ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF MEDCICNE

DEPARTMENT OF EMERGENCY MEDICENE

ASSESSMENT OF THE KNOWLEDGE, ATTITUDE AND PRACTICE OF FOURTH, FIFTH AND SIXTH YEAR MEDICAL STUDENTS ON STANDARD PRECAUTION IN TASH, ADDIS ABABA, ETHIOPIA, 2014

BY

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A THESIS SUBMITTED TO GRADUATE STUDIES OFADDIS ABABA UNIVERSITY, DEPARTMENT OF EMERGENCY MEDICENE IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THEDEGREE OF MASTER OF EMERGENCY MEDICENE AND CRITICAL CARE

JUNE, 2014

ADDIS ABABA, ETHIOPIA

Approval by the board of examiners

This thesis by_____ is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of Master of Science in Nursing.

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Acknowledgments

My gratitude and thanks goes to God for giving me health and capacity during the whole course of my studies. I am very grateful to my advisor DrAkliluAzazh of the Department of Emergency Medicine, Faculty of Medicine (FOM), Addis Ababa University (AAU), for his advice in selection of the research title, unreserved guidance and constructive suggestions and comments for the course of research development

I would like to express my respect and acknowledgment to Mryonasabebe who helped me a lot during the proposal development including informing me possible titles which I could take as research titles,

My honest gratitude also goes to AwolSeid Who is always on side of me, in giving me constructive suggestions on each step in the course of research development

I would take this opportunity to extend my thanks to all of my teachers, classmates the research Centre and computer lab staffs for their unreserved support.

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List of Acronyms

AAU Addis Ababa University

AIDS Acquired Immune Deficiency Syndrome

CDC Center for Disease Control and Prevention

CI Confidence Interval

C_2 Clinical year two

COR Crude Odds Ratio

HAI Hospital Acquired Infection

HBV Hepatitis B Virus

HCV Hepatitis C Virus

HIV Human Immunodeficiency Virus

IP Infection Prevention

MOH Ministry of Health

NaSH National Surveillance System for Health Care Workers

NGOs Non-Governmental Organizations

OR Odds Ratio

OPD Out Patient Department

PEP Post Exposure Prophylaxis

PPE Personal Protective Equipment

SD Standard Deviation

SIGN Safe Injection Global Network

SPSS Statistical Package for Social Science Research

TASHTikurAnbessaspecialized hospital

VCT voluntary counseling and testing

Abstract

Background; employingstandard precautions means taking precautions with everybody. If precautions are taken with everyone, health care workers do not have to make assumptions about people's lifestyles and risk of infection.

Objectives: The main objective of the study is to assess the knowledge, attitude and practices of medical students on Standard precautions.

Methods: This cross sectional health institution based survey was conducted in TASH, Addis Ababa University,among medical students who are 4th, 5th and 6th year. The study uses quantitative methods. Statistical significance was determined by computing mean variations using logistic regression.

Result: The total knowledge score showed the level that 118(54.6%) had fair knowledge 71(32.9%) has good knowledge and 27(12.5%) had poor knowledge. Total knowledge score of respondents range from 6 to 18 out of 18 the mean knowledge score 13.37 with sd of±2.42.The knowledge level on standard precaution132 (61.1%) had good knowledge, 25(11.6%) fair and 59(29.6%) poor knowledge.Attitude score of the respondents showed that 180(83%) scored above half. Overall practice score showed that 117(53.9%) had fair practice while 15(6.9%) had good practice and 85(39.2%) had poor practice. Practice score standard precaution showed that 125(56.8%) had fair 69(32.6%) poor and 23(10.6%) good practice. Hand hygiene practice showed that 12.9% had good practice while 21% fair and 66.1% poor practice.Weak association was found between knowledge and attitude ($r = 0.354$; $P<0.001$); knowledge and practice to UP standards ($r=0.201$; $P<0,001$); attitude and practice towards UP ($r=0.425$; $P<0.001$).

Conclusion: Medical students had a better Knowledge and acceptable level of attitude towards standard precaution but Medical students had poor knowledge and practice towards hand hygiene, overall they had poor practice to all components Strengthen and integrate standard precaution with the routine services through providing training for medical students in the Hospitals and health centers they are attached.

Keywords: standard precaution, medical students, standard precaution related

Chapter One

Introduction

1.1.Background

Employing standard precautions means taking precautions with everybody. If precautions are taken with everyone, Health care workers do not have to make assumptions about people's lifestyles and risk of infection. Health care workers should have the right to be able to protect themselves against infection, whether it is human immunodeficiency virus (HIV), Hepatitis or anything else (1). And clients have also the right to get safe service (1).

To protect HCSs from percutaneous injuries and to prevent nosocomial infection, students should have adequate knowledge before their initial training period at a hospital. Nurses‟

Few studies have reported on medical students‟ knowledge of standard isolation precautions or sharp injuries7-10 and noted a lack of adequate knowledge of standard precautions.9

The observance of hygiene recommendations by students is reported as being weak: medical students rarely wash their hands after examining patients.11,12

Medical and nursing students‟ knowledge of standard precautions are rarely compared13; to our knowledge, no studies have previously reported comparison of knowledge of standard precautions between students in different health curricula. Poor compliance may have its roots in a failure to learn this simple, essential behavior at medical school.11

Concern about occupational exposure to blood borne pathogens exists, and medical students, who lack in experience in patient care and surgical technique, may be at an increased exposure risk

The world health organization (WHO) estimated that at least 50% of the 12 billion injections administered each year in the developing world are unsafe- posing serious health risk to recipients, health workers and the public (3,4).

Injuries from sharp devices have been associated with the transmission of more than 40 pathogens, including hepatitis B virus(HBV), hepatitis C virus (HCV), and HIV (3, 4,5).

Globally, WHO estimates that every year unsafe injections and needle stick injuries cause at least 8-16 million hepatitis B infections, 2.3-4.7 million hepatitis C infections and 160,000 HIV/AIDS (acquired immuno-deficiency syndrome) infection. These chronic infections lead to a high burden of morbidity and mortality (5). In many countries for many years health care workers have been infected with HIV as a result of their work. The main cause of infection in occupational settings is exposure to HIV infected blood via a percutaneous injury.

The World Health Organization estimates that about 2.5% of HIV cases and 40% of HBV and HCV cases among HCWs worldwide are the result of these exposures (5).

Compliance with standard precautions reduces the risk of exposure to blood and body "fluids (6).

Health care workers especially medical students are at risk of acquiring infection through occupational exposure. Hospital employees can also transfer infections to patients and other office workers (7).

The incidence of needle stick among all medical students was high i.e 20.9%. This study also revealed that the incidence of episodes of needle stick injuries according to clinical posting was high in obstetrics and gyne(13.2) followed by medical (4.7) and surgery (1.6) (8).

