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Assessment of the Knowledge and Practices of Health Care Providers on Hand-washing and Glove Utilization at Agaro Health Center and Hospital, South West Ethiopia, 2015

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Abstract

Background: One of the most recurrent themes with regards to the prevention of nosocomial infections in hospital has been the issue of hand washing and glove utilization among health care providers. Knowledge and practice of hand washing and aseptic technique are very important in preventing the transfer of pathogen micro-organisms by nurses to their patients in the course of rendering care. It is considered as one of the most infection control measures.

Method: A cross sectional study design was used to assess the knowledge and practice of hand-washing and glove utilization among health care providers of Agaro health center and hospital. A structured self-administered questionnaire was used to gather data from study participants by using census method. The data was compiled and the variables calculated and analyzed for frequency, percentage and graphic presentation using SPSS for window version 20.

Result: Majority, 59 (80.9%), of the respondents said that many infections in the health care facilities are preventable with proper and consistent hand washing. Majority, 60 (82.2%), of the study participants reported that they donned glove regularly whenever contact with body fluid is anticipated. All of the study participants had adequate knowledge regarding glove utilization.

Conclusion: 70 (96%) of the study participants believed that hand washing is the single most effective mechanism to prevent the spread of infection. Majority, 60 (82.2%), of the study participants reported that they donned glove regularly whenever contact with body fluid is anticipated.

Keywords: Nosocomial infections; Hand washing; Glove utilization

Abbreviations: CDC: Center for Disease Control; HCW: Health Care Workers; UP: Universal Precautions; HICPAC: Hospital Infection Control Practice Advisory Committee; HLD: High Level Disinfection; OSHA: Occupational Safety and Health Administration; OPIM: Other Potentially Infectious Materials; WHO: World Health Organization; AIDS: Acquired Immune Deficiency Syndrome; HIV: Human Immune Virus; IUD: Intra Uterine Device

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Introduction

One of the most recurrent themes with regards to the prevention of nosocomial infections in hospital has been the issue of hand washing and glove utilization among medical personnel. Knowledge and practice of hand washing and aseptic technique

are very important in preventing the transfer of pathogen micro-organisms by nurses to their patients in the course of rendering care. It is considered as one of the most infection control measures. Nurses may harbor micro-organisms that are harmless to them but potentially harmful to patients if they find a route of entry. It is important that nurses wash their hands and

maintain aseptic technique when carrying out health procedures because they are directly involved in providing a biologically safe environment for the patients. Micro-organism exists everywhere, in water, soil, air, body surface like the skin, intestinal tract, vagina, respiratory tract and urinary tract. Some micro-organisms are normal resident flora, while others invade the body and cause infection and disease that could either be asymptomatic, subclinical or clinical. These features make them vary in their virulence, pathogenesis and sepsis [1].

Nosocomial or hospital acquired infections- is infection that is neither present nor incubating at the time the patient come to the health care facility (hospital). Nosocomial refers to the association between care and the subsequent onset of infection and nosocomial infections are a significant problem throughout the world and are increasing [2].

In 1987, the Centers for disease Control and Prevention (CDC) developed universal precautions (UP) to help protect both health care workers (HCWs) and patients from infection with blood-borne pathogens in health care settings. The recommendations stress that blood is the most important source of HIV, HBV and other blood –borne pathogens, and that infection control efforts should be focused on the prevention of exposures to blood as well as the receipt of HBV immunizations. In 1996, however, the CDC's Hospital Infection Control Practices Advisory Committee (HICPAC) introduced the concept of standard precautions, which states that a single set of precautions be used for the care of all patients in hospital regardless of their presumed infection status [3]. Standard precautions integrate and expand the elements of universal precautions into a standard of care designed to protect health care practitioners and patients from pathogens that can be spread by blood or by any other body fluid, excretion or secretion [4].

