



PRACTICES OF SANITATION HYGIENE AND HEALTH CARE AND DISEASE IN OMAN AFTER AND BEFORE THE COVID-19 PANDEMIC

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Abstract

One of the important measures to prevent the speed o which Covid-19 was spreading was hand washing, it was a simple and main preventive measure that can be done by any person independently. Hand wash using soap or sanitizer was the primary defense to stop the spreading covid-19 disease. In this research paper, we have assessed the actual hand washing/ hand sanitizer practice among the various age group during a pandemic and also after the pandemic. Observational and demonstration was conducted among graduate, undergraduate, government employee, and school children. A total of 300 participants were done in our study. We collected this data using a checklist and questionnaire through observation. Both types of logistic regressions: Bi-variate & Multivariate were used to show the relationship between test and target variables. As per our observation, there was a significant change in practicing WASH (water, sanitation, and hygiene) after the covid-19. Local government and social activities have played an important role in this significant change as per our study. Sanitation and Hygiene were of important practices even before the pandemic among health care workers but it was not as effectively practiced by the common citizens. WHO has started project WASH (water sanitation and hygiene) strategy 2018-2025 as it is crucial for human health and well-being. WASH can be the most important preventive measure for most diseases. This was very much evident and practiced by most people during the pandemic.

Keywords WASH (Water, Sanitation, and Hygiene), HCWs (Health Care Workers), Sanitation, Hygiene, Health care, Drinking water, Covid, pandemics, WHO.

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1. Introduction

As well-known our hands are one of the sources of transmitting viruses/microorganisms. When we fail to wash our hands effectively, these organisms can spread to others. In healthcare systems and services, there have been almost continuous campaigns to promote handwashing among healthcare workers, patients, and

visitors. As an example, the international campaign "My five moments for hand hygiene" describes key moments at which health care workers should adhere to hand hygiene rules.[4]There was a national campaign launched in the UK called "Clean your hands", [5] which also included the message "it's OK to



ask” and encourage patients to ask for wash their hands as per HCWs (hand hygiene compliance) to minimize the risk of infections.[6]

In response to COVID-19, the World Health Organization (WHO) has strongly recommended that all state members provide public hand hygiene stations and ensure obligatory usage of these when visitors or personnel enter and leave the facilities, such as hospitals, health centers, and other facilities (Organization WHO, 2020). A variety of COVID-19 prevention measures have been communicated to the general public aggressively since then. As part of its preventive measures, the public was advised to regularly wash their hands with soap and water for 20 seconds. [7] Public health messages about hand washing and correct hand washing techniques have spread through various sources. Social media, television, radio, print ads, and billboards are all used to reach people through memes and short videos. In addition to a greater presence on social media platforms and other advertising outlets, the importance of hand washing was frequently covered in daily news reports, as service users, public figures, and others are taking part in hand washing initiatives. In spite of this, it is commendable that more and more people are speaking up and discussing the importance of hand washing. Though Oman has been relatively successful at countering the public health threat, the pandemic's economic impact - given that 45% of Omani exports go to China - may pose a greater challenge. COVID-19 has increased the pressure, as the public health threat necessitated extreme policy measures, which led to devastating economic consequences for the Sultanate. COVID-19 has increased the

pressure, with the public health threat necessitating extreme policy measures, which have had a devastating economic impact on the Sultanate's finances. The Omani government also took measures in the early stages of the pandemic that were similar to those elsewhere. All shops that were not essential were closed early on. The Sultan Haitham instituted a Supreme Committee that implemented travel restrictions of increasing severity until all commercial flights were prohibited by 29 March (except in Musandam Governorate). [8]

2. Research Methodology

In our analysis, we use observational methods for our study. This observational study was scheduled two times one before the pandemic and the second after the pandemic to measure the WASH (water, sanitation, and hygiene) practice among Omani citizens. Primary data were collected through direct observation using questionnaires and tick boxes. In our observational study, before the pandemic, we found unavailability of required resources (soap, sanitizers) but after pandemic the all the required resources like soap, sanitizers, etc. were available in most private and public organizations.

The observation was done on the participant (employees, and visitors) who used soap/sanitizers to wash their hands. Observers were told to use the WHO recommend hand washing tools for their observation ratings.[9]. In our observational study, we send at least two data collectors and they were asked to be near the washing area and pretending as waiting for someone. Each data collector was asked to follow the WHO recommendation for their observations for hand washing.[9]

For the sample size determination, 55% prevalence was used, and by using a single



population proportion formula by using given assumptions:

$P=50\%$, confidence= 90% & error margin 10% , standard deviation= 0.5

$N = (1.64)^2(0.5) * (0.5) / (.05) * (0.05)$

$N=268.96$, 269 approx. and if we take 10% more then it will be 295

For our observational study, we have collected data for 300 observations.