A study conducted in us, University of California among medical students towards exposure to body fluids showed that 119 of 1022 medical students sustained 129 exposures. Of these exposures, 82% occurred on four services: obstetrics-gynecology, surgery, medicine, and emergency medicine. The probability of exposure was not related to graduation year, clerkship location, previous clerkship experience, or training site. Surveys of two graduating classes at the beginning and end of the study showed that the percentage of exposures reported increased from 45% to 65% over the 7-year study period. Thus, the reported injury rates represent minimum estimates of actual occurrences. Human immunodeficiency virus infection and hepatitis were not reported, although follow-up was limited (9).

Health care workers are at risk for blood-borne infections through sharps injuries. One factor which might increase the risk in low and middle income countries is low adherence to universal

precautions. Much research has been conducted concerning this topic globally, but little in Indonesia (10).

The risk of acquiring HIV by health care worker after a needle stick or other sharps injury is 5%. Risk reduction must be undertaken for all blood borne pathogens through adherence to standard precautions, using personal protective equipment, appropriate use of safety devices, and providing a needle disposal system in work place (11).

Occupational blood-borne infections (BBIs) are associated with significant morbidity and mortality. Health care workers (HCWs) are exposed to hazardous BBIs such as infection with hepatitis B virus (HBV), hepatitis C virus (HCV) and human immune deficiency virus (HIV). HBV and HCV infections are serious public health problems that can have consequences in terms of psychological and occupational diseases (12).

They are common causes of occupational diseases transmitted from patients to HCWs and vice versa, and also to HCWs' families. Fortunately, most occupational transmissions can be prevented by standard precautions (13).

As identification of patients infected with blood-borne pathogens such as HIV, hepatitis B, and hepatitis C viruses cannot be reliably made by medical history and physical examination, standard precautions were recommended by the CDC to be used on all patients (14).

Standard precautions are set of measures formulated to prevent Transmission of blood borne pathogens when providing health care. Standard precautions include hand washing; use of barriers (gloves, gown, cap and mask); care with devices, equipment and clothing used during care; environmental control (surface processing protocols and health service waste handling); adequate discarding of sharp instruments; and patient‟s accommodation in accordance to requirement levels as an infection transmission source (15).

Since identification of patients infected with these pathogens cannot be reliably made by medical history and physical examination, the Centers for Disease Control (CDC) has recommended that standard precautions are used on all patients, regardless of knowledge about their infection status. Knowledge, Awareness and Compliance with Standard Precautions among Health Workers in North Eastern Nigeria (16).

Standard precautions are based on the principle that all blood, body fluids, secretions, excretions (except sweat), non-intact skin, and mucous membranes may contain transmissible infectious agents. The term „standard precautions" is replacing „universal precautions" as it expands the coverage of universal precautions by recognizing that any body fluid may contain contagious and harmful microorganisms .17

Compliance with standard precautions has been shown to reduce the risk of exposure to blood and body fluids reported that implementation of universal precautions significantly increased the frequency of barrier use and decreased the number of actual exposure incidents during medical practice in hospitals in the Us reported that implementation of universal precautions contributed to decreased parenteral injuries, which represent the most common source of significant occupational exposure to BBP.18

Compliance on the part of healthcare workers with standard precautions has been recognized as an efficient means to prevent and control health care-associated infections in patients and health workers [19].

Many factors are responsible for non-adherence to the basic principles of universal precautions among health care providers. Paramount to the prevention of infectious disease is the strict adherence to universal precautions for all patients.6

This includes, though not limited to, eye protection with lateral shields, facemask, and protective clothing, which will be laundered on the premises or by appropriate services.3 Garner J. Guideline for isolation precautions in hospitals. Part II. Recommendations for isolation precautions in hospitals.20

observed that better knowledge of universal precautions among HCWs was one of the correlates of good compliance. Observed the same among physicians. Knowledge of standard precautions by HCWs may be influenced by their type of training [21].

.A study conducted in Nepal showed that occupational exposure to bodily fluids and blood-borne pathogens is very high for basic health workers in Nepal. The level of knowledge of universal precautions was limited, resulting in poor precautionary practice. The issue of conformity to universal precaution should not be left to the discretion of the BHWs; it should be mandatory. 22

A study conducted in Iran to assess the level of knowledge, attitude, and practice among Iranian dental Health care professionals towards standard isolation precautions in Shiraz, Iran showed that Practice of standard isolation precautions is poor among dental professionals in Shiraz University of Medical Sciences. This study showed that knowledge of infection control measures and a positive attitude towards them alone does not have an impact on adherence to recommendations. 23

Hand hygiene is now regarded as one of the most important element of infection control activities. In the wake of the growing burden of health care associated infections (HCAIs), the increasing severity of illness and complexity of treatment, superimposed by multi-drug resistant (MDR) pathogen infections, health care practitioners (HCPs) are reversing back to the basics of infection preventions by simple measures like hand hygiene. This is because enough scientific evidence supports the observation that if properly implemented, hand hygiene alone can significantly reduce the risk of cross-transmission of infection in healthcare facilities (HCFs)24-28. .

Hand washing frequently is the single most important measure to reduce the risks of transmitting skin microorganisms from one person to another or from one site to another on the same patient. Washing hands as promptly and thoroughly as possible between patient contacts and after contact with blood, body fluids, secretions, excretions, and equipment or articles contaminated by them is an important component of infection control and isolation precautions.

The spread of nosocomial infections, among immune compromised patients is connected with health care workers' hand contamination in almost 40% of cases, and is a challenging problem in the modern hospitals. The best way for workers to overcome this problem is conducting correct hand-hygiene procedures; this is why the WHO launched in 2005 the GLOBAL Patient Safety Challenge.[^ World Alliance for patient safety.29

Effective hand hygiene can lower the prevalence of healthcare associated infections. Unfortunately, the prevalence of these infections continues to rise and poses a challenge to healthcare providers. Healthcare associated infections due to poor hand hygiene has been linked to an unacceptably high level of morbidity, mortality and healthcare costs.1 In developing countries it‟s prevalence is found to be as high as 19%.2 WHO: The Burden of health care-associated infection worldwide.30

Previous studies have shown that hand hygiene compliance among healthcare workers is generally low.3 Further increase in compliance is difficult to sustain, although the World Health Organization (WHO) has compiled guidelines in this regard in order to reduce the prevalence of health care associated infections (31).

In most health care institutions, adherence to recommended hand-washing practices remains unacceptably low, rarely exceeding 40 per cent of situations in which hand hygiene is indicated (35,37). Hand hygiene reflects attitudes, behaviors and beliefs. Some of the observed/self-reported factors found to be affecting hand hygiene behaviors are enlisted (32).

In Ethiopia, medical students are practicing in clinical setting of different clinical units where patients are getting health care services largely so, assessing the necessary knowledge ,attitude and practice or skill on universal precaution and factors in health care facilities as early as possible can give way to manage the limited resource available in the sector.

