

ACQUAINTANCE, MIND-SET AND COMPLIANCE OF HAND HYGIENE PRACTICE AMONG NURSES AT DESSIE REFERRAL HOSPITAL, NORTH EAST ETHIOPIA, 2017

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ABSTRACT:

Introduction: Hand hygiene is a general term that applies to either hand hygiene, antiseptic hand wash, alcohol-based hand rub, or surgical hand hygiene/antiseptics. Hand hygiene refers to hygiene hands with plain soap and water. Hand hygiene with soap and water remains a sensible strategy for hand hygiene in non-healthcare settings and is recommended by CDC and other experts. One of the foremost problems in public health is hospital-related infections in the world. Hospital Acquired Infection (HAI) also known as Nosocomial Infection which is thought to be transmitted by the hands of health care workers. Hand hygiene is recognized as the leading measure to prevent cross-transmission of microorganisms and to reduce the incidence of health care associated infections.

Objectives: The aim of this study was to assess knowledge, attitude and practice towards hand hygiene among nurses at Dessie Referral Hospital, 2017.

Methodology: Institution based cross sectional study design was employed among one hundred fifty five nurses using systematic random sampling technique. The collected data were analyzed using descriptive and inferential statistics

Results: Among 155 study subjects, only 60% have good knowledge on hand hygiene's nurses were 14 times (AOR = 13.9, CI=2.9, 67.0) more likely to have good knowledge on hand hygiene as compared to diploma nurses. Participants who had no prior training on hand hygiene were 0.2 times (AOR = 0.2, CI = 0.1, 0.4) more likely to have poor knowledge on hand hygiene as compared to participants who had prior training on hand hygiene. About 84.5 % of the study subjects are Bsc nurses and were 14 times (AOR = 13.9, CI=2.9, 67.0) more likely to have good knowledge on hand hygiene as compared to diploma nurses. In this study subjects, the overall hand hygiene compliance rate was only 34.0 %.

Keywords: Knowledge, Compliance, Hand Hygiene, Nurses



INTRODUCTION

Hand hygiene is a general term that applies to either hand hygiene, antiseptic hand wash, alcohol-based hand rub, or surgical hand hygiene/antiseptics. Antiseptic detergent preparations often have persistent antimicrobial activity [1]. One of the foremost problems in public health is hospital-related infections in the

world. Health-care-associated infection (HAI) also known as Nosocomial Infection (NI) whose development is favored by hospital environment, such as one acquired by a patient during a hospital visit or one developing among hospital staff. Such infections include fungal and bacterial infections and are

aggravated by the reduced resistance of individual patients and health workers. Infections are considered nosocomial if they first appear 48 hours or more after hospital admission or after discharge. This also includes occupational infections among staff of the facility. The infections usually acquired during patient examination and operation, specimen collection, handling and processing, discarding of left over specimens and used equipment's [2, 3, 4, 5].

The usage of proper hand hygiene techniques has been widely accepted as the most effective way for health care workers to prevent the spread of diseases and it is also the least expensive method [6]. Formal written guidelines on hand hygiene practices in hospitals have been developed by the Centers for Disease Control and Prevention (CDC) and World Health Organization (WHO). According to the World Health Organization, the indications for hand hygiene can be merged into five moments during health care delivery. Adequate knowledge and recognition of these moments are the pillars for effective hand hygiene. Therefore, it is possible to prevent health care associated infections by cross-transmission via hands if health care providers promptly identify these moments and comply with hand hygiene actions.

These five moments that call for the use of hand hygiene include the moment

before touching a patient, before performing aseptic and clean procedures, after being at risk of exposure to body fluids, after touching a patient, and after touching patient surroundings^[7,8,9].

Nosocomial infection continues to be a burden to the world health care system through increased risk to patient and employees. These infections have tremendous health and financial costs with an estimate incidence of 2,000,000 infection per year, 20,000 death per year and added costs of billion dollars per year. Effective infection control program with proper hand hygiene is essential for controlling and preventing Nosocomial infections^[10, 11, 12,].