Study revealed that at any time over 1.4 million patients worldwide will have infectious complications acquired in the hospital. Hospital acquired infection poses a very real and serious threat to all who are admitted to hospital. Hand hygiene means either washing the hands with soap and water or hand antiseptics with an alcohol-based hand-rub. The efficacy of hand washing for the prevention of hospital acquired infections has been clearly demonstrated. To make hand washing easier and safer, new detergents and methods have been developed, tested, and were successful, integrated into many infections control guidelines [5-7].

However, under routine hospital conditions the compliance with hand washing by health care workers including nurses, Physicians, and others (e.g. physical therapists and radiologic technicians) is still unacceptably low. As the rate of compliance with hand hygiene in medical practitioners is low, and the US centers for Disease Control and Prevention (CDC) published a guide line for hand hygiene in health care settings in an effort to promote it [8].

A study conducted in Jimma university hospital in, south west Ethiopia, also showed that hand washing practice by the nursing staff will be inadequate. This study demonstrated that only 43.2% of the nursing staff practices adequate hand washing while 56.8% of them practice inadequate hand washing [9].

Despite the magnitude of Hospital acquired infections problems and the importance of adherence to infection control policies, hand hygiene practice has remained unacceptably low. Hand

hygiene compliance rates in different developed countries rarely exceed 50%. For instance, figures show that in the USA it is 50%, in Switzerland 42% and in the UK 32%. Hence, poor compliance has resulted in high morbidity and mortality. In the USA, there are between 1.7 and 2 million people who contract hospital acquired infections and 88 to 99 thousand deaths are attributed to it annually. Furthermore, hospital acquired infections affect nearly 10% of hospitalized patients and presents major challenges in healthcare facilities. Consequently, annual medical expenses have increased in the USA to approximately \$4.5 billion [10].

One of the most important infection control measures is hand hygiene. In Turkey, the compliance of health-care workers is generally poor (<33%). The major reasons for non-compliance are heavy workload, inadequate structure (lack of sinks, difficult access to hygiene products), and behavioral aspects [11].

As proper glove utilization and appropriate hand washing practice has of paramount importance to reduce and prevent hospital acquired infections, it is important that all health care workers must have adequate knowledge and practice and compliance with proper hand washing and glove utilization. In Agaro health center and hospital there is no formal research conducted on this subject matter, and therefore it is necessary to conduct a baseline study to determine the knowledge and practice of hand washing practice and glove utilization with the standard, so that compliance with the standard will be recommended.

Materials and Methods

An institutional based cross-sectional study design was conducted at Agaro health center and hospital from February 1-3, 2015. Agaro health center and hospital contain 17 and 63 health care providers respectively. The sample size was determined by using census method (Since the number of study participants were less than one hundred (N =73) and all health care providers were included in the study (n=73) except pharmacists. Pharmacists were excluded from the study because their frequency of contact with the patient is not as much significant.

Data was collected using pre-tested structured and semi structured questionnaire that developed after a thorough review of literature on the subject matter. The tool contained three parts, part I-Socio-demographic information with 8 items, part II-Practice questions with 12 items and Part-III-Knowledge questions with 16 items.

The data was analyzed and processed using SPSS for windows version 20 so that percentages and frequencies of the findings were identified and presented in texts, tables and figures.

Ethical clearance letter was obtained from ethical review board of Jimma University College of health sciences and the school sent a one page letter of permission to Agaro health center and hospital administrators. The administrators read the purposes of the study and gave their letter of permission. Explanation about the objective, method as well as the benefit of the study was given to the study population for their full-co-operation.

Result

Socio demographic distributions of the study participants

From all respondents 83.6% of respondents' age lie between 20 – 29 age group. Moreover, 61.9% of the study participants had 1 – 5 years of service (**Table 1**).

Frequency and percentage distribution of study population by occupation and sex

Most of the study participants, 45.2% were nurses from that 32.8% of them were males followed by midwives accounting 21.8% from whom only 5.4% of them were females and the least in numbers were Health officers with 2.7%. Generally, from all health care providers males were the predominant (77%) (**Table 2**).

Knowledge of hand washing and glove utilization

All study participants have knowledge of hand washing and glove utilization.