1.2.Problem Statement

Universal precautions are not fully practiced worldwide, especially in developing nations like China. In rural northern India, 40% of health care providers admitted recapping used needles.33

In a rural area of Anhui, China, the rate of self-reported non-compliance with glove utilization and hand hygiene among obstetricians and gynecologists was 68% .34.

In Changsha, China, only 11% of student nurses used gloves during high exposure risk procedures. A training program for prevention of occupational exposure to blood borne pathogens.35

Developing countries, which account for the highest prevalence of HIV-infected patients in the world, also record the highest rate of needle-stick injuries .36

Nosocomial infections are estimated to make patients stay in the hospital four to five additional days. Around 2004-2005, about 9,000 people died each year with a nosocomial infection, of which about 4,200 would have survived without this infection. 37

The World Health Organization estimates that about 2.5% of HIV cases and 40% of HBV and HCV cases among HCWs worldwide are the result of these exposures .38

In, UK a study reported that the nurses poorly performed aseptic technique particularly gloving and hand-hygienic practice.39

Although several recommendations and guidelines are issued by medical and dental societies as well as governmental organizations, studies demonstrate that infection is not well-controlled in the dental settings and hospitals. 40

A study conducted in Iran revealed that, the practice of standard isolation precautions among medical students of Qazvin University of Medical Sciences was poor. Having knowledge and positive attitude alone doesn't influence practice. In addition the necessity of standard isolation in prevention of disease in patients in all duration of education must be emphasized and facilities should be improved.41

One factor which might increase the risk in low and middle income countries is low adherence to universal precautions The risk of occupational BBI for HCWs in low and middle income countries like Indonesia is high due to crowded hospitals, high patient load per HCW, limited knowledge of risks, inadequate personal protective equipment (PPE), lack of sharps containers, limited knowledge and utilization of Post Exposure Prophylaxis (PEP), low adherence to Universal Precautions (UP),high prevalence of patients with BBI and low hepatitis B vaccination coverage among HCWs.2-4 As 2 million cases of HCV and 21 million of HBV infections are due to unsafe therapeutic injections,5 poor adherence to UP puts both patients and HCWs at risk of BBI(.42,43,44)

1.3.Significance of the study

Even though medical students are practicing in clinical setting, there is no study conducted towards KAP of students concerning standard precautions.

This study provides baseline information on knowledge level and practice on prevention of nosocomial infection of medical students. It will provide strong body of scientific knowledge which will ensure the highest standards of medical care and practice. This can be achieved

through adherence to the evidence based guidelines for prevention of nosocomial infection ultimately improving patients‟ outcomes. Improved outcomes will shorten patient‟s length of stay, hospitalization as well as benefit the patient financially with decreased hospital costs. Hospitals also gain benefits as they are continually faced with the challenge of providing cost effective services to patients and communities.

Again, future researchers will benefit from this study that, it will provide them the baseline facts needed to compare their study results as necessary though studies have been conducted; still there is poor KAP towards prevention of nosocomial infection in medical and nursing students who are in clinical attachment. This motivates me to conduct this research The author strongly beliefs that a research on this issue can be important step forward in providing information concerning stake holders with an input in developing their polices.

this study will serve as the basis for policy makers in developing health education Programs which may serve as interventions to reduce incidence of nosocomial infections There is a need to work on the perception, attitude and utilization to reduce mortality and morbidity.

Chapter Two
Literature review

Health care workers should have the right to be able to protect themselves against infection, whether it is HIV, Hepatitis or anything else (1). Clients have also the right to get safe service.

The following universal infection control precautions are advised by the World Health Organization to help protect health care workers and clients from blood-borne infections including HIV:

• Washing hands with soap and water before and after procedures.

• Using protective barriers such as gloves, gowns, aprons, masks, goggles for direct contact with blood and other body fluids.

• Disinfecting instruments and other contaminated equipment.

• Handling properly soiled linen. Gloves and leak proof bags should be used if necessary. Cleaning should occur outside patient areas, using detergent and hot water.

• Using a new, auto disable syringe (AD) or single-use disposable injection equipment for all injections is highly recommended. Sterilizable injection should only be considered if single use

Equipment is not available and if the sterility can be documented with Time, Steam and Temperature (TST) indicators.

• Discarding contaminated sharps immediately and without recapping in puncture and liquid proof containers that are closed, sealed and destroyed before completely full. Document the quality of the sterilization for all medical equipment used for percutaneous procedures (1, 45).

Health care workers are increasingly at risk of becoming infected with serious blood borne viruses such as HBV, HCV, HIV and many other multiple drug resistance bacterial infections. The greatest risk is for staff that performs or assists with surgical procedures (physicians, medical students, nurses and midwives); process surgical instruments and equipment; and performs housekeeping and waste management tasks, including disposal of infectious waste items (46,47). Believing that safety injection and hand hygiene compliance can show the desired

outcome of universal precaution in the study area this survey was addressed these two major components.

A study conducted in Nepal to assess the knowledge, attitudes, and infection control practices among Nepalese health care workers (HCWs) showed that The study comprised a questionnaire survey of 324 staff from acute care hospitals in Kathmandu, Nepal. A total of 158 doctors and 166 nurses participated, 27% of whom had received infection control training. Only 16%, 14%, and 0.3% of the respondents achieved maximum scores for knowledge, attitude, and practice items, respectively. Staff had good knowledge and positive attitude toward most aspects of infection control, although only half had heard of methicillin-resistant Staphylococcus aureus.48

It demonstrates the responses of knowledge items about the general concepts of infection control and SPs, 18.3% and 51% did not recognize the goal of infection control and the precise definition of SPs respectively. Only 41.8% recognized that all patients are sources of infection and only 31.9% stated that all body fluids except sweat should be viewed as sources of infection.49,

A study conducted in India concerning KAP of needle stick injuries among dental students, of the 120 students, 13 (11%) were not even aware that virus could be transmitted through infected needle. A significant proportion of the third year students i.e. 27 (67.5%) were not aware of correct method of disposal of disposable needles and syringes as against interns 17 (42.5%). Around 31 (26%) said that they would promote active bleeding at the site of injury and 37 (30%) said they would take post-exposure prophylaxis.50

A study conducted in America among medical students concerning needle stick injury showed that among 146 students. Forty-three students (30%) reported needle stick injuries that most commonly occurred in the operating room; 86% of students reported always using double gloves in the operating room; 90% reported always wearing eye protection, and all but one student had been vaccinated against hepatitis B. A concern about contracting a blood borne pathogen through work was noted in 125 students, although they usually reported that this concern only slightly influenced their decision regarding a career subspecialty.51

Study conducted in Chicago, America among Three hundred fifty students (107 medical students, 78 nursing students, 71 physiotherapist students, and 94 assistant radiologist students)

were included in the study among Mean overall score (_SD) was 21.5 _ 2.84. Nursing students had a better overall score (23.2 _ 2.35) than did physiotherapist students (21.9 _ 2.36), medical students (21.1 _2.35), and assistant radiologist students (20.5 _ 3.04; *P* _.001). The mean score (_SD) was 8.5 _ 1.4 for the standard precautions questionnaire, was 7.4_1.26 for the hand hygiene questionnaire, and was 5.7_1.55 for the nosocomial infection questionnaire (*P* _ .001).

