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Perceived Barriers of Hands Washing Practices during Coronavirus (COVID-19) Outbreak (Sudan)

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***Abstract*— *Introduction**: Hands washing practice is the simple and important procedure to reduce the spread of infection in the community and health care settings. **Objective:** To explore barriers of hands washing practices among people in Sudan. **Methodology**: This is a cross-sectional study was conducted among Sudanese population immediately after the lockdown of Sudan states. Data was collected online by close ended questionnaire. Relying on authors' networks with local people living in Khartoum and other states using, such as Whats App messengers and face-book accounts. **Results**: result showed that 41.1% of the respondents washing their hands with water only while 87.9% washed them with soap and water. Work over load was the main barrier for hand washing (34%)followed by, shortage of water and soap(22%), laziness (10.6%),lack of hand washing facilities (10.6%), lack of time (7.1%) while 5.7 % of the respondents believe that their hands were not dirty enough to get infected. Length of time of washing hands among the respondents was reported as follows: 1-5sec, (9.2%), 6-10 sec (16.3%), 11-15 sec (14.9%), 16-20sec (28.4%), and more than 20 second (31.2%). Number of times spending in washing hands with soap under running water was reported as follows 6.4% one time /day, 27 % (2-4/day), 30.5 %(5-7/day) while 36.1% washed their hands regularly. **Conclusion and recommendation**: The study concluded that, the majority of the respondents washed their hand with soap and water. Work over load was the main barrier to hand washing followed by, shortage of water and soap. Significant association was found between age, education and occupation with perceived barriers to hand washing. The recommended, public needs to be continuously encouraged to engage in proper hands washing practices and eliminate barriers towards hand hygiene.*

Keywords— *Hand washing, perceived, barriers, Practice.*

I. INTRODUCTION

Hand washing is widely accepted as one of the most effective measures in prevention of health care associated infections. Hand washing with soap is a learned behavior, to be effective, proper hand washing must be learned, preferably as a school going child or a pupil so that it becomes a routine habit throughout life. The health, academic performance and retention rates of school going children is greatly affected by the availability, accessibility and quality of sanitation facilities in schools (Water and Sanitation Programme, & UNICEF, 2015). Studies conducted by the center for disease control reported that the availability of clean water and soap for hand washing can help to reduce infections by almost 30 %. (CDC, 2017). Healthcare workers handle animate objects which are colonized with bacteria and other microbes. Hands have two microbial floras: Resident and transient. The highest rates of hand colonization are found in the areas such as in the Intensive Care Unit (ICU), in such critical care areas merely touching inanimate objects may lead to contamination (Boyce & Pittet, 2011). Fomites such as automated teller machines (ATM), computer keyboards, mobile phones generally serve as the source of infection in communities and the main source of nosocomial infections (Maji, *et al.,* 2018). According to the WHO;CDC,(2020), regular hand washing can help reduce chances of contracting infectious diseases such as, Cholera, Typhoid, COVID-19, worldwide statistics for 2017 revealed that poor sanitation and limited access to hand-washing facilities contributed to around 1.5 million deaths. Nearly 2.2 billion people are currently living without safely managed water outlets, and around 22% of healthcare facilities in the least developing countries lack basic water services (WHO, 2020). Despite the proven importance and benefits of hands washing, proper hands washing is not as pervasive as desired to prevent infections until now, especially in the developing countries that bear the greatest burden of infectious diseases. (Rabbi& Dey, 2013). There are number of known factors affecting compliance with hand hygiene. Some of these are lack of time, forgetfulness, lack of knowledge of importance of hand hygiene in preventing cross infection, poor access to hand washing facilities, lack of institutional commitment and skin irritation to hand hygiene products. (Barrett & Randle,2008). Perceived barriers about practice of hand hygiene was assessed among 36 Doctors who participated in the study and findings indicted that Workload (64%), Lack of time (53%), Location and Shortage of Sinks (69%) Lack of Encouragement (69%), Lack of water(56%), Lack of Hand Rub(78%)Lack of soap(58%) are major barrier to practice of hand hygiene in health care setting.(Richa, *et al.,* 2019).

Justification

Hand washing is the single most effective way to prevent the spread of infections and remains the No. 1 tip for preventing the spread of infectious disease like Coronavirus (COVID-19). Exploring the practices towards hands hygiene and barriers faced washing hands are of high importance to public health policy makers and health educators, and for the whole population to be save from infectious diseases, some barriers towards hand hygiene were reported in some previous studies, but to the researcher knowledge no published data

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regarding perceived barriers for hand washing practices among the Sudanese population.