We have used random sampling techniques to select 300 participants. Data collection was done using a questionnaire and checklist as per WHO recommendations for hand washing. We used the English language for the questionnaire. All the observers were trained before the observations for the questionnaire and interaction with the participant.

In our research, we have used the Pandas-python data analysis library for the preprocessing of data. We also used other python packages like NumPy, Scikit, and matplotlib in our analysis. In our research, we used descriptive analysis, and logistic regression to find the associated variable with WASH compliance.

A total of 300 participants were observed by our team for this study before the pandemic. The median age was 32 in the age group 18-60, for this study we observed only male participants among them 155 were married. Out of 300 respondents, 65 were students, 95 were private sector employees and the remaining were public sector employees. The majority of respondents were from the urban part of Oman. These details can see in the given table-1 below:

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3. Data Analysis and Results

Variables		Frequency (N)	Percentage(%)
Gender	Male	300	100.00
Age group	18-24	55	18.33
	25-30	45	15.00
	31-40	80	26.67
	41-50	70	23.33
	>50	50	16.67
Marital status	Single	110	36.67
	Married	190	63.33
Educational	Secondary	70	23.33
	Under graduate	110	36.67
	Graduate	80	26.67
	Post graduate	40	13.33
Employee	Private sector	110	36.67
	Government Sector	100	33.33
	Student	90	30.00
Residence	Urban	200	66.67
	Rural	100	33.33

Table-1: Social & demographic details of the respondents

For our analysis, we tried to observe similar types of participants after the pandemic,

in a total of 300 participants were observed by our team after the pandemic for this study. The



median age was 35 in the age group 18-65, for this study again we observed only male participants among them 144 were married. Out of 300 respondents, 60 were students, 97 were private sector employees and the

remaining were public sector employees. The majority of respondents were from the urban part of Oman. These details can see in the given table-2 below:

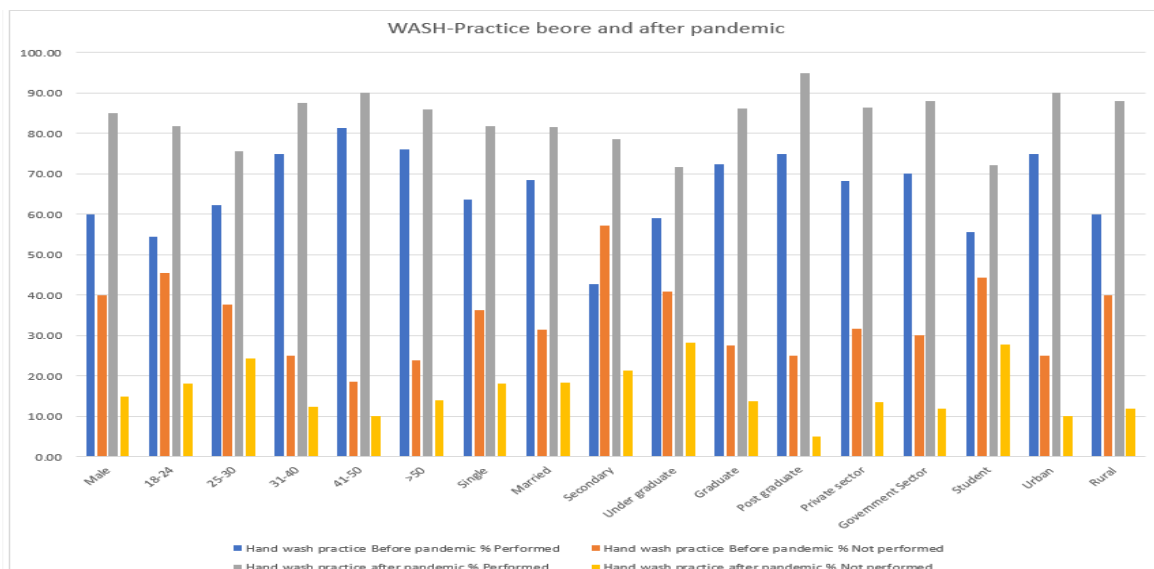
WASH-Hand wash practice before pandemic						
Variables		Performed	Not-Performed	% Performed	% Not performed	P-value
Gender	Male	180	120.00	60.00	40.00	0.85
Age group	18-24	30	25.00	54.55	45.45	0.99
	25-30	28	17.00	62.22	37.78	0.22
	31-40	60	20.00	75.00	25.00	0.37
	41-50	57	13.00	81.43	18.57	0.88
	>50	38	12.00	76.00	24.00	0.71
Marital status	Single	70	40.00	63.64	36.36	0.92
	Married	130	60.00	68.42	31.58	0.62
Educational	Secondary	30	40.00	42.86	57.14	0.45
	Under graduate	65	45.00	59.09	40.91	0.32
	Graduate	58	22.00	72.50	27.50	0.65
	Post graduate	30	10.00	75.00	25.00	0.65
Employee	Private sector	75	35.00	68.18	31.82	0.71
	Government Sector	70	30.00	70.00	30.00	0.72
	Student	50	40.00	55.56	44.44	1.00
Residence	Urban	150	50.00	75.00	25.00	0.62
	Rural	60	40.00	60.00	40.00	0.77