Several literatures indicated that the assessment of knowledge, attitude and performance of nurses towards hand hygiene is mandatory in order to limit HAIs transmission. Even if hand hygiene is the most effective and least expensive way of prevention for infection transition, Hand hygiene compliance in some countries were found to be inadequate at only 38.30%^[13, 14]

Nurses constitute the largest percentage of the health care forces and they are the "nucleus of the health care system", because they spend more time with their patients than any other health care workers, their compliance with hand hygiene guidelines seem to be more vital in preventing the disease transmission among patients^[17]. So this study provides evidence for different

stakeholders regarding with hand hygiene and then, it will push them to stride for improving hand hygiene compliance among nurses with adequate material supply, trainings, educational opportunities and other strategies. Moreover, this study will also serve as a reference for researchers who will conduct study hear after.^[15]

OBJECTIVES

1. To determine the level of knowledge of hand hygiene among nurses in Dessie Referral Hospital, North East Ethiopia.
2. To assess the level of attitude of hand hygiene among nurses in Dessie Referral Hospital, North East Ethiopia.
3. To determine the overall compliance rate of hand hygiene practice among nurses in Dessie Referral Hospital, North East Ethiopia.

METHODS AND MATERIALS:

3.1 Research design: Institution based cross sectional study design was employed

3.2 Setting and sampling: The study was conducted in Dessie Referral Hospital, North East Ethiopia, 2017. This hospital is found in Dessie Town, Amhara Region, North East Ethiopia, 401km away from Addis Ababa, the capital city of Ethiopia and 480 km from Bahirdar, which is the capital city of Amhara Regional State. It is now giving many services including preventive, curative, and rehabilitative care for patients coming from all districts

and zones of Eastern Amhara and Afar Region. It has 629 workers. Off these, according to the data obtained from the hospital's human resource management office, 226 are nurses. Majority of the respondents' were from the following departments: OR (29) emergency (22), Pediatrics ward (18), adult OPD (17), medical ward (17), and surgical ward (13) and more than half of the respondents' (56.1%) had no prior training experience on hand hygiene. The study was conducted from November 1-5/ 2017 G.C .Systematic sampling technique was used to select total of 155 Bsc and diploma nurses and three Bsc nurses were trained and recruited for data collection

Description of the tool: The tool is divided into mainly four parts

Part-A: Demographic pro-forma of the health professionals

Part-B: Structured knowledge questions adopted from WHO (World Health Organization) hand hygiene questionnaire

Part-C: Structured attitude questionnaire adopted from WHO hand hygiene questionnaire.

Part-D: Observational checklist adopted from WHO hand hygiene questionnaire based on five hand hygiene moments

Content validity: The tool was taken from WHO standardized hand hygiene questionnaire. The experts were requested to judge the items for accuracy, relevance, appropriateness and degree of agreement. The suggestions of the experts were incorporated into the tool and it was modified accordingly.

Pilot study: Pilot study was conducted in Aemata Hospital with 10% (16) of the sample size before the main study to identify potential problems in the proposed study such as data collection tools and to check the performance of the data collectors and questionnaires used in the pre-test did not included in the analysis as part of the main study. English version of questionnaire was used to assess knowledge on hand hygiene among nurses.

Data collection procedure: Prior permission was obtained from the concerned authority. Informed consent obtained from the subjects. Once all necessary data obtained, data was checked for completeness edited, cleaned, coded and entered in to and analyzed by SPSS version 20 for windows. Bivariate and multivariable regressions used to identify the independent predictors on hand hygiene.

Statistical analysis: The collected data were analyzed by using descriptive (frequency, distribution, percentage, mean and standard deviation) and inferential statistics (logistic regression). This was done by entering each independent variable separately into bivariate analysis.

Then, variables that showed statistical significant association with p-value of less than 0.25 on bivariate analysis were

entered into multivariate logistic regression. Then, variables which showed statistical significant association with p-value less than 0.05 on multivariable regression were considered as predictors of knowledge on hand hygiene.

Operational definitions

Surgical hand hygiene/antiseptis: - refers to an antiseptic hand wash or antiseptic hand rub performed preoperatively by surgical personnel to eliminate transient and reduce resident hand flora-

Good knowledge: - Participants who answered 7-9 ($\geq 77.7\%$) of knowledge related questions correctly were considered as having good knowledge [2].

Poor knowledge: - Participants who answered less than seven (below 77.7%) knowledge related questions were considered as having poor knowledge [2].

Good attitude: - Nurses who scored 37-50 total points ($\geq 74\%$) from attitude related questions from the five Likert rating scale were considered as having good attitude [2]

Poor attitude:- Nurses who scored less than 37 total points (below 74%) from attitude related questions from the five Likert rating scale were considered as having poor attitude [2]

Hand Hygiene Compliance Rate (HCCR) was calculated using the formula

$$\text{HCCR} = \frac{\text{Total number of correct moments of hand hygiene}}{\text{Total number of observed hand hygiene moments}} \times 100$$

RESULTS:

Socio-demographic characteristics of the respondents

A total of 155 participants were included in this study. Out of 155 of total participants, 87 (56.1%) were females and their mean age was 27.10 (± 3.47 SD) years. One hundred twenty three (79.4%) of respondents were more than 25 years old. The majority of the respondents were

single 78 (50.3%). One hundred thirty one (84.5%) of the participants have first degree in nursing. In this study the majority of participants 85(54.8%) had work experience less than five years. Majority of the respondents, 87 (56.1%) had no recent training on hand hygiene (Table I)

Table I. Socio-demographic characteristics of the study participants (n=155) in Dessie Referral Hospital November, 2017.

