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Effect of hand-washing Education on Patients' Knowledge and Practice of Infectious Disease Prevention in Selected Health Centers in Akure South, Ondo State

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Abstract

Background:

Infectious diseases usually cause morbidity and mortality all over the world. However, hand-washing practice is the most important methods to prevent the transmission of infectious diseases.

Aim: Therefore, this study aimed at assessing the effect of hand-washing education on knowledge and practice of infectious diseases prevention in selected health centers in Akure South, Ondo State.

Methodology: The study employed a pre-test and post-test design, using questionnaires to obtain data from 98 women in selected health centers in Akure South, Ondo State. Data were analyzed using SPSS 20.0. Descriptive statistics such as frequencies, percentages and chart were used to summarize and present data. Furthermore, associations between variables were tested using ANOVA at p value 0.05 level of significance.

Results: The result from this study revealed better knowledge of hand-washing and good understanding of hand-washing practices after hand-washing education. Frequent education on hand hygiene and importance of hand washing, notice to create awareness on hand-washing at every corners of health centres, availability of running water and liquid soap at various locations of the clinic were observed measures put in place to ensure the strict adherence to hand-washing among patients. The researcher found out that there was a significance difference between hand-washing knowledge and practices before and after hand-washing education ($P=0.00$, $P<0.05$).

Conclusion: It is therefore concluded that hand-washing education improves the respondents knowledge on hand-washing and hand-washing practices.

Keywords: Hand-washing Education, Knowledge, Practice, Infectious Disease Prevention

Introduction

Infectious diseases outbreak had been a threat not only to lives of individuals but also national security [1]. The recent and ongoing outbreak of COVID-19, Lassa fever and Ebola Virus Disease has stressed the urgent need to break the chain of infections through universal standard precaution, and this should be the responsibility of all health care workers[2]. Infectious disease prevention has been regarded as a vital substructure of the health care system and thus the need to adhere to the standard protocols to prevent and lessen the risk of infectious disease transmission at the health facilities among patients, staff, and visitors[1].

Health care workers are traditionally known to be in close proximity with patients, and are likely to be at high risk of acquiring from patients and transmitting infectious disease to others[3]. It is however possible to track outbreaks of diseases and step up medical treatment and preventive measures even before it spreads over a large populace[4]. Appropriate disease surveillance system should adequately identify, define and recognize cases of illness on a timely and complete basis; and culminating into data driven forecast and advice on the trend of infections[3]. Hence, knowledge of infectious diseases outbreaks could galvanize support towards building capacities to meet the requirements of the international health regulations[4].

The surveillance systems towards timely and complete prevention of all infectious diseases in order to meet up with international standards in surveillance program needs proper attention in Nigeria[5]. In Nigeria, the culture of preparedness for infectious disease control before its eventual outbreak is poor compared to the pattern in developed countries[5]. Practice of infectious disease prevention could assist preparedness for control and also preventive measures that could be instituted even before it spreads over a large populace[6]

The human hands and role played in germ transmission, is well documented as sources and modes of infection, since the hands touch all parts of the body, other people, objects, domestic animals and food, it follows that a diverse microbial flora can exist on the hands[7]. Clean hands are the primary preventive tool for spreading pathogens[8]. Besides, it might yet be necessary to disinfect sometimes even after cleaning. In this light, hand washing is one of the crucial measures paramount for preventing the transmissions of infectious diseases.

The promotion of hand-washing practices remains a complex issue in Nigeria. Reasons for non-compliance with recommendations occur at individual, group, and institutional levels[9]. Perceived barriers to adherence to hand hygiene practice recommendations include inaccessible hand hygiene supplies, forgetfulness, lack of knowledge of guidelines, insufficient time for hand-washing. Despite considerable efforts, compliance with
hand-washing as a simple infection-control measure remains low and hygiene is suboptimal in both community and healthcare settings in Nigeria[10].

Proper hand hygiene has been one of the most effective ways to prevent infection and limit the spread of diseases, such as respiratory infections. Hand hygiene is a primary measure of health and development,

and practices include hand-washing with soap and use of alcohol-based hand rub[11]. Water, sanitation, and hygiene are often the first line of defense against infectious disease outbreaks, such as the ongoing COVID-19 pandemic. According to the World Health Organization (WHO), frequent and proper hand hygiene is one of the most important measures that can be used to control the spread of COVID-19[12].