Objectives of the Study

To explore barriers to hand washing practices among people in Sudan

II. METHODOLOGY

This cross-sectional survey was conducted immediately one week after the lockdown of Sudan states on 18-24/4.2020. Because it was not feasible to do a community-based national sampling survey during this special period, the researches decided to collect the data online. Relying on network with local people living in Khartoum and other states using, such as Google drive form WatsApp messengers and face-book accounts. Post contained a brief introduction on the background objective, procedures and notes for how to fill in the questionnaire, as well as the link and quick response (QR) code of the online close ended questionnaire. Questionnaire included demographic characteristics, hand washing practices, perceived barriers to hands washing practices, hands washing facilities at home and diseases associate with unwashed hands.

Statistical Analyses

Data were collected by online questionnaire (Google forum) and then transferred to SPSS version 16 for analysis. Frequency, Chi-square and cross tabulation were used to analyze the data collected from Sudanese People.

III. RESULTS TABLES & FIGURES

Table (1) Demographic data among responders, Sudan.

Gender	Number	%
Male	96	68.1
Female	45	31.9
Total	141	100.0
Marital status	Number	%
Single	77	54.6
Marriage	62	44.0
Divorce	1	.7
Widow	1	.7
Total	141	100
Age group	Number	%
15-30 year	71	50.4
31-45 year	41	29.1
More than 45 year	29	20.6
Total	141	100.0
Education level	**Number**	**%**
Secondary school	16	11.3
University	84	59.6
Post graduate	41	29.1
Total	141	100.0
Occupation	**Number**	**%**
Private sector	65	46.1
Governmental sector	34	42.1
Others	42	29.8
Total	141	100

Table (2) Washing hand practices, among responders, Sudan.

Washing hand with water only	Number	%
Yes	58	41.1
No	83	58.9
Total	141	100.0
Washing hand with soap and water	Number	%
Yes	124	87.9
No	17	12.1
Total	141	100.0

Diseases associated with unwashed hands	Number	%
COVID-19	46	32.6
Cholera	20	14.2
Typhoid	27	19.1
H pylori	11	7.8
Others	8	5.7
Total	112	79.4
Don't know	29	20.6
Total	141	100

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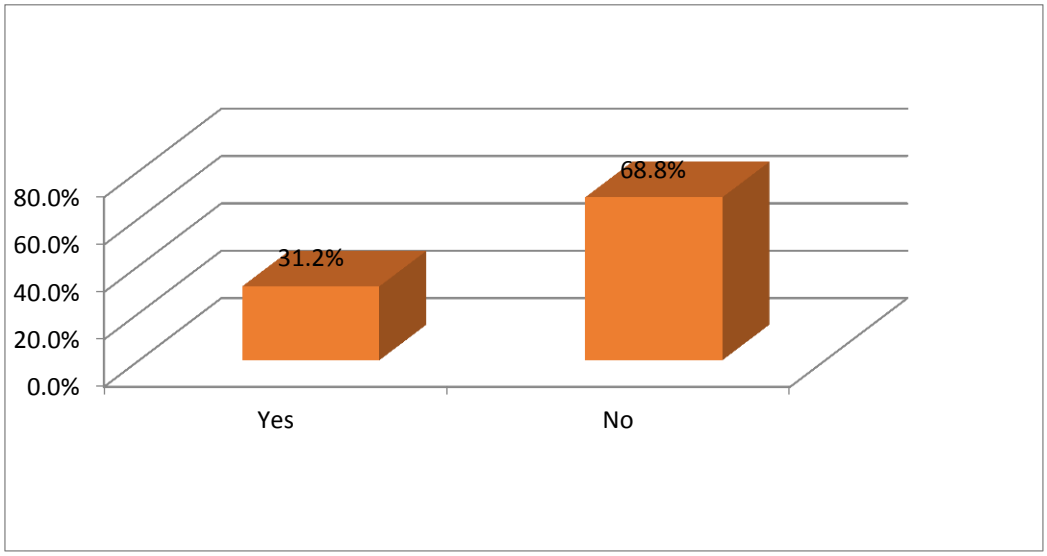

Figure (1) Wearing gloves among respondents, Sudan.