Variables	Category	Frequency	Percentage
Sex	Male	68	43.9
	Female	87	56.1
Age	<25	20	12.9
	25+	123	79.4
Marital status	Single	78	50.3
	Married	77	49.7
Educational status	Diploma	24	15.5
	First degree	131	84.5
Work experience	<5 years	85	54.8
	5+ years	47	30.3
Training experience on hand hygiene	Yes	68	43.9
	No	87	56.1

Level of knowledge on hand hygiene

Knowledge was computed using nine questions related to hand hygiene. The mean knowledgescore of the total sample was 6.81 (± 0.16 SD). Subjects who scored above 7.76of the mean value were categorized as having good level of knowledge. But only 93 (60 %) study

participants had good knowledge about hand hygiene.

Among variables entered in the bi-variate analysis, marital status, work experience, training experienceand educational levels showed significant association with the level of knowledge on hand hygiene. Variables with P-value <0.25 were entered in the multivariable logistic analysis but

there was no significant association between marital status and work experience with knowledge on hand hygiene. However, Educational status and training experience were significantly associated with knowledge on hand hygiene. In the multivariable logistic analysis, Bsc nurses were 14 times (AOR = 13.9, CI=2.9, 67.0) more likely to have

good knowledge on hand hygiene as compared to diploma nurses. Participants who had no prior training on hand hygiene were 0.2 times (AOR = 0.2, CI = 0.1, 0.4) more likely to have poor knowledge on hand hygiene as compared to participants who had prior training on hand hygiene (Table II)

Table II. Bivariate and multivariate logistic regression predicting the level of knowledge of participants towards hand hygiene among study participants at Dessie Referral Hospital, Ethiopia, 2017 (n =155)

Variables	Category	Level of Knowledge				COR (9% CI)	P- value	AOR (95% CI)	P- value
		Good		Poor					
		n	%	n	%				
Sex	Male	41	60.3	27	39.7	1	0.95		
	Female	52	59.8	35	40.2	0.9 (0.5,1.8)			
Age	<25	9	45	11	55	1	0.15		
	25+	84	62.2	51	37.8	0.5 (0.2,1.3)			
Marital status	Single	38	48.7	40	51.3	1	0.004*	2.1 (0.7,6.1)	0.2
	Married	55	71.4	22	28.6	2.6 (1.4,5.1)			
Education al status	Diploma	2	8.3	22	91.7	1	0.001*	13.9 (2.9,67)	0.001*
	First degree	91	69.4	40	30.6	25(5.6,111)			
Work experience	<5 year	44	51.8	41	48.2	1	0.02*	0.9 (0.32,6)	0.8
	5+ years	49	70	21	30	2.2(1.1,4.2)			
Training experience on hand hygiene	Yes	59	86.7	9	13.3	1	0.001*	0.2 (0.1,0.4)	0.001*
	No	34	39.1	53	60.9	0.1(0.1,0.2)			

Level of attitude on hand hygiene

Attitude was computed using 10 questions related to hand hygiene. The mean attitude score of the total sample was 8.3 (± 3.47 SD). Subjects who scored above 74.9 % value were categorized as

having good level of attitude. Twenty -six (17 %) study participants had poor attitude about hand hygiene (Fig 1). n=155

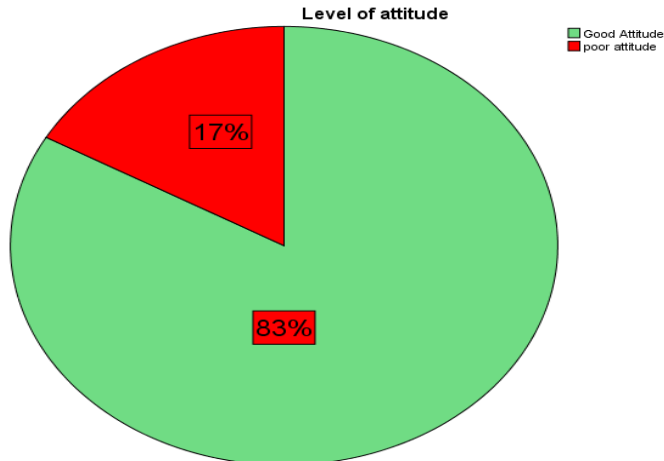


Fig 1. Participants level of attitude on hand hygiene in Dessie Referral Hospital, Ethiopia, 2017