A study done in Malaysia among medical students concerning needle stick injury and associated factors revealed that the percentage of students who had acquired knowledge of standard precaution was slightly low(70.3%).the knowledge acquired through formal lectures(77.5%),books(50.5%) and through informal lectures(67.2%).52

Gynecology department of an Indonesian teaching hospital showed that Knowledge of UP was fairly good, means of correctness level reached 71.8% ± 7.56 with maximum value of 100%. Knowledge of hand washing, personal protective equipment, medical waste disposal and post exposure prophylaxis was high, both among staff and students. However, knowledge of instrument processing and medical sharps disposal was poor, especially among the students. All respondents showed favorable attitude on UP but almost all (95.8%) reported low adherence to UP standards . The findings were similar even when we analyzed replies into staff, residents and students groups., Most (305/377) of the staff had had training on UP (90% of medical staff and students, 73% of nurses and midwives and 85% of nursing and midwifery students).53

Knowledge of UP was fairly good, means of correctness level reached 71.8% ± 7.56 with maximum value of 100%. Knowledge of hand washing, personal protective equipment, medical waste disposal and post exposure prophylaxis was high, both among staff and students. However, knowledge of instrument processing and medical sharps disposal was poor, especially among the students. All respondents showed favorable attitude on UP but almost all (95.8%) reported low adherence to UP standards. The findings were similar even when we analyzed replies into staff, residents and students groups. 10

A study conducted in Saudi Standard Precautions and Infection Control, Medical Students' Knowledge and Behavior at a Saudi University: showed A total of 251 students were included. Knowledge scores in all domains were considerably low, 67 (26.7%) students scored ≥ 24 (out of 41points) which was considered as an acceptable level of knowledge, 22.2% in 4th year, 20.5%

in 5th year and 36.8% in 6th year. Sharp injuries, personal protective equipment and health care of the providers showed the least knowledge scores. The main sources of knowledge were self-learning, and informal bed side practices The majority of students' believed that the current teaching and training are insufficient in providing them with the necessary knowledge and skills regarding standard precaution.58

The study aimed at assessing the observance of universal precautions by HCWs in Abeokuta, Ogun State, Nigeria among Healthcare workers of 433 respondents, 211 (48.7%) of which were trained nurses. About a third of all respondents always recapped used needles. Compliance with non-recapping of used needles was highest among trained nurses and worst with doctors. Less than two-thirds of respondents (63.8%) always used personal protective equipment, and more than half of all respondents (56.5%) had never worn goggles during deliveries and at surgeries. The provision of sharps containers and screening of transfused blood by the institutions studied was uniformly high. A high percentage (94.6%) of HCWs observed hand washing after handling patients. 16

A study conducted in Nigeria assessing knowledge and compliance of health workers towards universal precaution showed that among 276 health workers Half (50%) of the respondents reported no knowledge of universal precautions; more than one third (37%) had average knowledge of universal precautions while 13% had good knowledge. Knowledge of universal precautions was highest among women than men, and among nurses (85.5%) compared with other health workers. 54

A study conducted in Nigeria Concerning the knowledge and practice of hand hygiene, this study revealed that 56.7% of the health workers knew that their hands had to be washed before and after patient care. However, compliance with hand hygiene was noticed in only 38.7% of the knowledgeable health workers. three (3%) did not wash their hands before or after taking care of patients. 54

A study conducted in Ghana assessing KAP of medical residents to wards universal precaution shows that among fifty, Forty six (92%) respondents claimed knowledge about universal precautions, 2 (4%) had no knowledge and 2(4%) others gave no response . Between 23 (46%) and 48 (96%) of respondents understood the various constituents of UBP. 55

A study conducted in USA concerning factors associated with compliance of nurses on universal precaution Studies have shown that the most common explanations given for non-compliance with universal precautions were lack of time to put on the protective gears, gear interference with medical procedures, and a belief that compliance with universal precautions is unnecessary, time consuming and costly .59

Attitude

A study conducted in Ghana assessing KAP of medical residents to wards universal precaution showed that All respondents except one person said UBP reduce the risk of HIV transmission. Forty-eight (96%) of the respondents agreed that UBP should be practiced for all patients. One respondent (2%) said it should be so for only HIV positive patients and one person (2%) was silent on the issue.

Forty-seven (94%) of the respondents agreed that it is important to wear gloves when doing invasive procedures but 3 respondents (6%) disagreed. In spite of this, 22 (44%) persons said every patient going for surgery should be screened for HIV, 27 (54%) said no to this whilst 1 person (2%) did not give their opinion.

As many as 18 respondents (36%) admitted that they would be reluctant to perform an invasive procedure on an HIV positive patient but 31 (62%) had no problem with that. One (2%) respondent gave no answer . 55

The attitudes of medical students towards their satisfaction with the current curricular content and the received training towards infection control and SPs. Of the included students 61.4% disagreed and strongly disagreed that the current curriculum provides them with enough information on infection control and SPs, 69.9% disagreed and strongly disagreed about the availability of extracurricular training and/or orientation sessions towards infection control and SPs at the college, 60.1% disagreed and strongly disagreed about the role of their tutors and faculty in providing them with necessary information on how to avoid health facilities related infections before their entrance into clinical training at hospitals, and almost 80% of the included students agreed or strongly agreed about their need to receive training and orientations towards infection control and SPs. 49

Practice of hand hygiene

A study conducted in sirilanka concerning practice of hand hygiene practices found that only 5.53% had good practices, while 26.9% had moderate practices and the majority (67%) had poor hand hygiene practices. Nursing students had better practices than medical students and the difference was statistically significant ($p<0.05$. 56

A study conducted in Ghana assessing KAP of medical residents to wards universal precaution showed that Forty-two (88%) of respondents indicated that they wore gloves routinely when performing invasive procedures on patients but 8 (16%) did not for the reasons that:

- they are careful when performing invasive procedures,
- there is no time to look for gloves in emergency situations
- that sometimes gloves are not readily available,
- they have better control over the IV cannula without gloves and
- they can set intravenous lines without soiling themselves.

Respondents were also asked which precautionary measures they practice in surgical procedures. In response to the use of other precautionary measures some respondents did not wear some of the protective gadgets. 55

A study conducted in Ghana assessing practice showed that Forty-two (88%) of respondents indicated that they wore gloves routinely when performing invasive procedures on patients but 8 (16%) did not for the reasons that: they are careful when performing invasive procedures, there is no time to look for gloves in emergency situations that sometimes gloves are not readily available, they have better control over the IV cannula without gloves and they can set intravenous lines without soiling themselves. Respondents were also asked which precautionary measures they practice in surgical procedures.