Practice of hand washing and glove utilization

Almost all 72 (98.6%) of the study participants practiced hand washing before and after individual patient contact and after contact with body secretions, but only 1 (1.4%) of the study participant didn't practice hand washing and raised unavailability of sink for not practicing it. The study participants also reported that the frequency of hand washing practice depends on the patient flow and varies from day to day. All of the study participants wet their hands under running water before applying soap and 64 (88%) of them always used soap or other antiseptic

Table 1 Socio demographic distributions of respondents in Agaro health center and hospital, 2015.

Category		Frequency	Percentage
Age	20-29	61	83.6
	30-39	10	13.7
	40 and above	2	2.7
	Total	73	100
Ethnicity	Oromo	54	73.9
	Amhara	16	21.9
	Tigre	3	4.2
	Total	73	100
Religion	Orthodox	28	38.4
	Muslim	27	36.9
	Protestant	17	23.3
	Others (wakefeta)	1	1.4
	Total	73	100
Marital status	Single	45	61.7
	Married	27	36.9
	Others (engaged)	1	1.4
	Total	73	100
Years of service	Less than 1 year	6	8.3
	1 – 5 years	45	61.6
	More than 5 years	22	30.1
	Total	73	100

Table 2 Frequency and percentage distribution of study population by occupation and sex among HCWs of Agaro health center and hospital, 2015.

Category of staffs	Male		Female		Total	
	No	%	No	%	No	%
Physicians	6	8.2	2	2.7	8	10.9
Nurses	24	32.8	9	12.3	33	45.2
Dentists	3	4.1	-	-	3	4.1
Midwives	12	16.4	4	5.4	16	21.8
Lab Technologists	7	9.5	-	-	7	9.5
Anesthetists	3	4.1	1	1.3	4	5.4
Health officers	1	1.3	1	1.3	2	2.7
Total	56	77	17	23	73	100

solutions during hand washing. Majority, 52 (71.2%) of the study participants applied soap and alcohol for total duration of 15 seconds and the rest for less than 15 seconds. Majority, 70 (95.8%) of the study participants had adequate practice of glove utilization.

Frequency and percentage distribution of antiseptic solutions used by health care providers

59%, 16.4% and 24.6% of health care providers used Soap, Alcohol and Soap with Alcohol respectively for hand hygiene (**Figure 1**).

Frequency distribution of methods of hand drying after hand washing by health care providers

Most of the study participants (70%) use air for hand drying and only 21% of the participants used towel for hand drying after washing their hands (**Figure 2**).

Discussion

Over all in this study almost all, 70 (96%), of the study participants believed that hand washing is the single most effective mechanism to prevent the spread of infection even before and after gloving. A survey of approximately 200 health care workers noticed that 89% recognized hand washing as an important means of preventing infections [12]. The discrepancy might be because of sample size and study area difference.

Majority, 59 (80.9%), of the respondents said that many infections in the health care facilities are preventable with proper and consistent hand washing. Other study puts the importance of proper hand washing is to perform correctly the various procedures in reducing transmission of infections and therefore decreasing the frequency of nosocomial infection in patients, by using antiseptic solutions to inhibit growth or kill microorganisms on the hands [13].

Out of 73 study groups 63 (86.3%) of them agreed that hands should be washed by applying soap for at least 15 seconds. All of the study participants agreed that effective hand washing consists of wetting, soaping, applying friction, rinsing and drying adequately. All of the study participants agreed that medical personnel should always wash their hands before and after contact

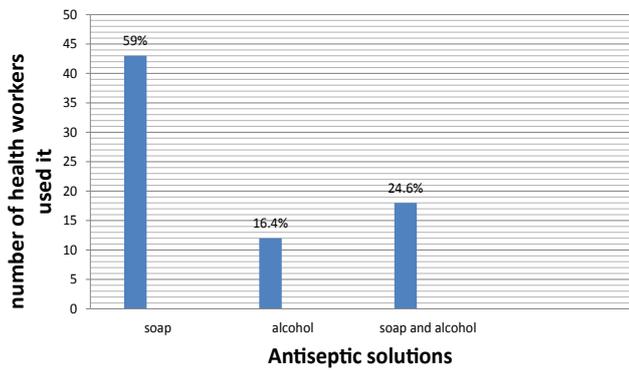


Figure 1 Frequency and percentage distribution of antiseptic solutions used by health care providers of Agaro health center and hospital, 2015.

