The second category contained questions about more detail in the daily work. The third category is about some questions before and during Covid-19. The final category concerns the barriers and obstructions toward the medical staff during the pandemic.

2.4. Statistical Analysis Instrument

After collecting the data, the authors analyzed the results via Microsoft Excel tool, and with the help of this tool, the data could be analyzed scientifically [29]. First, to analyze the results sufficiently and easily, the authors encoded the data into reliable numbers [30]. Then, via using the Microsoft Excel function tools, some statistics about the ratio of gender, age, profession, awareness degree, water consumption, and many other parameters were analyzed. Therefore, some figures were produced from the result sheet. The analytical method of having a percentage of 100% is considered while analyzing the data. For instance, in the question "Barriers for not washing hands frequently, " the following barriers were commonly noticed: Equipment fear, far away bathroom, forgotten, no sanitizer, no time, cold water, no equipment, and water quality. Participants could tick the right answer regarding their opinion. For analyzing it, it has been encoded as 0 and 1.

Then, the percentage of awareness level can be easily extracted by using the following formula:

$$\frac{\left[\left(\frac{\text{Average of Opnion}}{5} \right) + \left(\frac{\text{Sum of avoinding Barriers}}{8} \right) \right]}{2} \quad (4)$$

Here is the formula, if a person strongly agrees to all four questions and has no barriers. Consequently, the result would be 1, which is 100%. The total percentage of awareness risk in Table 1 is determined using the following equation. Here the authors wanted to measure a ratio between the risk that an employee has and his/her awareness by using this simple formula:

$$\text{Total percentage of awareness – risk} = \text{Awareness\%} – \text{Risk\%} \quad (5)$$

Here the answer is rational, meaning that: 0 is a neutral point (the person has a balance between awareness and risk), (+) is a good sign (the person is at low risk with high awareness), (-) is a bad sign (the person is at high risk with low awareness)

3. Results and Discussions

3.1. Demography Data

In this part, the general demography of the participants is discussed, such as the number of participants, gender, age, and profession, Table 1. A total of 404 contributors from different hospitals and private clinics in Sulaymaniyah City participated in the questionnaire. Among them, 51.23% were female, and 48.77% were male, as shown in Figure 2.

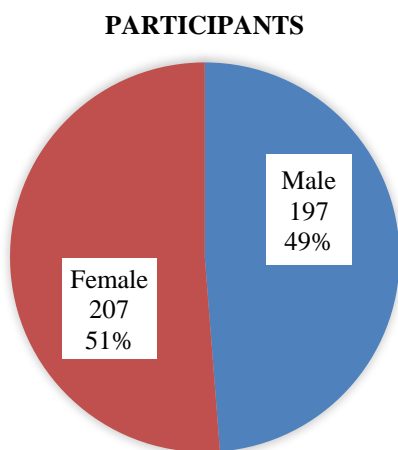


Figure 2. Gender Percentage of Participants

To identify age limits, the authors divided into five categories: (20-25 years, 26-31 years, 32-45 years, 46-55 years, and more than 55 years). No people below 20 years old were considered because there is no employee under this age.