Table-2: Details of WASH (water, sanitation and hygiene)- hand wash practice before the pandemic

As per the standard of WASH (water, sanitation, and hygiene), hand washing practice was much improved after the pandemic, in

most of our observation's improvement varied from 30%-40 % compared to before the pandemic. Details can be seen in the given graph:





Graph-1: After and before pandemic hand washing practice chart

In our analysis in which we used bivariable logistic regression, we found graduates & post graduates significantly associated with hand washing practice as per WHO recommendation, and when we use

similar data using multivariable logistic regression, we found 41-50, >50 and the married group were significantly associated with hand washing practice as per WHO recommendation. Details of this analysis can be seen in the given table-3.

WASH-Hand wash practice after pandemic						
Variables		Performed	Not-Performed	% Performed	% Not performed	P-value
Gender	Male	255.00	45.00	85.00	15.00	0.0199
Age group	18-24	45.00	10.00	81.82	18.18	0.25
	25-30	34.00	11.00	75.56	24.44	0.12
	31-40	70.00	10.00	87.50	12.50	0.012
	41-50	63.00	7.00	90.00	10.00	0.023
	>50	43.00	7.00	86.00	14.00	0.05
Marital status	Single	105.00	5.00	95.45	4.55	0.056
	Married	144.00	46.00	75.79	24.21	0.0362
Educational	Secondary	55.00	15.00	78.57	21.43	0.0245
	Under graduate	79.00	31.00	71.82	28.18	0.321
	Graduate	69.00	11.00	86.25	13.75	0.0365
	Post graduate	38.00	2.00	95.00	5.00	0.0256
Employee	Private sector	97.00	13.00	88.18	11.82	0.056
	Government Sector	91.00	9.00	91.00	9.00	0.091
	Student	60.00	30.00	66.67	33.33	0.0541
Residence	Urban	180.00	20.00	90.00	10.00	0.0388
	Rural	88.00	12.00	88.00	12.00	0.0364

Table-3: Logistic regression analysis and details of WASH (water, sanitation and hygiene)- hand wash practice after the pandemic



4. Discussion & Conclusion

During the COVID-19 pandemic, the need for basic WASH (water sanitation and hygiene) in HCFs (health care communities), community institutions, and households have only increased. WASH assessment tools were readily adaptable for COVID-19-focused assessments due to the focus on WASH in HCF just before 2020, as well as existing guidance and standards. COVID-19-specific operational guidance was developed after the pandemic for other community institutions, such as markets, and public places based on existing WASH guidelines for other settings.

Overall, healthcare providers and community members did not adhere to hand hygiene resources before the pandemic even all required resources were available. It appears that behavioral interventions to improve compliance should emphasize both protecting the patient and protecting oneself when providing healthcare. Providing access to hand hygiene materials in healthcare contexts requires a multimodal approach, which includes changing systems, training, educating, monitoring practices, reminding and nudging, and establishing a culture to reinforce hand hygiene practices. [9-11] The prevalence of handwashing after the toilet was higher than at entrances and exits, suggesting greater communication of other key times to wash hands, especially during a pandemic. WASH behavior adoption requires consideration of multiple levels, beyond the individual, according to models such as IBM-WASH: societal, community, interpersonal, and habitual levels.

As per our study, there was a major improvement in practicing WASH (water, sanitation, and hygiene) practices [7] after and

during the covid-19. After the pandemic, most of the people around the world get aware of hygiene and sanitation, and also lots of information and required sources got available for the correct practice of hand washing and sanitation. In the future also The WHO recommends health education and public mass media as a means to improve proper hand washing practices. Audiovisual aids are very important to show the real state of proper hand washing practices.

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