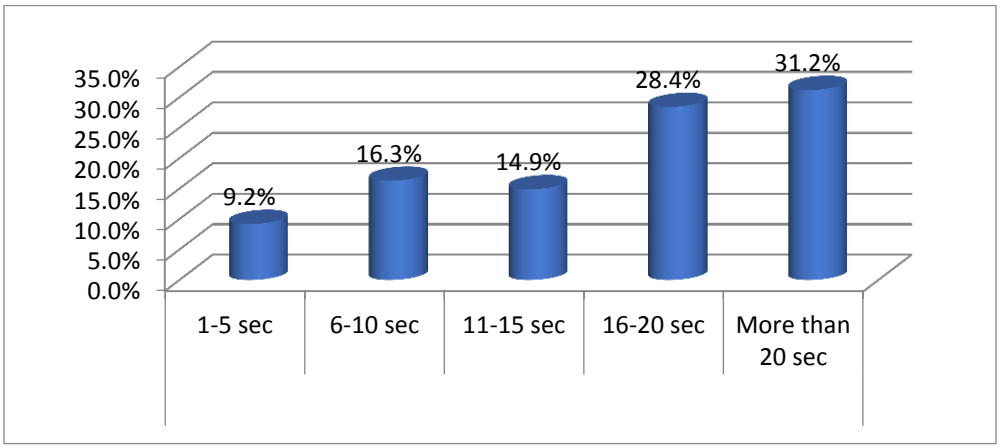

Figure (2) Length of hand washing practices, among responders, Sudan.

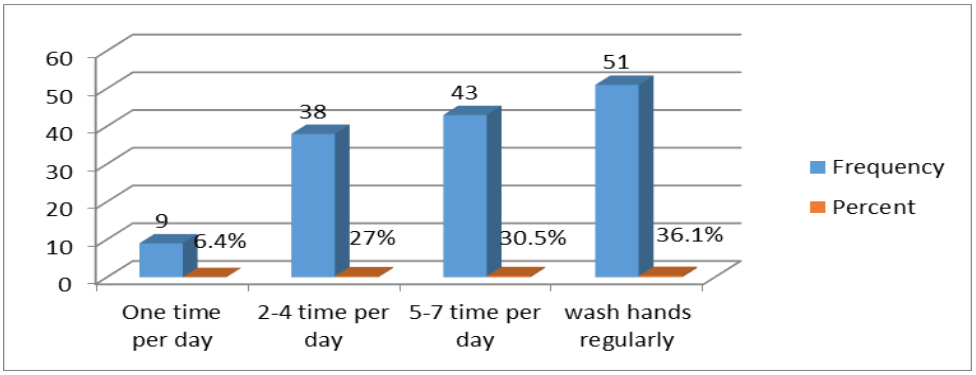

Figure (3) Number of times the respondents spend in washing hand with soap under running water / day

Table (3) Perceived barriers for practicing hand washing

	Frequency	Percent
Work overload	48	34.0
Lack of time	10	7.1
Lack of hand washing facilities	15	10.6
Laziness	15	10.6
Skin irritation to hand hygiene products	14	9.9
Shortage of water and soap	31	22.0
Believe that their hands were not dirty enough to get infected.	8	5.7
Total	141	100.0

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Table (4) Association between age and perceived barriers for practicing hand washing

		Perceived barriers for practicing hand washing							Total
		Work overload	Lack of time	Lack of hand washing facilities	laziness	Skin irritation to hand hygiene products	Shortage of water and soap	Believe that their hands were not dirty enough to get infected	
Age	15-30 year	28	0	0	8	9	22	4	71
	31-45 year	12	10	15	4	0	0	0	41
	>45 year	8	0	0	3	5	9	4	29
Total		48	10	15	15	14	31	8	141

Chi-Square =86.849[a] P value=.000

Table (5) Association between occupation and perceived barriers for practicing hand washing

Perceived barriers for practicing hand washing	Types of work			Total
	Private sector	Governmental sector	I don't work	
Work load	22	8	18	48
Lack of time	0	0	10	10
Lack of hand washing facilities	0	1	14	15
Laziness	8	7	0	15
Skin irritation to hand hygiene products	9	5	0	14
Shortage of water and soap	22	9	0	31
Believe that their hands were not dirty enough to get infected	4	4	0	8
Total	65	34	42	141

Chi-Square =86.873[a] P value=.000

Table (6) Association between educational level and perceived barriers for practicing hand washing

Perceived barriers for practicing hand washing		Work load	Lack of time	Lack of hand washing facilities	laziness	Skin irritation to hand hygiene products	Shortage of water and soap	Believe that their hands were not dirty enough to get infected	Total
Educational level	Secondary school	8	0	0	0	0	4	4	16
	University	40	1	0	8	9	22	4	84
	post university	0	9	15	7	5	5	0	41
Total		48	10	15	15	14	31	8	141

Chi square =95.072[a] P value=.000

IV. Results &Discussion

In the present study, a total of 141 respondents completed the survey questionnaire, their age was ranging between 15 to more than 45 years old ,59.6 % of them held bachelor degree, 46.1% engaged in private sector, and 68.1% of them were men, other demographic characteristics are shown in table (1).