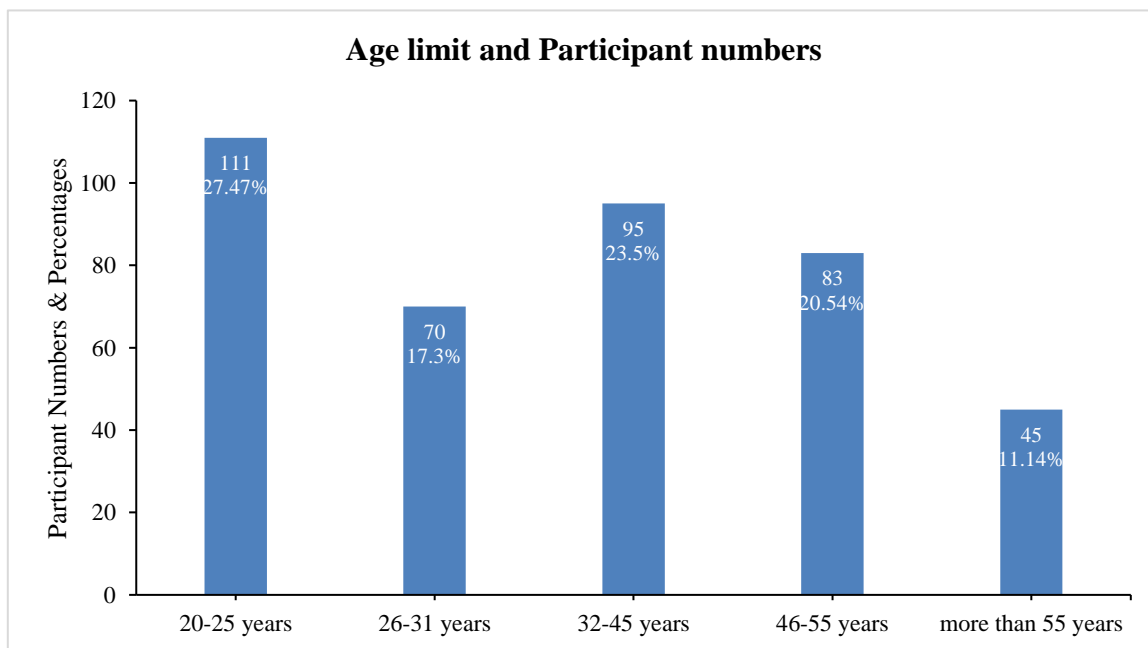


Figure 3. Age limit of participants

The participants' profession is categorized as Doctors, Dentists, Microbiologists, and Health workers. While the maximum and minimum rates of about 31.4% and 18% consisted of healthcare and dentists, respectively, only data from those professions were collected (i.e., patients were not contributed to the current work) as shown in Figure 4.

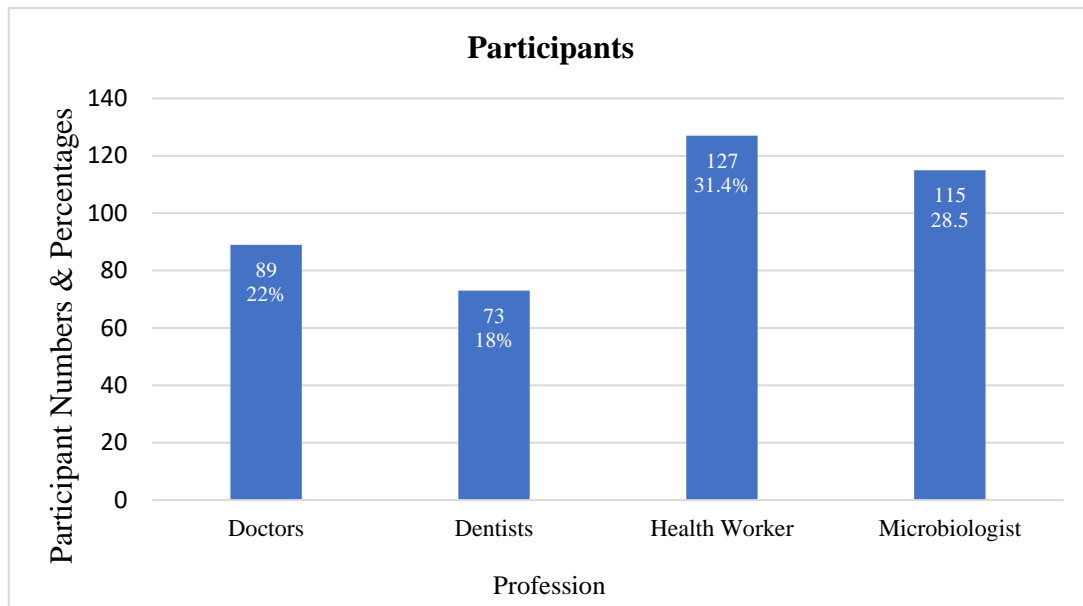


Figure 4. The profession of the participants

3.2. Risk and Awareness Levels

The average risk and awareness levels for the hospital employees are shown in Table 1. This section included age, working days, working hours, and exposure to Covid-19 patients.

