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Hand washing practices during Coronavirus (COVID-19) outbreak in Sudan

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Abstract
Introduction: Hands hygiene practice is the simple and important procedure to reduce the spread of infection in the community and health care settings during Coronavirus (COVID-19) outbreak
Objective: To investigate hands washing practices among people in Sudan during Coronavirus (COVID-19) outbreak.
Methodology: This is a cross-sectional study has been conducted among population in Sudan immediately after the lockdown of Sudan states. Data was collected online. Relying on authors' networks with people living in Khartoum and other states using, such as WhatSapp messengers and face-book accounts.
Results: the result showed that 41.1% of the respondents washing their hands with water only while 87.9% washed them with soap and water. Those respondents who washed their hand before meal with water only were 51.1% and 59.6% of them washed their hands before meal by using soap with water. The result revealed that, 83.7% of the respondents washed their hands after going to the toilet, while 33.3% of them washed their hand after sneezing and coughing. Washing hands after hand shaking, handling money and touching animals and garbage were reported by 56.7%, 60.3%, 82.3% and 91.5% respectively. The findings also showed that 31.2% of the respondents wearing gloves as protection against diseases. 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. Regarding diseases associated with hand washing practices, 32.6%of the respondents stated Corona COVID-19.
Gender and educational levels were significantly associated with length of times spending in hands washing (P=.000), all of the females in the present study washed their hands for more than 20 minutes. Age was also significantly associated with washing hands by soap & water (P=.000). Significant relationship was detected between monthly income with hands washing facilities and tools at home (P=.000), 72.3% of the respondents had hands washing facilities and tools at home.
Conclusion: The study concluded that there were significant association between educational levels and gender with length of time spending in hands washing, between age and washing hands with soap and water, monthly income with hands washing facility and tools, and recommended that public needs to be continuously encouraged to engage in proper hand washing practices and recommended careful attention to have wash handing facilities and tools at home.

Keywords: important, attention, facilities, engage

Introduction

Hand hygiene has been described as the cornerstone and starting point in all infection control programs, with the hands of healthcare staff being the drivers and promoters of infection in critically ill patients. Hand hygiene has been identified as the treating intervention strategy that will drive down cross-transmission of pathogens in the healthcare environment. It has been proven to reduce the incidence of nosocomial infections (Scheithauer, *et al*, 2013) one of the most resent infectious disease is Coronavirus disease 2019 (abbreviated "COVID-19"), is an emerging respiratory disease that is caused by a novel coronavirus and was first detected in December 2019 in Wuhan, China and spread almost all over the world. The disease is highly infectious, and its main clinical symptoms include fever, dry cough, fatigue, myalgia, and dyspnea. Regular Hands washing with soap and water, prevent and slow down transmission of COVID-19 virus (WHO, 2020). Appropriate hand hygiene practices have been shown to reduce the rates of gastrointestinal, respiratory tract, and skin infections. (Bloomfield, *et al.*, 2007). Recent hygiene promotion campaigns especially in low income settings have not been unanimous in recommending soap use (Ejemot, *et al.*, 2008).
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).
The impact of non-adherence to hand hygiene on the part of healthcare workers is seen in the high rates of nosocomial infections. This is fueled by the lack of improvement strategies in healthcare institutions. Effective strategies targeted at improving hand hygiene should include education and training on hand washing and the donning of gloves (Andersson, *et al.*, 2010).
The World Health Organization has developed an evidence-based measure of hand hygiene called the five moments of hand hygiene which refer to washing hands before touching a patient, before performing an aseptic or clean procedure, after potentials exposure to body fluids, after touching a patient, and after touching the patient surroundings (Sax, *et al.*, 2007).

Statement of the problem

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. Frequent, thorough hand washing with soap and water is one of the best ways to prevent the spread of infectious diseases, including COVID-19. Like a cold, coronaviruses are spread through droplets from a person coughing or sneezing, and potentially via contaminated surfaces (CDC, 2020). Good hygiene is key to avoiding spreading it and catching it. In observational studies of three long-standing refugee camps in Kenya, Ethiopia, and Thailand where hygiene promotion was ongoing, (Biran *et al*., 2012) found that soap was available at 94% of hands washing sites in Thailand, 82% in Ethiopia, and only 26% in Kenya. Hand washing with soap was practiced at a minority of times of possible pathogen transmission in all three sites. For example, 16% of latrine events in Thailand, 20% in Kenya, and 22% in Ethiopia were followed by hands washing with soap. In an evaluation of the effects of soap distribution on diarrhea risk in a Malawi refugee camp, Peterson and colleagues demonstrated that presence of soap in a refugee household was associated with reduced risk of diarrhea, compared to in households without soap present.

Justification

Little is known about hand hygiene practice among population in Sudan as one of the infection controls measures. According to the World Health Organization, (2020), regular hand washing can help reduce chances of contracting infectious diseases such as 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 developed countries lack basic water services. Exploring the practices towards, hand hygiene are of high importance to public health policy makers and health educators, and for the whole population to be save from infectious diseases, to the researcher knowledge no published data regarding practices of hands washing among the Sudanese population, so this drew their attention to conduct this research to see the hand washing practices among Sudanese practices particularly during this period of coronavirus outbreak.