Interestingly, the World Health Organization (WHO) has strongly recommended that all the state members proffer public hand-washing stations in response to infectious diseases prevention, and ensuring obligatory usage of these when visitors or personnel enter and leave the facilities, such as hospitals and health centers. Besides, an institution-based assessment of students' hand-washing behavior in Cameroon revealed that the prevalence of hand-washing with soap was estimated at 10.7%. Besides, the majority of the study participants (75.2%) had poor hand-washing practices score[12].

Even when hand-washing stations are available, an analysis of data from 16 countries in Sub-Saharan Africa found that only 34% of those with a place to wash their hands had water and soap. Yet, compliance of patients to hand-washing guidelines is low, especially in Nigeria. Consequently, there are general concerns about the poor hand-washing culture in Nigeria. The negative implications in the control of infectious diseases were the motivations behind the undertaking of this study.

Objectives of the study

1. To assess the level of knowledge of patients on hand washing as preventive measure against infectious diseases before and after education intervention.
2. To find out hand washing practices among patients as preventive measure against infectious diseases before and after education intervention.
3. To find out the observed measures put in place to ensure the strict adherence to hand washing by the clinics.

Research Hypothesis

$H_{O1:}$ There is no significance difference between hand washing knowledge and practices before and after education intervention.

Methodology

The study employed a pre-test and post-test survey design to assess the effect of hand- washing education on patients' knowledge and practice of infectious disease prevention in selected health centers in Akure South, Ondo State. The population of this study was made up of the entire attendees in Basic Health Centre Ita-Oniyan, Akure and Comprehensive Health Centre Arakale, Akure. The average population of patients attending Comprehensive Health Centre Arakale is 110 while Basic Health Centre Ita-Oniyan is 25. In view of this, an average population of 135 patients was used for this study.

Sampling size: The population of this study was made up of the entire attendees in Basic Health Centre Ita-Oniyan, Akure and Comprehensive Health Centre Arakale, Akure. The average population of patients attending Comprehensive Health Centre Arakale is 110 while Basic Health Centre Ita-Oniyan is 25. In view of this, an average population of 135 patients was used for this study. A sum of 101 respondents was recruited for this study based on 135 estimated number of mothers in the facilities using Taro Yamane's method; $n = \frac{N}{(1+Ne^2)}$. Therefore, the sampling was random selection of 19 and 82

patients attending Basic Health Centre Ita-Oniyan, Akure and Comprehensive Health Centre Arakale, Akure respectively.

Research Instruments

The research instrument used for this study was researcher's self designed questionnaire. The questionnaire was divided into sections covering the research questions raised and the demographic characteristics of the respondents.

Validity and Reliability of the instrument

The instrument was subjected to both face and construct validity of research experts. The reliability of the instrument was done by the researcher through the test-retest method. The instrument was pre-tested twice before proceeding to administer the instrument to the respondents. On reliability correlation testing using SPSS, the cronbach's alpha value of 0.825 was obtained.

Method of analysis

The number of questionnaires administered were 101 out which 98 were properly filled. The retrieved copies of questionnaire were analyzed using simple percentage and frequency count with the aid of the software SPSS version 20. This statistical tool was selected by the researcher because of its simplicity and relevance to the research work.

Ethical considerations

Consent was obtained from primary health care coordinator through the letter of introduction from the school authority. All participants were assured anonymity and confidentiality.

Results

Table 1 shows the demographic characteristics of 98 respondents. 11.2% are below 20 years of age, 52% are in the range of 20-30 years, 23.5% are in the range of 31-40 years while 13.3% fall in the age range of above 40years. The average age of the respondents is 27 years. 14.3% are single and 86.7% are married. 83.7% belongs to Yoruba ethnic group and 88.8% are Christians. 5.1% had no formal education, 22.2% had primary school education, 17.3% had secondary school education while 65.3% had tertiary education. 8.2% were full house wife, 14.3% were artisan, 37.8% were business men/women, 23.5% were private sector employees and 16.3% were civil servants. This is shown in table 1.

Table 2 revealed knowledge of patients on hand washing as preventive measure against infectious diseases. Majority 93.9% stated that they have been educated on how to wash your hands before hand-washing education while 100% all the respondents stated that they have been educated on hand-washing after the education.