Among variables entered in the bi-variate analysis, educational status and prior training experience on hand hygiene showed significant associations with the level of attitude on hand hygiene. Variables with P-value < 0.25 were entered in the multivariate logistic analysis. But only educational status was significantly associated with the level of attitude on hand hygiene. In the multivariable logistic analysis, Bsc nurses were 6 times (AOR = 6.0, CI=2.1, 17.1) more likely to have good level of attitude as compared to diploma nurses (Table III)

Table III. Bivariate and multivariate logistic regression predicting the level of attitude of participants on hand hygiene

Variables	Category	Level of attitude				COR (9% CI)	P- value	AOR (95% CI)	P- value
		Poor		Good					
		n	%	n	%				
Sex	Male	10	14.7	58	85.3	1	0.5		
	Female	16	18.4	71	81.6	0.7 (0.3,1.8)			
Age	<25	2	10	18	90	1	0.4		
	25+	24	17.8	111	82.2	0.5 (0.1,2.3)			
Marital status	Single	13	16.7	65	83.3	1	0.9		
	Married	13	16.9	64	83.1	0.8 (0.4,2.3)			
Educational status	Diploma	12	50	12	80	1	0.001*	6 (2.1,17.1)	0.001*
	First degree	14	10.7	117	89	8.4 (3.2,22)			
Work experience	<5 year	16	18.8	69	81.2	1	0.5		
	5+ years	10	14.3	60	85.7	1.4 (0.6,3.3)			
Training experience on hand hygiene	Yes	5	7.4	63	22.6	1	0.009*		0.1
	No	21	24.1	66	75.9	0.3 (0.1,0.7)			

Compliance of hand hygiene practice

A moment was observed and then it was recorded whether the nurses hand hygiene practice before and after the moment – if hand hygiene was observed it was recorded as a ‘correct moment’. (5 moments of Hand Hygiene described by

the WHO are the following:- 1/ Before patient contact, 2/ After patient contact, 3/Before an aseptic/clean/ procedure, 4/ After exposure to body fluids and 5/ After contact with patient surroundings)