In Table 1, the authors illustrated the average level of potential risks of getting the Covid-19 pandemic. At the same time, according to the participants' answers, the level of awareness regarding covid and sanitary issues was analyzed. The last column is a ratio between risk and awareness levels. The table shows the percentage level of risk, awareness, and cross-tabulation ratio according to gender, age, and profession [30, 31].

According to the results shown in Table 1, it can be realized that there is a total of -39% ratio gap between risk and awareness, meaning that despite that the risk level is 64%, the awareness level is three times less than the risk level. This is a big threat that the employees at the hospital should be warned and educated regarding the threats of Covid-19, and their awareness rate should be increased. According to Nemati et. al [32] the low awareness level of nurses during the Covid-19 pandemic caused huge anxiety in handling and taking care of patients.

Upon closer inspection, it can be noticed that generally, employees over 55 years old, specifically female employees are more under threat because of their age. Female employees over 55 show the least awareness level with only 22%, and the total aware-risk level ratio percentage is -54%. The male age group of more than 55 years also has the most risk, but their awareness level is somehow more than females in the same age group, with a percentage of 26%, and the total aware-risk level ratio percentage is -45%.

Table 1. Demography data, average risk, and awareness levels of hospital employees

Age (Year)	Profession	Average of Risk Level	Average of Total Aware	Average of Total Aware - Risk	Profession	Average of Risk Level	Average of Total Aware	Average of Total Aware - Risk	
	Female	63%	26%	-38%	Male	64%	24%	-40%	
20-25	20-25	54%	31%	-23%	20-25	53%	24%	-29%	
	Dentist	55%	31%	-25%	Dentist	53%	28%	-26%	
	Doctor	56%	31%	-25%	Doctor	53%	22%	-31%	
	Health Worker	53%	39%	-14%	Health Worker	51%	22%	-29%	
	Microbiologist	50%	23%	-27%	Microbiologist	57%	30%	-27%	
26-31	26-31	63%	26%	-37%	26-31	62%	27%	-35%	
	Dentist	50%	22%	-28%	Dentist	65%	24%	-40%	
	Doctor	65%	30%	-35%	Doctor	66%	31%	-35%	
	Health Worker	63%	24%	-39%	Health Worker	60%	28%	-32%	
	Microbiologist	64%	25%	-38%	Microbiologist	59%	22%	-37%	
32-45	32-45	65%	23%	-42%	32-45	68%	21%	-47%	
	Dentist	68%	24%	-44%	Dentist	65%	19%	-46%	
	Doctor	65%	22%	-42%	Doctor	59%	25%	-34%	
	Health Worker	65%	22%	-43%	Health Worker	72%	23%	-49%	
	Microbiologist	61%	26%	-35%	Microbiologist	68%	21%	-47%	
46-55	46-55	71%	22%	-49%	46-55	68%	22%	-46%	
	Dentist	71%	27%	-44%	Dentist	71%	21%	-50%	
	Doctor	68%	16%	-52%	Doctor	60%	32%	-28%	
	Health Worker	71%	22%	-49%	Health Worker	68%	21%	-47%	
	Microbiologist	70%	20%	-50%	Microbiologist	69%	21%	-48%	
More than 55	More than 55	76%	22%	-54%	More than 55	72%	26%	-45%	
	Dentist	77%	18%	-59%	Dentist	74%	23%	-51%	
	Doctor	76%	29%	-47%	Doctor	74%	21%	-54%	
	Health Worker	76%	25%	-51%	Health Worker	75%	28%	-47%	
	Microbiologist	76%	17%	-59%	Microbiologist	65%	28%	-37%	
Grand Total (M&F)		64%	25%	-39%	Grand Total (M&F)		64%	25%	-39%

It is worth mentioning that the employees aged 20-25 are the most aware group regarding other aged employees. In the case of female employees aged between 20-25, the awareness-risk ratio percentage is -23%, but the males of the same age group are -29%.

3.3. Hand Washing

Information regarding hand washing, cleaners, and reasons for hand washing are given in Table 2. This part is sub-divided into the following sections:

3.3.1. Hand Washing Before and During Covid -19

After finding the demographical information from the participants, the authors took information about (washing their hands, frequency, and tools of cleaning hands) before and during the pandemic.