In response to the use of other precautionary measures some respondents did not wear some of the protective gadgets. For example, goggles were not always used because they were not

available in the theatre, were not routinely needed in every operation and the available ones did not fit or the respondents were not used to wearing goggles for operations.

On aprons, they stated that it is too warm to wear them or that they only wear them for potentially bloody surgery. 55

Another study conducted in AlnShams university hospital, Cairo shows that Baseline knowledge regarding HBV transmission, sequelae and preventive measures, was poor in both groups. Among nurses, only 62% wore gloves on withdrawing or giving blood to patients, 43.5% routinely washed hands between patients and 37.5% reported exposure after sharp injury.57

A study conducted in Ethiopia among health workers towards standard precaution showed The mean observed practice score was 9 with standard deviation 1.48 out of eleven. This is an indicative of improvements on supply of safety box, to collect sharp materials in some health care facilities.

The use of personal protective device in provision of cares ever worn was 98.9% only for gown and also low as 59 (16.9%) goggle and shoe/boot 107 (30.7%) could be related to shortage of supply. It is also supported by the FGD no goggle was supplied despite frequent requests and it was proved with inventory no goggles and boots were found in all health care facilities.

The practice of health care workers after sustaining needle stick injuries or blood or body fluid splash was not statistically significant with the current knowledge score and whether attended UP related training or not. For instances, health care workers who were counseled and tested for HIV after being exposing to sharp/needle were 37 (19.9%) and only 6(3.2%) took post exposure prophylaxis. All participants achieved below mean score, this could have happened for the reason that health care workers might give answer of their practices even though such accident happed before they got the necessary knowledge, attitude and skill.59

Chapter Three
Objectives

3.1. General objectives

To assess knowledge Attitude and practice of medical students of Addis Ababa university towards standard precaution

3.2. Specific objectives

1. To identify the level of medical students knowledge towards standard precaution
2. To determine attitude of medical students on prevention of nosocomial infection
3. To describe the practice of standard basic precautionary measures among medical students in the clinical setting
4. To identify associated factors of KAP towards standard precaution

Chapter Four
Methodology

4.1. Study area

Addis Ababa University Faculty of Medicine established in 1964 with the goal of producing medical doctors to handle the country‟s health problems. Starting from 1979 the faculty launched graduate programs, which was the first graduate program in the history of AAU.

In 1998 TikurAnbessaspecialized Hospital, which is the largest referral hospital in the country was given AAU from MoH for the faculty as a main teaching hospital. The faculty is the oldest and the largest among the health training institutions in the country, staffed with the most senior specialists.

The health care workers are composed of nurses, laboratory technicians, pharmacy technicians, sanitarians, health officers, physicians, housekeeping personnel, maintenance personnel, and laundry personnel . The study period was from January through September 2006.

4.2. Study design

Questionnaire based cross sectional study design with quantitative component was utilized

4.3. Source and Study population

Medical students who are learning in Addis Ababa university in state of clinical attachment during collection time have been the source population for the study. Medical students (4^{th}year, 5^{th}year,and interns) identified with simple random sampling method included in the study.

4.3.1. Inclusion criteria

Medical students who are in clinical attachment Of 4^{th} year, 5^{th} year and interns.

4.3.2. Exclusion criteria of the study subject

Medical student who were not in the study area during data collection and who were not willing to participate in the survey were excluded.

4.4 Sampling

The sample size for quantitative study was calculated using a single

Population proportion (p). The formula:

$n=z^2\ \alpha/2\ p\ (1-p)/d^2$

$n = (1,96)^2(0.5(1-0.5)/(0.05)^2=384$

The assumption where; ni is sample size, z (/2) the reliability coefficient

95% i.e. 1.96, since there was no study done on KAP of medical students in Ethiopia, p was taken 50%

Considering the finite population correction, where N = 700

Since the study conducted from medical students list in the registrar Therefore, using single population correction formulae

Using the formula $n = [n_o / (1+ n_o) /N]$ and 5% for non-response rate the final sample size will be **260.**

The number of medical students for each study year allocated using proportional allocation to size method.

4.5. Data Collection

Quantitative method of data collection employed. The quantitative method involves assessment of the knowledge, attitude, and practices of two hundred seventeen medical students on standard precaution. Medical students selected by simple random sampling given self-administered questionnaire to face.

4.6. Measuring Instrument

The measuring instrument was a questionnaire which was used in a study conduct to asses KAP of HCWK‟s in north wollo and questionnaire which was utilized in Iran to assess KAP of medical students towards standard precaution from previous study in which the questionnaire has been validated. Participants responses will be rated on a Likert scale (Lincoln et al, 2007),

A self-administered questionnaire was used which consists of 5 parts; demographic information, assessment of knowledge, attitudes, practices and availability of facilities. Knowledge will assessed using 25 questions which includes multiple choice and “yes” or “no” questions. Attitudes were measured using 10 questions where the respondents were given the option to

select on a 0 to 4 point scale between agree, neutral and strongly agree and disagree. Practices and facilities were assessed in a similar way using 6 and 8 questions respectively.

A scoring system will be used where 1 point was given for each correct response to knowledge, and practices. 0 was given for incorrect knowledge and poor practices. Attitude was measured using Likert-type scale questions. Attitude was measured by a scale from strongly agree to strongly disagree for each item, then each answer was scored from 0 to 4

A score of more than 80% wasconsidered good, 60-79% moderate and less than 60% poor. Different Knowledge Attitudes and Practices (KAPs) studies have used different analytic methods. The cut off values to determine good, moderate and poor levels were taken from previously published studies with some modification to suit our purpose

A higher total score indicates better KAP towards standard precaution; a score of ≤60 suggests that further evaluation of standard precaution and infection prevention strategies needed.

The questionnaire will collect data on:

1. Participants‟ socio-demographic characteristics.

3. Knowledge/awareness of standard precaution

4. Practices of hand hygiene, use of PPE, safe injection

4. Attitude towards standard precautions

4.6. Data quality

The data collection instrument format developed in English by different individuals for its accuracy and desired results. The data collectors will use structured self-administered questionnaire for medicalstudents.

To evaluate the understandability and the applicability of the instruments pre-test data was collected form 13 students for self-administered questionnaire .

Data collectors will be organized in teams of two nurses. Measurements and responses will crosschecked for missed, irregularities, inconsistencies, and unlikely response based on which corrective measures will be taken as required. To maintain the quality of the data and avoid any

problem or suspicious data, the researcher and the supervisors will crosscheck by recollection data from 5% of the study population.