In addition, Table 3 revealed hand washing practices among patients as preventive measure against infectious diseases. Before the hand-washing educational intervention, awareness of patients preventive measure against infectious diseases were low, however after the preventive measure against infectious diseases. But there was increase in their awareness level after the educational intervention.

The demonstration of hand-washing was observed on ten(10) patients before and after the education intervention. Table 4 revealed this observation. There were improved hand-washing practices among the 10 patients after the educational intervention.

Measures put in place to ensure the strict adherence to hand-washing among patients by the facilities used for the study was observed in Table 5. It was observed that there is frequent education on hand hygiene and importance of hand-washing was practised in the two health centers. Notice to create awareness on hand-washing were placed on notice board in the two health centers. Availability of water and soap was observed in one of the clinics. Any patient who doesn't wash his/her hands with water and soap will not be granted access to one of the health centers.

The study conducted ANOVA to determine the extent to which the Independent and dependent variable relates with each other, and the result showed that P-value = 0.000. This implies that there was a significance difference between knowledge of hand-washing and practices before and after hand-washing educational intervention.

Table 1: Socio-demographic data of the respondents

Variables	**Categories**	**(N=98) Frequency**	**Percentage (%)**
Age at last birthday	Less than 20 years	11	11.2
	20-30years	51	52
	31-40years	23	23.5
	Above 40 years	13	13.3
Marital Status	Single	14	14.3
	Married	83	86.7
	Divorced/Separated	-	-
	Widow	1	1
Ethnicity	Yoruba	82	83.7
	Igbo	9	9.2
	Hausa	2	2
	Others	5	5.1
Religion	Christianity	87	88.8
	Islam	9	9.2
	Traditional	2	2
	Others	-	-
Level of Education	No formal education	5	5.1
	Primary	12	12.2
	Secondary school	17	17.3
	Tertiary	64	65.3
Occupation	Full house wife	8	8.2
	Artisan	14	14.3
	Business man/woman	37	37.8
	Private sector	23	23.5
	employee	16	16.3
	Civil servant		

Table 2: Knowledge of patients about hand-washing as preventive measure against infectious diseases

Variables	Before		After	
	Yes (%)	No (%)	Yes (%)	No (%)
Have you ever been educated on how to wash your hands	92 (93.9%)	6 (6.1%)	98 (100%)	-
Where have you ever been educated on how to wash your hands				
Clinic	69 (70.4%)		98 (100%)	
Friends	12 (12.2%)		14 (14.3%)	
Home	17 (17.3%)		19 (19.4%)	
Community	53 (54.1%)		53 (54.1%)	
Media	82 (83.7%)		82 (83.7%)	
Hand washing create a safer working environment for medical staff and patients	87 (88.8%)	11 (11.2%)	98 (100%)	-
Washing of hands is the most important basic technique in preventing infectious disease	81 (82.7%)	17 (17.3%)	98 (100%)	-
Hand washing can obstruct the spread of respiratory tract infections	61 (62.2%)	37 (37.8%)	96 (98%)	2 (2%)
Hand washing practices prevent the spread of COVID-19 and other infectious diseases	92 (93.9%)	6 (6.1%)	98 (100%)	-
How do you wash your hands?				
Wash hands with water only	21 (21.4%)		-	
Wash hands with water and soap	77 (78.6%)		98 (100%)	
Which type of soap is best to use in hand washing?				
liquid soap	76 (77.6%)		95 (96.9%)	
powder detergent	13 (13.3%)		3 (3.1%)	
bar soap	7 (7.1%)		-	
I don't know	2 (2%)		-	
Washing of hands with water and soap is better than the use of hand sanitizers	51 (52%)	47 (48%)	97 (99%)	1 (1%)
It is good to wash our hands with water and soap for 20seconds	64 (65.3%)	34 (34.7%)	98 (100%)	-
It is important to wash the backs of your hands, your wrists, between your fingers and under your fingernails.	67 (68.4%)	31 (31.6%)	98 (100%)	-

Table 3: Hand-washing practices among patients as preventive measure against infectious diseases before and after education intervention