3.3.2. The Change of Hand Cleaner Equipment

Here the authors wanted to know the equipment the employees used to clean their hands before and during the pandemic. The options were alcohol, hand sanitizer, soap, and only water.

3.3.3. The total Change Percentage of Reasons to Wash Hands

In this section, the authors wanted to find out why an employee would think he/she should wash his/her hands before and during the Covid-19 pandemic. The authors put seven reasons for this section, and the participants answered accordingly. The options were washing time, touching equipment, contacting the patient before and after a meal, coughing/sneezing, and others. Several studies assessed using hygiene equipment in hospitals to prevent spreading infectious diseases like the Covid-19 virus [33].

3.3.4. Grand Total Change in Washing Hand Analysis

Here the researchers needed to analyze all factors affecting washing hands before and during the Covid-19 pandemic by taking the average of the previously calculated parameters of hand wash change, hand cleaner, and reasons to wash hands.

According to the results shown in Table 2, there are 38% increase in hand washing and 46% more materials used during washing hands compared to the era before the pandemic. That gives an average total change percentage of 41%. Females have increased the usage of hand clear by 62%, while males increased it by only 30%. Studies also show that hand washing increased among health workers during the Covid-19 pandemic [33]. Female employees aged between 20-25 had the most changes in washing their hand's percentage 51% and cleaner materials used 119% increase. That gives a total grand percentage of 73%, the

highest among other age groups. The female doctors aged between 46-55 were the group in which their washing hands percentage decreased to negative -20% during pandemic, and the materials used for washing their hands were not changed nor increased by 0%. They had a total grand change percentage of -1%.

Table 2. Elaborates all results regarding hand washing, hand cleaner change, and total grand

Age	Profession	Avg. of Hand-wash Change %	Avg. of Hand Cleaner Total Change%	Avg. of Grand Total Change%	Profession	Avg. of Hand-wash Change %	Avg. of Hand Cleaner Total Change%	Avg. of Grand Total Change%
	Female	38%	62%	47%	Male	39%	30%	35%
	20-25	51%	119%	73%	20-25	41%	27%	38%
20-25	Dentist	37%	119%	79%	Dentist	56%	44%	59%
	Doctor	66%	84%	72%	Doctor	28%	20%	25%
	Health Worker	53%	250%	111%	Health Worker	41%	-25%	31%
	Microbiologist	28%	54%	31%	Microbiologist	62%	120%	68%
	26-31	38%	58%	47%	26-31	56%	54%	53%
26-31	Dentist	33%	0%	22%	Dentist	15%	60%	37%
	Doctor	92%	40%	68%	Doctor	101%	70%	83%
	Health Worker	1%	68%	31%	Health Worker	82%	40%	56%
	Microbiologist	26%	68%	45%	Microbiologist	14%	50%	30%
	32-45	25%	32%	37%	32-45	29%	11%	21%
32-45	Dentist	10%	52%	35%	Dentist	14%	0%	12%
	Doctor	80%	0%	31%	Doctor	100%	-25%	64%
	Health Worker	-3%	29%	33%	Health Worker	21%	36%	24%
	Microbiologist	64%	25%	49%	Microbiologist	35%	0%	16%
	46-55	42%	5%	26%	46-55	31%	25%	24%
46-55	Dentist	119%	-8%	44%	Dentist	77%	-8%	14%
	Doctor	-20%	0%	-1%	Doctor	19%	150%	58%
	Health Worker	28%	19%	31%	Health Worker	3%	44%	21%
	Microbiologist	36%	-5%	17%	Microbiologist	30%	1%	24%
	More than 55	13%	53%	27%	More than 55	44%	54%	59%
More than 55	Dentist	-2%	0%	2%	Dentist	0%	0%	50%
	Doctor	106%	100%	61%	Doctor	7%	75%	23%
	Health Worker	-2%	95%	38%	Health Worker	3%	90%	70%
	Microbiologist	6%	-13%	8%	Microbiologist	147%	0%	62%
Grand total (M&F)		38%	46%	41%	Grand total (M&F)	38%	46%	41%

Figure 5 elaborates clearly on the change in washing hand ratio before and during the pandemic. It can be seen that the washing hand ratio increased mostly by doctors, following them are dentists. Microbiologists are the least changed ratio range before and during the pandemic. Their hand-washing ratio range was between 23-63% [34].