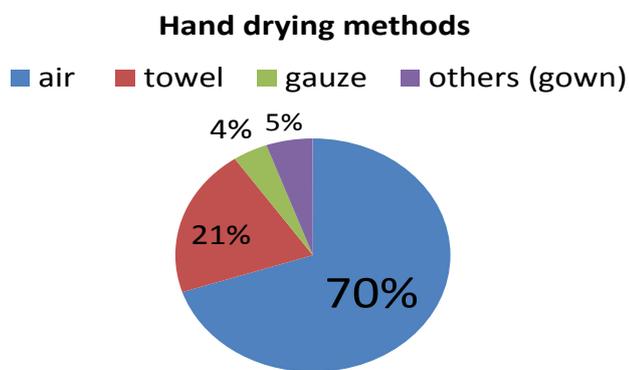


Figure 2 Frequency distribution of methods of hand drier after hand washing by health care providers of Agaro health center and hospital, 2015.

with a client and immediately after contact with blood, secretions or excretions. But other evidence shows that health care provider always needs to moisten and apply soap at least for 10 seconds or antiseptic solution and wash their hands before individual patient contact and after contact with blood, body secretions or excretions. Effective hand washing includes wetting, soaping, and applying friction, rinsing and drying adequately [14] which are consistent to each other.

In this study, 43 (59%), of the study participants used soap followed by soap and alcohol, 18 (24.6%), for washing their hands. Of those who practiced hand washing, 51 (70%), of them dried their hands by air followed by towel, 15 (21%). But Since 2005 research by creed on S.A indicate that alcohol based hand rub or 70% isopropanol (99-99.9%) kills bacteria most effectively but that antimicrobial soap or chlorhexadine (88-90) continues to destroy them for some time after the initial application. Soap (<60%) appears least effective [15]. Even if soap is the least effective in destroying microorganisms, majority of the health care workers used it. This discrepancy may be due to economical difference of the study area.

All of the study participants reported that examination gloves should be changed as soon as possible when visibly soiled, torn

or punctured. All of the study participants thought that sterile glove should be used for blood drawing, IV insertion and removal, pelvic examination, IUD insertion and removal and for procedures involving contact with tissue deep under the skin (e.g. cesarean section). All of the study participants agreed that utility glove should be used for handling and cleaning instruments, handling contaminated wastes and cleaning blood or body fluid spills. It is consistent with reference pointing: Surgical staffs are required wearing sterile or high level disinfected gloves and when needed examination gloves are used but in case of like blood pressure check, temperature check and injection glove is not required. Exam gloves and HLD surgical glove is preferred and acceptable for blood drawing, IV insertion and removal, pelvic examination, IUD insertion and removal (with no -touch technique). Sterile/ high level disinfectant surgical, HLD Surgical glove is preferred and acceptable for the health worker to use for procedures involving contact with tissue deep under the skin (e.g. cesarean section). Utility or heavy-duty household glove, a health worker should use for handling and cleaning instruments, handling contaminated wastes and cleaning blood or body fluid spills [16].

Conclusion

Based on the finding it was concluded that the knowledge and practice of the study participants regarding hand washing and glove utilization was adequate.

According to this study, almost all, 72 (98.6%) of the study participants practiced hand washing before and after individual patient contact and after contact with body secretions, but only 1 (1.4%) of the study participant didn't practice hand washing and raised unavailability of sink for not practicing it.

Majority, 43 (59%), of the study participants used soap for hand washing.

Almost all 70 (96%) of the study participants believed that hand washing is the single most effective mechanism to prevent the spread of infection.

Authors' contributions

Both TL and BF participated in the design and analysis of the study. TL searched the databases, and wrote the first and second draft of the article. BF reviewed proposal development activities and each drafts of the result article. Finally, both authors revised the manuscript and approved the final version.

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