Variables	Before		After	
	Yes (%)	No (%)	Yes (%)	No (%)
Before direct contact with others, I should wash my hands	21 (21.4%)	77 (78.6%)	92 (93.9%)	6 (6.1%)
After direct contact with other people, I should wash my hands	37 (37.8%)	61 (62.2%)	96 (98%)	4 (4.1%)
I should wash my hands before and after eating	96 (98%)	2 (2%)	98 (100%)	-
If my hands are visibly dirty, I should wash it with running water and soap	79 (80.6%)	19 (19.4%)	97 (99%)	1 (1%)
I should wash my hands after coughing or sneezing	73 (74.5%)	25 (25.5%)	98 (100%)	-
I should wash my hand and after using the toilet	82 (83.7%)	16 (16.3%)	98 (100%)	-
I should wash my hands after touching pets	57 (58.2%)	41 (41.8%)	95 (96.9%)	3 (3.1%)
I should wash my hands after taking out the trash	71 (72.4%)	27 (27.6%)	98 (100%)	-
I should wash my hands after shaking of hands	39 (39.8%)	59 (60.2%)	95 (96.9%)	3 (3.1%)
I should wash my hands after touching the surface of objects	37 (37.8%)	61 (62.2%)	96 (98%)	2 (2%)

Table 4: Observed hand-washing practices among 10 patients

	Before		After	
hand-washing process	**Yes**	**No**	**Yes**	**No**
Wet your hands with clean, running water, turn off the tap	8	2	10	
Apply soap and lather well for 20 seconds (or longer if the dirt is ingrained)	4	6	10	-
Rub hands together rapidly across all surfaces of your hands and wrists	3	7	10	-
Don't forget the backs of your hands, your wrists, between fingers and under fingernails	6	4	9	1
If possible, remove rings and watches before you wash your hands, or ensure you move the rings to wash under them, as microorganisms can exist	-	10	6	4
Rinse well under running water and make sure all traces of soap are removed	8	2	10	-
Dry your hands using a clean towel or air dry them	2	8	7	3
It is best to use paper towels (or single-use cloth towel)	1	9	3	7
Dry under any rings, as they can be a source of future contamination if they remain moist	-	10	6	4

Table 5: Observe measures put in place to ensure the strict adherence to hand washing among patients by the clinics management.

Question	Yes	No
Frequent education on hand hygiene and importance of hand washing	2	0
Notice to create awareness on hand washing at every corners of health centres	2	0
Availability of running water at various locations of the clinic	1	1
Availability of liquid soap at various locations of the clinic	1	1
Any patient who doesn't wash his/her hands with water at soap should not be allowed to enter the clinic	1	1

Testing of hypothesis

H_{O1}: There is no significance difference between knowledge of hand washing and practices before and after hand-washing education.

Table 6: ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	84.120	1	84.120	47.335	.000[a]
Residual	26.700	97	1.455		
Total	108.820	98			

Source: Research Survey, 2022

Discussion

Socio demographic data of respondents

Findings from this study revealed that the mean age of the respondents as 27 years and majority (86.7%) were married. This was similar to the study of [13] on knowledge and practice of preparedness for infectious disease prevention and control among healthcare workers in secondary health care facilities in Osogbo, the study had 70.3% married but the mean age of the respondents was 42 years. This study had majority (83.7%) as Yoruba, (88.8%) of the respondents were Christians and (65.3%) had tertiary education. The findings is contrary to the study of [14] from Ethiopia on COVID-19 knowledge, attitude and frequent hand hygiene practices among taxi drivers and associated factors had majority of respondents less than 30years of age with mean age of 29years, majority had secondary school education but (63.8%) were Muslims.

Knowledge of patients about hand-washing as preventive measure against infectious diseases before and after education intervention

Based on the findings from this study, it was revealed that 92 (93.9%) had been educated on hand-washing before and after the hand-washing education all the respondents 98 (100%) had education on hand-washing. The study of [15] on knowledge, attitude, practices, and barriers to hand hygiene among Makerere University Students and Katanga Community Residents, The study showed (63.2%) of the participants had received prior teaching on hand hygiene. The highest percentage of those trained,

university students (71.7%) had ever received teaching on hand hygiene compared to Katanga community residents 50 (44.6%). The study of[16] on hand-washing knowledge, attitudes, and practices during the COVID-19 pandemic in Saudi Arabia indicates that the majority of the study population had good knowledge of hand-washing to prevent infectious diseases. Majority (83.7%) received their hand-washing education from media before the training which was in accordance with the report of [16] that revealed the commonest source of information was social media (62.6%).