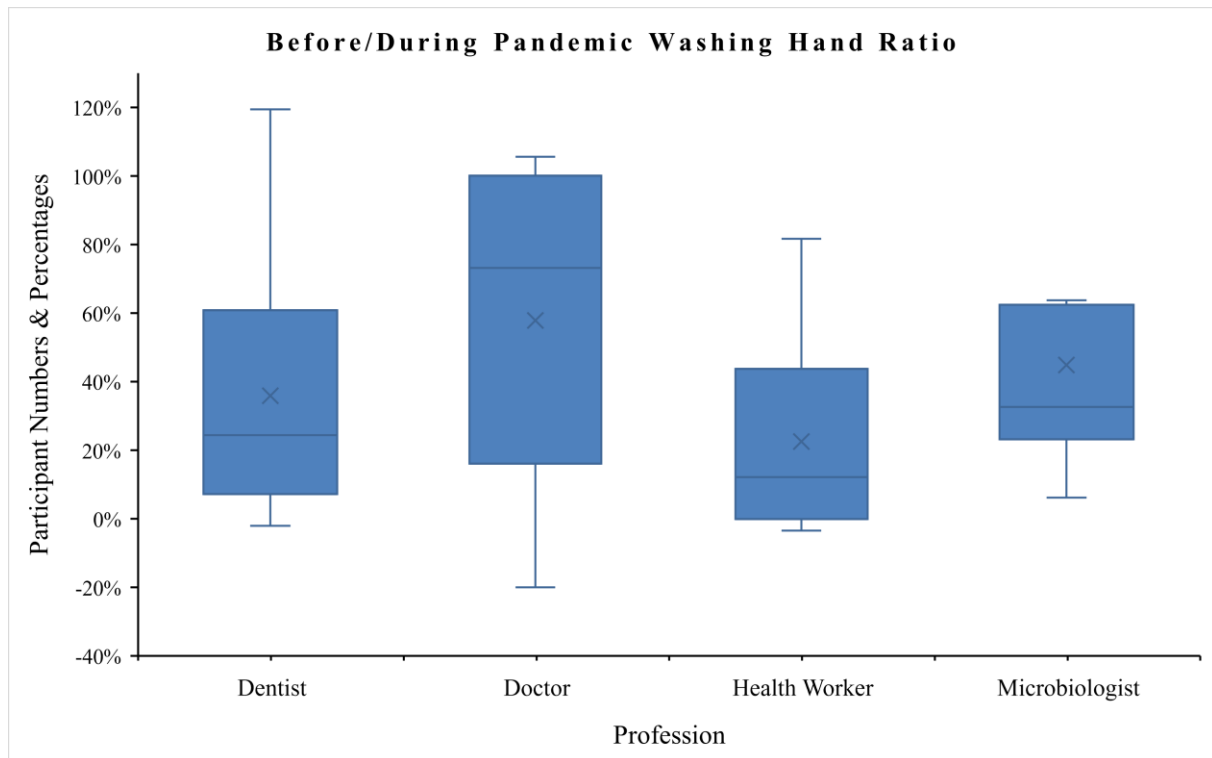


Figure 5. Washing hand ratio before/after the pandemic according to professions

3.3.5. Water Consumption Level

The effect of Covid-19 on hospital employees' water consumption rate has been examined in this section. The parameters for total water consumption were because not all employees work daily. So, the authors took a weekly basis of working hours. Meaning the average working day multiplied by working hours equals weekly working hours. Another parameter was the duration of washing hands. During the questionnaire, the authors asked the participants about the duration of washing their hands before and during the pandemic. The answer options were 13-18 seconds, 14-19 seconds, 20-25 seconds, 26-31 seconds, and more than 31 seconds.

From the weekly working hour and total duration of washing hands and some of the previously calculated handwashing parameters (reasons to wash hands, hand wash times), the authors could get the weekly hand washing water consumption unit before and during the pandemic. It must be noted that it is a unitless value because not all parameters have the same units. But hence we need it for comparison between

before/during the pandemic; researchers could still benefit from it since the same parameters have been used in both.