Objectives of the study

To investigate the practices of hand washing among people in Sudan.

Methodology

This cross-sectional survey was conducted immediately one week after the lockdown of Sudan states on Saturday/18/4.2020. 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 people living in Khartoum and other states using, such as WhatSapp 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 questionnaire.

Statistical Analyses

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

Results

Washing hand practices

Table 1

Washing hand with water only	Frequency	Percent
Yes	58	41.1
No	83	58.9
Total	141	100.0
Washing hand with soap and water		
Yes	124	87.9
No	17	12.1
Total	141	100.0
Hands washing before meal with only water		
Yes	72	51.1
No	69	48.9
Total	141	100
Hands washing before meal using soap		
Yes	84	59.6
No	57	40.4
Total	141	100
Hands washing after going to the toilet	118	83.7
Yes	23	16.3
No	141	100
Washing hand after coughing and sneezing		
Yes	47	33.3
No	94	66.7
Total	141	100
Hands washing after hand shaking	Frequency	Percent
Yes	80	56.7
No	61	43.3
Total	141	100.0
Hands washing after handling money	Frequency	Percent
Yes	85	60.3
No	56	39.7
Total	141	100.0
Hands washing when touching animal		
Yes	116	82.3
No	25	17.7
Total	141	100
Hands washing After touching garbage	Frequency	Percent
Yes	129	91.5
No	12	8.5
Total	141	100.0

Table 2

Hands washing facility and tools at home	Frequency	Percent
Yes	102	72.3
No	39	27.7
Total	141	100.0
Diseases associated with unwashed hands	Frequency	Percent
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

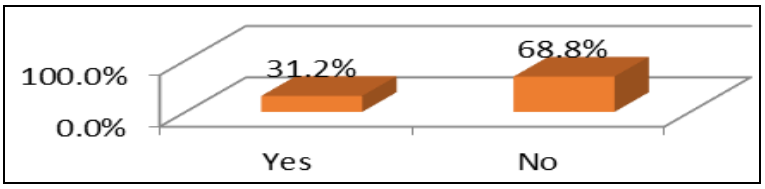

Fig 1: Wearing gloves

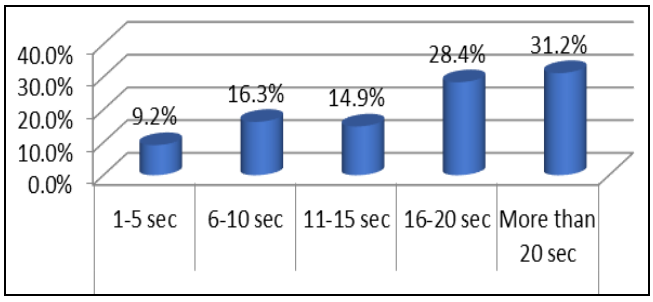

Fig 2: Length of hand washing practices

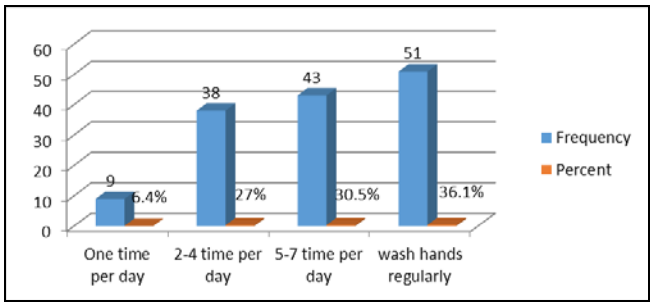

Fig 3: Number of times the respondents spend in washing hand with soap under running water / day

Table 3: Association between Educational level and length of time spending in hands washing

		Length of time spending in washing hands					Total
		1-5 sec	6-10 sec	11-15 sec	16-20 sec	More than 20 sec	
Educational level	Secondary school	0	0	0	0	16	16
	University	13	23	21	27	0	84
	post university	0	0	0	13	28	41
Total		13	23	21	40	44	141

Chi-Square =1.124E2[a] P value=.000

Table 4: Association between age and hands washing with soap and water

		Washing hands with soap and water		Total
		Yes	No	
Age	15-30 year	54	17	71
	31-45 year	41	0	41
	More than 45 year	29	0	29
Total		124	17	141

Chi-Square=19.058[a] P value =.000

Table 5: Association of Monthly income with hands washing facility and tools at home

		hand washing facility and tools at home		Total
		Yes	No	
Monthly income	Less than 5000 SD	49	0	49
	5000-10000 SD	45	0	45
	More than 10000 SD	8	39	47
Total		102	39	141

Chi-Square1.078E2[a] P =.000

Table 6: Association between gender and length of time spending in hands washing

		length of time spending in hands washing					Total
		1-5 sec	6-10 sec	11-15 sec	16-20 sec	More than 20 sec	
Gender	Male	13	23	21	39	0	96
	Female	0	0	0	1	44	45
Total		13	23	21	40	44	141