4.7. Measures and Study variables:

4.7.1. Dependent/ Outcome

Knowledge of standard precaution

Attitude of students towards standard precaution

Practice of students towards standard precaution (hand hygiene adherence, safe injection and sharp injury)

4.7.2. Independent / Exposure/ variables

1. The socio demographic characteristics:

Age, days of clinical attachment, year of study, encounter religion,ethnicity,number of patients

2. Supply of personal protective devices, water supply and availability of antiseptics

3 Perceived benefit and concerns on hand hygiene and the knowledge of blood borne pathogens/infection.

4 infection prevention Policy

5 Perceived risk of infection for self and others

6 Training on infection prevention

4.8. Operational Definition

1. Standard precaution; a set of measures designed to prevent infection

3. Perception; is one‟s feeling towards a subject or an issue.

4. Mean attitude score is the average of response on the attitudinal questions

5 Hand hygiene care - A general term that applies to hand washing, antiseptic hand wash, antiseptic hand rub, or surgical hand antisepsis

6 medical student - those health workers, who do have contact with syringes, needles, other sharp materials, blood and body fluids by the virtue of their duties.

7 Good knowledge; having knowledge score > 80%

8 Fair knowledge; having knowledge score 60-80 %

9 Poor knowledge; having knowledge score < 60%

10 Acceptable level of attitude;having attitude score > 60%

11 Low level attitude; having attitude score < 60%

12 Good practice; having score of > 80%

13 Fair practice; having score of 60-80%

14 Poor practice; having score less than 60%

5.8. Data management, analysis and interpretation

Each questionnaire will be checked for completeness, missed values and Unlikely responses and then manually cleaned up on such indications. The coded data will entered on to computer using EPI 6.04d Dos Operating System (DOS) version software for its customizing and skip benefit, then after data cleaning, it was exported to SPSS version 18.

Using double entry, the data was cross checked for consistency and accuracy. Responses and observations given points and recorded to obtain means. Mean variations between medical students who participated on an in service training and who had not participated. To see the mean difference within and between groups‟ methods will employ to calculate p value. Frequencies of variables were determined using cross-tabbing, chi square test, odds ratio (OR) the presence of the association revealed and p value for statistical significance. To control the effect of confounding factors multiple logistic regression analysis was done. Recoding, transforming, and re-categorizing of variables done to compute some of the analysis. The qualitative data obtained from observation on hand hygiene, injection provision, medical waste management; instrument processing and wearing of PPE will used to determine proportion. Then result synthesis, analysis and discussions was performed.

4.8. Ethical considerations

The ethical approval and clearance obtained from the Department Emergency medicine, Faculty of Medicine (Addis Ababa University) Research and Publication Committee. Written consent taken from each selected participant and head of the health facility to confirm willingness and those given the rights to do so. To ensure confidentiality was ensured throughout the process. Before starting the interview date collectors was informed the study subjects about the purpose and Significances of the survey to get the consent of the respondents.

4.9. Communication of the result

The finding of this study will be disseminated to department of emergency medicine, AAU, to infection prevention committee of TASH to Ministry of Health of Ethiopia and NGO"s working on infection prevention in the study area will be supplied with a copy of the research. Furthermore, the finding will be presented on appropriate seminars, conferences and workshops. And publishing with scientific journal will be considered.

Chapter Five
Results

6.1. **Socio demographic background of students**

A total of 217 medical students with a response rate of 91% were found valid and included in the analysis. The age of the respondents ranges from 20 to 32years with a mean age of 23.5 and the median age was 23 year.The number of patients encountered during last week of their attachment showed 19(9.5%) don"t encountered at all 89(44.5%) encountered 10 patients on average 56(28%) encountered 20 patients on average 30(15%) encountered 30 patients on average 17 students didn"t respond at all. the socio demographic characteristics of the health care workers are described in table 1.

Table1. Selected socio demographic characteristics of respondent medical students 4th ,5th and 6th year, Addis Ababa, 2014

Characteristics	**Frequency**	**No (%)**
Sex		
Male	138	(63.6%)
Female	79	(36.4%)
Age		
20-25	193	(88.9%)
26-30	22	(10.2%)
30 and above	2	(0.9%)
Ethnicity		
Amhara	**93**	**43.3%**
Orormo	**39**	**18.1%**
Gurage	**24**	**11.2%**
Tigray	**12**	**5.5%**
Others	**49**	**22.5%**
Religion		
Orthodox	126	58.3%

Protestant	49	22.7%
Muslim	22	10.2%
Catholic	7	3.2%
Others	12	5.6%
Year of study		
4th year	59	(27.2%)
5th year	55	(25.3%)
6th year	103	(47.5%)

6.2 Knowledge about Standard precaution and nosocomial infection

The total knowledge score showed the level that 118(54.6%) had fair knowledge 71(32.9%) has good knowledge and 27(12.5%) had poor knowledge. Total knowledge score of respondents range from 6 to 18 out of 18 the mean knowledge score 13.37 with sd of±2.42. Majority,200(92%) of the respondents scored greater than half and the highest result great majority 40(18.4%) scored 14

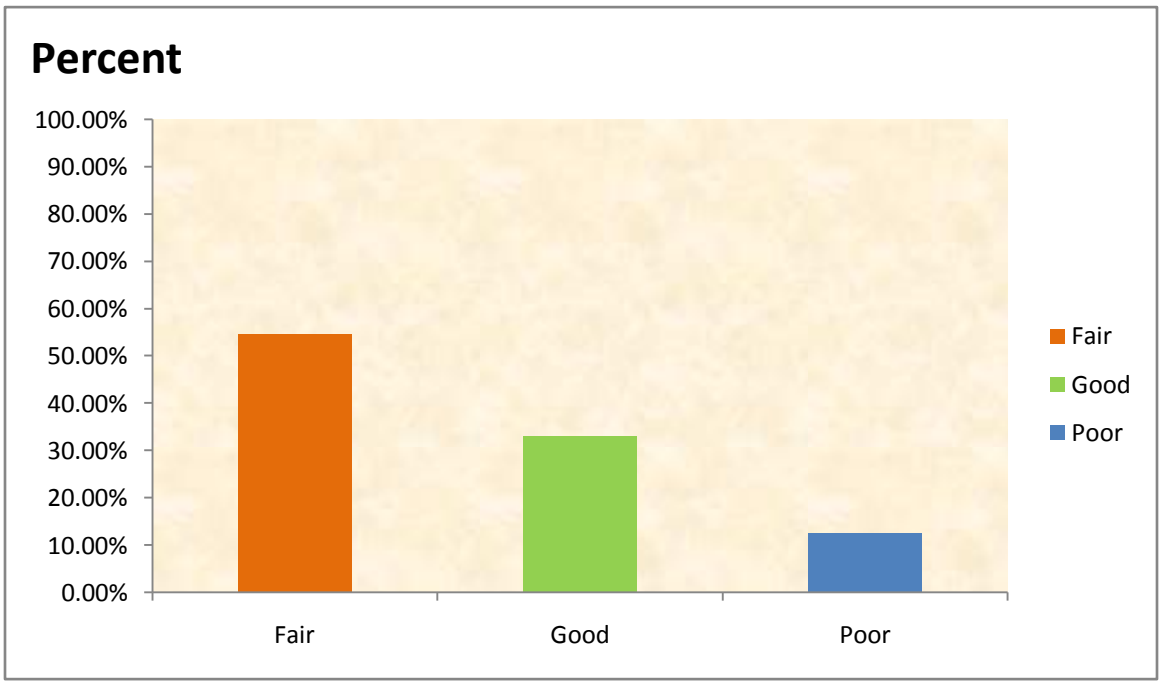

Figure 1. Distribution of overall knowledge score of medical students, TASH, 2014