Majority of the respondents revealed that hand-washing create a safer working environment for medical staff and patients (88.8%), the most important basic technique in preventing infectious disease (82.7%), obstruct the spread of respiratory tract infections (62.2%) and can prevent the spread of other infectious diseases. However, after the hand-washing education, almost all the respondents agreed that hand-washing is the most important basic technique in preventing infectious disease. Other study also emphasizes the role of hand-washing as an efficient preventive technique against many infectious diseases, for example, respiratory infections, impetigo and diarrhoea[17].
This study further revealed that majority (78.6%) indicates that it is good to wash hands with water and soap, (77.6%) indicates that liquid soap is the best to use in hand washing, they also indicated that washing of hands with water and soap is better than the use of hand sanitizers while almost all the respondents knowledge improve on how to wash hand and the best soap to use. This was supported by the study of [18] and [19] which confirms that the prevalent use of soap with hand-washing is recorded as an efficient measure for reducing contamination of the hands due to the potentially lethal effects of microbial contaminants. The result from the study of [20] showed that less than one-quarter or 23.66% know what proper hand-washing entails, while more than three-quarters or 76.34% could not say exactly what the NCDC recommended for proper hand-washing.

Hand-washing practices among patients as preventive measure against infectious diseases before and after education intervention

The findings from this study revealed majority believe they should wash their hands before and after eating, hands should be washed with water and soap when is visibly dirty, after coughing or sneezing, after using toilet, after touching pets and after taking out the trash before the hand-washing education. However, after the education on hand washing, their knowledge on hand-washing practices increased. This findings was supported by the study of [21] revealed 86% and 87% of the students washed their hands before eating and after using the toilet, respectively.[22] from Saudi Arabia on knowledge, attitudes, and practices of food hygiene among school students in Majmaah city, compared food hygiene practices, including hand-washing, between primary, intermediate, and secondary school students and found that the students demonstrated good levels of practice, even though attitudes and levels of knowledge were considerably reasonable.

Observed measure put in place to ensure the strict adherence to hand washing by the clinics

Based on the findings from the study, frequent education on hand hygiene and importance of hand washing, notice to create awareness on hand washing at every corners of health centers, availability of running water at various locations of the clinic and any patient who doesn't wash his/her hands with water and soap is not allowed into the facilities are measures put in place to ensure the strict adherence to hand-washing among patients. The of study [20] on proper hand-washing realities in select Nigerian

Communities amidst Covid-19 Pandemic reported that social media platforms and other advertising outlets, the importance of hand-washing is now frequently seen on daily news reports, notice are being everywhere, availability of liquid soap and running water in strategic location are hand-washing initiatives taken on by service users, politicians, public figures and many others measures are been put in place to ensure adhere to hand-washing practices.
Hypothesis tested revealed a significant difference between the knowledge of hand-washing and practice before and after education intervention.

Conclusions

It has been established that improvement in hand-washing has resulted in reductions in the spread of infectious diseases thereby making hand-washing education a beneficial intervention that could assist Nigerians to reduce disease burden that could follow an outbreak of infectious diseases. Therefore, this study assessed the effect of hand-washing education on patients' knowledge and practice of infectious diseases prevention in selected health centers in Akure South, Ondo State. The result from this study revealed better knowledge of hand-washing and good understanding of hand-washing practices after hand-washing education. Frequent education on hand hygiene and importance of hand-washing, notice to create awareness on hand washing at every corners of health centers, availability of running water and liquid soap at various locations of the clinic were stated as measure put in place to ensure the strict adherence to hand-washing among patients. The researcher found out that there was a significance difference between hand washing practices before and after hand-washing education ($P=0.00$, $P<0.05$). It was concluded that hand-washing education improves the respondent's knowledge on hand-washing and hand-washing practices.

Recommendations

Based on the findings, the following recommendations are made:
Hand-hygiene practices should be optimized through addressing the barriers and promoting public health education to reduce the spread of infectious diseases and stop pandemic

Government should make more provision of liquid soap and running water at every Clinic to enhance hand-washing practices

Conflict of Interest

There is no conflict of interest from the team of the researchers.

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