Chi squire =1.365E2[a] P = .000

Discussion

Hands hygiene is the most important measure to avoid the transmission of harmful germs and prevent health care-associated infections. The present study revealed that 41.1% of the respondents washed their hands with water only, although 87.9% washing their hands with soap and water which is higher than a result reported that 53% of the respondents used soap in washing their hands (suoud, 2018). Many studies indicated a 30 percent reduction in diarrhea cases when hands washing is practiced in day care centers and primary schools (Ejemot –Nwadiaro. *et al.*, 2009. In addition, other studies also indicate washing hands with soap under running water could reduce acute respiratory infections including pneumonia, which is the highest cause of child mortality, by 25 percent (Morgan, *et al.*, 2017)· the belief that washing hands under running water without soap makes the hands clean is very incorrect. Several studies on hands washing points to the fact that though clean water is very much essential, using running water alone without soap does not make the hands clean at all except only when soap is involved (Lee, 2015)·

Washing hand before meal with water only was reported by 51.1% of the respondents while 59.6% washed them with soap and water, which is higher than result found that only 13% of respondents used soap and water before meal, (ray, *et al.*, 2006)· washing hands before and after eating reduces the chance of various health complications resulting from contamination.

As for toilet practice, 83.7% of the respondents washed their hands after going to the toilet, which higher than previous study in rural area found that 71% of the respondents used soap and water after defecation, and 26% used mud or ash (ray, *et al.*, 2006)· The study showed that 33.3% washing hands after Sneezing and coughing. Sneeze and coughs spread all kinds of germs, new coronavirus creeping its way across the globe is a good reminder that the best way to protect the communities from widespread transmission of

illness is to practice good basic hygiene every day: wash hands, and cover sneezes and coughs. Using bent elbow is a good way to cover sneeze or cough with smaller risks of contamination, although it isn't the best way to keep germs from traveling, but it is better than using hands because individual is less likely to touch surfaces or other people with his elbow than with hands. 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. Washing hands after hands shaking, handling money, touching animals and garbage were reported by 56.7%, 60.3% 82.3% and 91.5% respectively, as respiratory viruses like coronavirus disease (COVID-19) spread when mucus or droplets containing the virus get into the body through eyes, nose or throat, most often, this happens through hands. Health care professionals strongly insisting on washing hands as the part of prevention from many types of infectious diseases. The findings showed that 31.2% of the respondents Wearing gloves to protect themselves from diseases. 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, 2009). They should be disposed after patient contact and never reused or washed (Suoud, 2018). People who are caring for someone who is infected with Covid-19 disease should wear disposable gloves when cleaning surfaces, washing dishes and doing laundry for a sick person, or touching raw foods. (CDC, 2020). Length of time spending in washing hands among the respondents was 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. Number of times of washing hand with soap under running water were reported by the respondents in the present study as follows 6.4% one time /day 27% (2-4) 30.5% (5-7) while 36.1% of them washed their hand regularly. Washing hands regularly, with the exact number depending on the activities done throughout the day. In homes, schools and crowded public spaces − such as markets, places of studying, and train or bus stations, regular hands washing should occur before preparing food, before and after eating, after using the toilet or, after touching animals and garbage(CDC,2017). Knowledge of disease associated with washing hand practices was varies, however coronavirus was stated by 32.6% of the respondents as a common disease currently hits all over the world. Significant association was found between educational levels and length of time spending in hands washing (P=.000), it was observed that post graduate respondents (28) washed their hand for more than 20 second this may be due to the fact that they are more knowledgeable of hands hygiene practices than the respondents in other education levels. Age was significantly associated with hands washing with soap and water (P=.000). Younger people are very aware by the important role of hands hygiene. It has been previously reported that lack of hygienic behaviors among adults (32-52 year) could be because of their very busy lifestyle, and incorrect belief that infectious diseases such as diarrhea affected mostly younger people particularly children (Pang, *et al.,* 2015) · As stated by the WHO & UNICEF, (2020) hands washing facilities consist of a sink with tap water, and also include continuous flow of water, tippy-taps and portable basins, liquid soap and powder detergents, the present result revealed that, 72.3% of the respondents had hands washing facilities and tools at home which is a good indicator of their interest in hands hygiene practices. Significant relationship was detected between monthly income and hands washing facilities and tools at home (P=.000), surprisingly, although 94 of the respondents had a monthly income of less than 10,000 Sudanese pounds that did not meet their essential basic needs, they were very interested in the hand-washing facility. Gender was significantly associated with length of time spending in washing hands (.000), almost all the females in the present study washed their hands for more than 20 minutes. Study is similar to the present study identified a gender bias in hand washing practices as women were consistently observed to wash their hands more frequently than men (carl, *et al*., 2013) ·

The study concluded that there were significant association between educational levels and length of time spending in hands washing, between age and washing hands with soap, monthly income and hands washing facility in home and between gender and length of the time spending in hands washing and recommended that public needs to be continuously encouraged to engage in proper hands washing practices and recommended careful attention to keep wash handing facilities and tools at home.

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