Coming to particularly the knowledge level on standard precaution132 (61.1%) had good

knowledge, 25(11.6%) fair and 59(29.6%) poor knowledge.170(78.7%) of the students respond hand washing between the same patient between procedures and tasks is necessary 46(21.3%) respond not necessary.Perceived risk of infection associated with increased likelihood of colonization of hands with harmful germs 40(18.7%) knows all of them i.e. wearing jewelry , damaged skin, artificial finger nails and regular use of hand cream 64(29.9%) knows three 34(15.9%) knows two 20(9.3%)

Among the students 200(92.2%) knows about standard precaution 17(7.8%) don‟t know about it. concerning the components of standard precaution 109(54.2%) know the four components 39(19.4%) know the three component 17(8.5%)know two components17 (8.5%) know one component only 16(8%) know nothing at all. The knowledge score concerning hand hygiene leveled as follows i.e. 29(13.5%) had good knowledge 107(49.8%) had fair and 79(36.7%) poor knowledge

Among the respondents 45(20.7%) medical students had participated in any training program dedicated to infection prevention 172(79.3%) hadn‟t any training program. Hepatitis b vaccination status of the students shows that 49(22.7%) have vaccinated 167(77.3%) have not vaccinated. The reasons not to be vaccinated are 36(23.1%) due to lack of availability 12(7.7%) due to lack of awareness 45(28.8%) due to being costy and 55(35.3%) due to other reasons such as negligence, fear of side effects and without reasons.

31(14.3%) respondents know that dirty needles and sharp materials could transmit all of the disease mentioned. 85 (39.2%) knows four of the disease 63(29%) knows three 10 (4.6%) knows two and 1(0.5%) respondent knows nothing at all.

Concerning perceived risk of infection,121(56%) of the respondents answered correctly patients considered as source of infection prior to their diagnosis 95(44%) respond incorrectly.

. Concerning when suction catheter disposed 177(85.5%) respond correctly and 30 (14.5%) respond incorrectly concerning time suction catheter should be disposed.

6.3. Attitude of students towards nosocomial infection, hand washing and standard precaution

the students attitude towards PPE are HAI measures showed that 73(33.6%) agreed strongly 133(61.3%) agreed and 5(2.3%) were neutral among the respondents 83(38.4%) follow standard precautions regularly 127(58.8%) follow some times and 6(2.8%) never follow 94(43.3%)

responds I don‟t know about the presence of infection prevention guideline in their health facility 58(26.7%) respond yes and 65(30%) respond No.

More than half 115(53%) of the respondents agreed on the use of guidelines for HAI‟s reduce the risk of infection86(39.6%) agreed strongly and 6(2.8%) disagreed

Respondents attitude towards who will be at risk of infection from health facility waste depicts that great majority 193(89%) respondents know at least one of among at risks such as health professional, supportive staff, the patient, the community and children.57 (26.3%) knows all mentioned 39(18%) knows four of them 48(22.1%) knows two and 2(0.9%) knows none of them.

Two/third of the respondents 140(64.5%) and one/third 66(30.4%) agree and strongly agree respectively in the absence of standard precautions health care facilities can be the source of infection and epidemic disease 3(1.4%) disagreed.

Standard precaution and nosocomial infection

Among the respondents107(53.5%) respond needles should be recapped whereas 93(46.5%) respond not recapped

The reason you wash your hands 68(31.8%) mentioned three of the specified i.e. hand washing b/n every patient is necessary, hand washing affect clinical outcome and hand washing necessary even when gloves are worn 68(31.8%) mentioned two 62(29%) mentioned one and 12(5.6%) nothing at all.

Some of the reasons for not wearing any of the stated personal protective devices were 73 (33.6%) due to lack of facility 33(15.2%) due to shortage of time 57(26.3%) due to lack of awareness38(17.5%) due to other reasons such as PPE were not convenient and considering not always necessary

Total attitude score of the respondents showed that 180(83%) scored above half. The score ranges from 10-24 and with a mode of 16(12%) and mean of --- with sd of

6.3. Practice score of students towards nosocomial infection, hand hygiene and standard precaution

The overall practice score showed that 117(53.9%) had fair practice while 15(6.9%) had good practice and 85(39.2%) had poor practice. Total practice score of the respondents showed that

177(81.5%) score more than half the score ranges between2-13. The mean score of practice showed 8.96 with sd +- 1.8 and median of 9 .the mode 9 scored by 49(22.6%)