Table 3. Water consumption change level

Age	Profession	Average of Water Consumption Change Level	Profession	Average of Water Consumption Change Level
	Female	131%	Male	138%
	20-25	179%	20-25	155%
20-25	Dentist	145%	Dentist	278%
	Doctor	254%	Doctor	130%
	Health Worker	152%	Health Worker	131%
	Microbiologist	71%	Microbiologist	71%
	26-31	158%	26-31	188%
26-31	Dentist	78%	Dentist	118%
	Doctor	339%	Doctor	357%
	Health Worker	68%	Health Worker	197%
	Microbiologist	90%	Microbiologist	70%
	32-45	111%	32-45	90%
32-45	Dentist	90%	Dentist	87%
	Doctor	98%	Doctor	300%
	Health Worker	82%	Health Worker	76%
	Microbiologist	195%	Microbiologist	74%
	46-55	104%	46-55	130%
46-55	Dentist	146%	Dentist	20%
	Doctor	6%	Doctor	20%
	Health Worker	156%	Health Worker	31%
	Microbiologist	42%	Microbiologist	274%
	More than 55	42%	More than 55	155%
More than 55	Dentist	4%	Dentist	106%
	Doctor	84%	Doctor	86%
	Health Worker	47%	Health Worker	188%
	Microbiologist	35%	Microbiologist	150%
Grand Total (M&F)		135%	Grand Total (M&F) 135%	

According to Table 3, it can be observed that there is a total of 135% increase in water consumption level compared to the situation before the pandemic. This ratio would be catastrophic for any place with water scarcity. The males aged 26-31 used the least water percentage during the pandemic than other groups, with only a 42% increase. At the same time, the increased water consumption ratio for males was

188%. Published works by [35] confirm the results of the current work. Male and female doctors in the group range of 26-31 years old have the most water consumption level, with 357% and 339%. This group range of doctors is the ones who recently graduated from university. On the other hand, in the age group of 46-55, health workers have the least increase in their water consumption level, with 31%. The least increased profession among all participants was female doctors ranging from 46-55 years old, with an increase of 6% only.

Table 4. Average of water consumption compared between professions

Profession	Average of Water Consumption Change Level
Doctor	213%
Dentist	115%
Microbiologist	113%
Health Worker	110%
Grand Total	135%

According to the results in Table 4, doctors were at the top of the list, with an increase of 213% in water usage. This may be because they are more in contact with patients, and it gives them the anxiety to wash their hands more, eventually increasing water consumption. On the other hand, health workers had the least increase in water usage compared to other groups, with an increase of 110%. It's also worth mentioning that the ranking of water usage may be based on the employees' contact with Covid-19 patients. Studies also show that the pandemic has a negative impact from the perspective of increasing consumption levels by healthcare staff [36].

Table 5: Water consumption increases based on hours of work

Hours of work	Average of Water Consumption Change Level
1-4 hours	212%
>8 hours	166%
8 hours	108%
5-7 hours	94%
Grand Total	135%

Table 5 illustrates water consumption increase based on hours of work. Employees who work only between 1-4 hours at the hospital use more water by an increase of 212%. This may be because they don't

want to get Covid-19 only at the hospital for a few hours. At the same time, others may forget or think that eventually, they will also get Covid-19. Therefore, the range changes in that manner.

4. Conclusions

This investigation has focused on the effect of Covid-19 on awareness, risk level, and hand cleaning by hospital staff in Sulaimaniyah City hospitals. The level of awareness has been upgraded by the hospital staff in Sulaimaniyah City during the Covid-19 pandemic. Employees over 55 years were more under threat because of their age, but at the same time, females over 55 years had the most risk. The rate of washing hands increased by 38%, and 46% of materials were used more while washing hands compared to the era before the Covid-19 pandemic. The average total change percentage was 41% which is a high rate. Water consumption increased by 135% in the Sulaimaniyah Hospitals during Covid-19. This can lead to a problem of water supply shortage during drought times. Less working hours in the hospitals resulted in a high-water consumption ratio among the employees. More specific studies can be held with the hospital staff to measure their continuity of awareness level after the pandemic ends.

Declaration of Competing Interest The authors declare that they have no known competing of interest.

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