Hands hygiene is the most important measure to avoid harmful germs and prevent health care-associated infections particularly at this current time of spreading of *Corona Virus* COVID-19. The present study revealed that 41.1% of the respondents washed their hands with water only, while 87.9% washing their hands with soap and water, this result is higher than result reported by Suoud, (2018) who found that 53% of the respondents used soap in washing their hands. In addition other studies also show washing hands with soap under running water could reduce acute respiratory infections including pneumonia, the highest cause of child mortality, the belief that washing hands under running water without soap makes the hands clean is very incorrect (Morgan, *et al.*, 2017). Wearing gloves was reported by 31.2% of the respondents, gloves should be wear when handling body substances such as bloods, secretions, mucous membranes, open wounds or contaminated objects or surfaces of the patients (WHO,2020), they should be disposed after patient contact and never reused or washed (Suoud, 2018). People who are caring for someone who infected with infectious disease like corona Covid 19 or other types of diseases should wear disposable gloves when cleaning surfaces, washing dishes and doing laundry for a sick person, or touching raw foods. In general hands hygiene in non−health care settings is one of the most important measures that can prevent many infectious diseases like COVID 19 infection. Work over load was the main barrier towards hand washing practices (34%)followed by, shortage of water and soap(22%), laziness (10.6%),lack of hand washing facilities(10.6%), lack of time (7.1%) while 5.7 % of the respondents believed that their hands were not dirty enough to get infected. Similar study on perceived barriers reported that laziness is the main barrier of frequent hand washing, followed by lacked of nearby water supply and the feeling that respondents' hands were not dirty enough to get infected. (Omogbai, *et al.*, 2011). Similar findings also reported that the main barriers to regular hand hygiene were lacked of adequate facilities, forgetfulness and lack of time (Al-Naggar & Al-Jashamy, 2013), however significant association was detected for perceived barriers with age education and

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occupation(P=.000). Although in Sudan there are many water resources, the Nile and its branches and the Artesian wells, but always there is shortage of water across the cities and villages due to water stations technical problems, hand washing culture alone appears to be an important factor in explaining why some counties have been hit harder by the outbreak of infection like Corona COVID-19. Low education, high work load, lack of human resource, lack of facilities, lack of encouragement with absence of any guidelines of practice of hand hygiene as set by the institution from the most hand washing barriers.(Paremeshwar, *et al., 2014).* Length of time spending in washing hands among the respondents in the present study reported as follows: 1-5sec,(9.2%), 6-10 sec(16.3%), 11-15 sec(14.9%), 16-20 sec (28.4%), and more than 20 second (31.2%), CDC (2012) recommends that people should rub their soaped hand for 15 to 20 seconds before rinsing thoroughly, again WHO, (2020) reported that cleaning hands with soap and water or an alcohol-based hands rub should be performed according to the instructions known as "My 5 moments for hand hygiene". Siddharta,(2017) reported that if hands are not visibly dirty, the preferred method is to perform hands hygiene with an alcohol-based hands rub for 20−30 seconds using the appropriate technique. When hands are visibly dirty, they should be washed with soap and water for 40−60 seconds using the appropriate technique (WHO, 2009). Number of times of washing hand with soap under running water was reported as follows: 6.4% one time /day, 27 % (2-4times), 30.5 % (5-7times) while 36.1% of respondents washed their hand regularly. Washing hands regularly, with the exact number depending on the activities done throughout the day. Knowledge of disease associated with washing hand practices was varies, however coronavirus was stated by 32.6% of the respondents as a common dangerous disease recently hits all over the world.

The study concluded that the majority washed their hands with water and soap. Work over load was the main barrier followed by, shortage of water and soap. Significant association was found between age, education and occupation with barriers to hand washing practices and recommended that public needs to be continuously encouraged to engage in proper hands washing practices and eliminate barriers to hand washing.

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