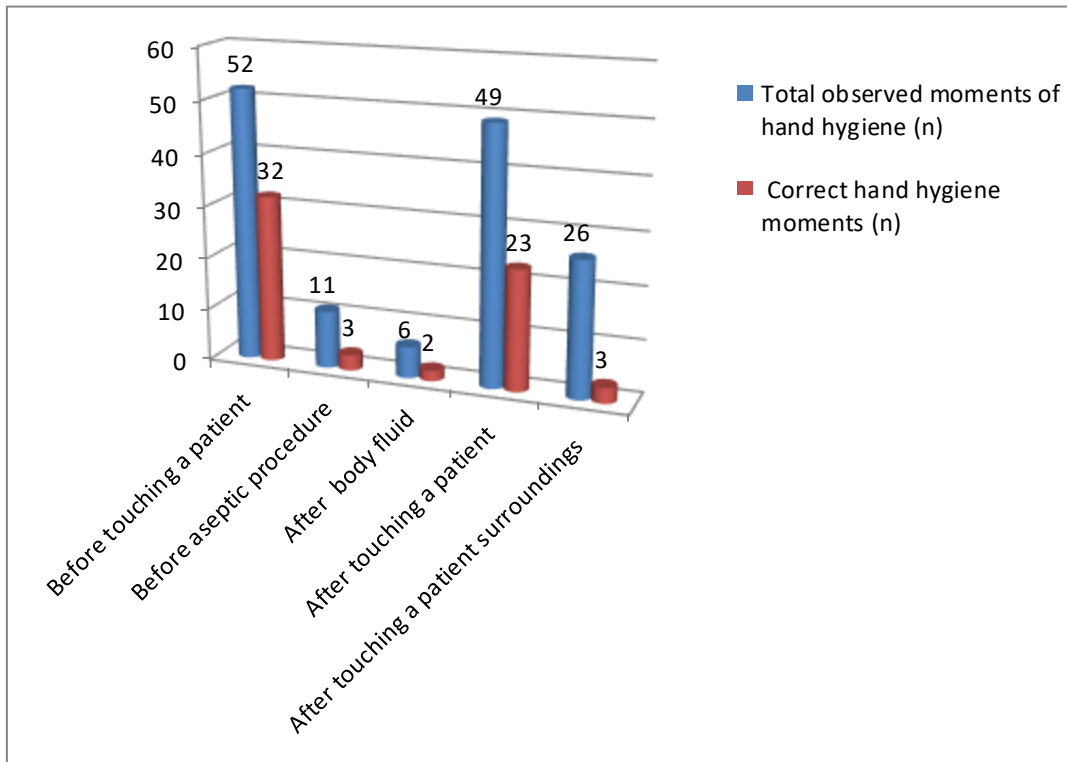


Fig II: Observation of hand hygiene moments on hand hygiene among study participants of Dessie Referral Hospital, Ethiopia, 2017.

The total number of observed moments and the total number of correct moments was also recorded separately for each moment of hand hygiene. In this study the total number of observed moments (considering all five moments of hand hygiene) was 144, of which there were only 49 correct moments, giving an overall hand hygiene compliance rate of 34.0 %. The above Bar graph shows that the

adherence of hand hygiene was highest before patient contact (61.5%), followed by after patient contact (46.9%) and after body fluid contact (33.3%) with the lowest hand hygiene compliance rates were before aseptic procedure (27.3%) and after touching patient surrounding (11.5%) respectively.

DISCUSSION:

Knowledge on hand hygiene

Effective hand hygiene is pivotal in preventing health-care-associated infections as the hands of health care workers are the most common mode of transmission of pathogens to patients. Though the majority (60 %) of the study participants had good knowledge on hand hygiene, there was a wide gap in the level of hand hygiene in this study subjects. Participants who had no prior training on hand hygiene were 0.2 times (AOR = 0.2, CI = 0.1, 0.4) more likely to have poor knowledge on hand hygiene as compared to participants who had prior training on hand hygiene. Similarly, a study conducted in India at puduchery found that the majority (76%) of nurses had moderate knowledge on hand hygiene. And also a study conducted at Cape Coast Teaching Hospital found that (51.2%) had fair knowledge on hand hygiene practices. In this study 84.5 % of the study subjects are Bsc nurses and were 14 times (AOR = 13.9, CI=2.9, 67.0) more likely to have good knowledge on hand hygiene as compared to diploma nurses.^[9,16]

Attitude on hand hygiene

Eighty three percent of study participants had good attitude about hand hygiene. Similarly a study conducted in Ain Shams University, Cairo, Egypt and a study in Canada hospital revealed that about 68% and 70.5 % of nurses had good attitude about hand hygiene respectively. In contrast, a study conducted in India at puduchery found that only few (14%) of nurses had good attitude on hand

hygiene. This could be due to the difference in availability of facilities, perceived benefits and risks of hand hygiene among study subjects.^[9, 11]

Compliance of hand hygiene practice

The overall hand hygiene compliance rate in this study subjects was 34.0 %. Hand hygiene compliance was highest before patient contact (61.5%), followed by after patient contact (46.9%) and the adherences of hand hygiene compliance rate were lowest before aseptic procedure (27.3%) and after touching patient surrounding (11.5%) respectively. Similarly, in a study conducted in Neville Fernando Teaching Hospital the lowest compliance rate of hand hygiene rates were observed before aseptic procedures (28.57%) and after exposure to body fluids (25.00%) respectively. From this study any one can easily infer that when a nurse touched a patient 100 times – she/he only could perform effective hand hygiene 34 times, whereas according to WHO hand hygiene guideline recommendation he/she should perform effective hand hygiene every time before and after every patient contact. This type of poor hand hygiene compliance rate could be observed due to lack of proper information/training/ to the five moments of WHO hand hygiene practice by the study subjects.^[1]

CONCLUSIONS :

This study revealed that the majority (60 %) of the study participants had good knowledge on hand hygiene. In this study

84.5 % of the study participants are Bsc nurses and were 14 times more likely to have good knowledge on hand hygiene as compared to diploma nurses. The majority (83%) of study participants had good attitude about hand hygiene but the overall hand hygiene compliance rate in this study subjects was very low. Regular practical training based on the five moments of hand hygiene shall be conducted for nurses by giving special emphasis to diploma nurses.

Acknowledgement: We express our sincere thanks to Wollo University – College of Medicine and Health Sciences for funding this research. Our sincere thanks go to all participants who formed the core and basis for this study. Our earnest gratitude also extended to Hospitals Authority, Team members, friends and all others for their constant support in the flourishing completion of this research.

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