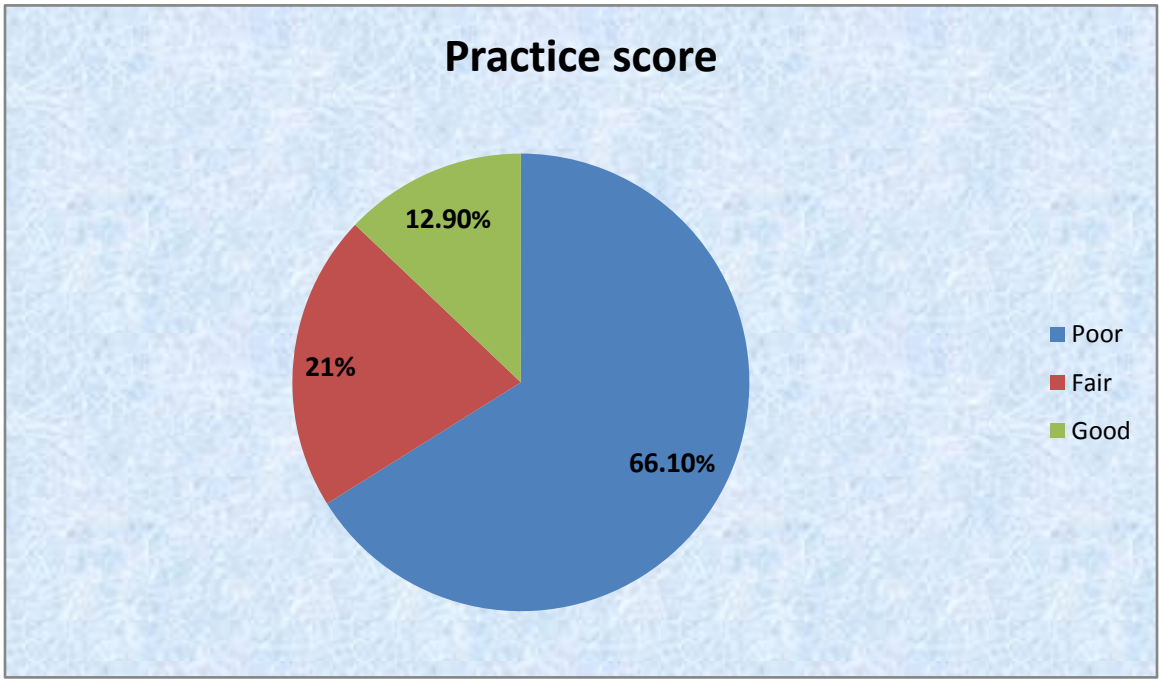

Figure 2. Distribution of overall practice score of medical students, TASH, 2014

Hand hygiene practice showed that 12.9% had good practice while 21% fair and 66.1% poor practice.The conditions that respondents wash their hands showed that 180(87%) washed their hands at least for a single condition among listed four i.e. even gloves are worn, between every patient encounter, thinking of hand washing affects clinical outcome and hand washing do not take too much time, 45(21.8%) wash at single moment 53(25.7%) wash at two moments 10(4.9%) wash their hand in all four conditions but 26(12.6%) don't wash even at single moment. When we determine based on the overall practice score117 (53.9%) had fair practice while 15(6.9%) had good practice and 85(39.2%) had poor practice.

Practice score standard precaution showed that 125(56.8%) had fair 69(32.6%) poor and 23(10.6%) good practice Among respondents who ever worn personal protective devices, 216 (61.9%) used apron, 101 (28.9%) worn utility glove, 166(47.6%) head cover, 107 (30.7%) boots or shoes which cover toes, 59 (16.9%) eye protectors, 244(69.9%) mask, 278 (79.7%)examination glove and 345 (98.9) gown.

Almost all 212(97.7%) of respondents know one instrument that should disposed to safety box

i.e. needles, lancet and other contaminated sharps 78(35.9%) know three of them and 95(43.8%)knows two 5(2.3%) knows nothing at all.

The availability of water resources 40(18.4%) respond yes whereas 177(81.6%) respond no concerning disinfectant alcohol 138(63.9%) respond yes 78(36.1%) respond not available

61(28%) of the respondents had blood or body fluid splash among these only 7(12.5%) had got appropriate services including wash with soap and water, use antiseptics, visiting VCT, seek PEP and report to the head person 10(17.9%) only washed with water and kept silent.

53(24.5%) of the respondents had needle stick or sharp related injury among these almost half 22(44.9%) sustained during recapping 11(22.4%) sustained during collection of sharp instruments in OR and other procedure rooms 7(14.3%) sustainedat movement of the patient during different procedures.

Almost all 215 (99%) of the respondent had ever wore at least one type of personal protective device.17(7.9%) wore only gown 31%(14.4%) wore gown and glove 67(31.2%) wore gown, glove and mask 33(15.3%) wore gown, glove mask and goggle33(15.3%) wore five of the components

Concerning glove use 198(92%) respond correctly when glove should be used i.e. for all people when needed and procedures need glove but 15(7%) respond incorrectly i.e. only for HIVpatients.

Half of the respondents 108(50%) wash their hand always after touching environment surface near to the patient 92(42.6%) wash some times and 16(7.4%) never at all

45(20.7%) of the respondents use plain soap and water to clean their hands 64(29.5%) use alcohol hand rub and 31(14.3%) use both together.

Multinomial logistic regression was taken to see the association between dependent variable,practice score and covariates of sex, year ofstudy,training on IP, department attached knowledge score and attitude score.significant association hasn‟t been seen among practice and covariates such as sex,year of study,training and department attached

Weak association was found between knowledge and attitude ($r = 0.354$; $P<0.001$); knowledge and practice to UP standards ($r=0.201$; $P<0,001$); attitude and practice towards UP ($r=0.425$; $P<0.001$).

A negative association was found between knowledge and rate of sharp injuries ($r= - 0.133$; $P=0.01$). There were no significant correlations between episode of sharp injuries and attitude on

UP. The result shown here under in table 3.

Table 2. Factors affecting practice of medical students about standard precaution,infection prevention and hand hygiene, TASH, 2014

Practice score(a)		B	Std. Error	Wald	df	Sig.	Exp(B)
1.00	Intercept	64.050	3061.507	.000	1	.983	
	[N1Trainingoninfectionprevention=no]	1.592	1.942	.672	1	.412	4.915
	[N1Trainingoninfectionprevention=yes]	0(b)	.	.	0	.	.
	Which department you attached in the]	-11.930	.000	.	1	.	6.59E-006
	Which department you attached in the=A	-13.756	1615.699	.000	1	.993	1.06E-006
	Which department you attached in the=B]	-14.052	1615.699	.000	1	.993	7.90E-007
	[which department you attached in the=C]	1.508	1962.344	.000	1	.999	4.518
	[which department you attached in the=D	-16.800	1615.700	.000	1	.992	5.06E-008
	[which department you attached in the=E	-.599	2083.557	.000	1	1.000	.549
	Which department you attached in	1.828	2357.90	.000	1	.999	6.219

the=F		3				
Which department you attached in the=G	-16.487	1615.699	.000	1	.992	6.91E-008
Which department you attached in the=H	-.071	3767.184	.000	1	1.000	.931
Which department you attached in the=I	.199	3088.448	.000	1	1.000	1.220
Which department you attached in the=J	-13.164	6210.847	.000	1	.998	1.92E-006
Which department you attached in the=K	2.934	3594.934	.000	1	.999	18.807
Which department you attached in the=M	0(b)	.	.	0	.	.
Knowledge score=1.00]	-16.677	1955.217	.000	1	.993	5.72E-008
Knowledge score=2.00]	0(b)	.	.	0	.	.
attitude=1.00]	3.110	2.013	2.387	1	.122	22.431
attitude=2.00]	0(b)	.	.	0	.	.
sex=female]	-1.156	1.137	1.034	1	.309	.315
sex=male]	0(b)	.	.	0	.	.
Religion	-13.189	.000	.	1	.	1.87E-006
Catholic	-3.072	2118.102	.000	1	.999	.046
Muslim	-	730.631	.001	1	.981	2.38E-

Orthodox	17.554					008
	-16.847	730.630	.001	1	.982	4.82E-008
Others	.849	1704.512	.000	1	1.000	2.336
Protestant	0(b)	.	.	0	.	.

Chapter Six

Discussion

Knowledge of standard precaution and nosocomial infection

- Employing standard precautions and hand hygiene practice means taking precautions with everybody. If precautions are taken with everyone, medical students do not have to make assumptions about people's lifestyles and risk of infection. Medical students should have the right to be able to protect themselves against infection.The study assessed the knowledge attitude and practice of medical students of AAU, in TASH.

- Knowledge of standard precaution is goodwhich showed 87.5% had fair knowledge , it was better than a study conducted in Saudi Arabia which was 26.7%. overall mean score of standard precaution and prevention of infection knowledge score of respondents out of 18 the mean knowledge score 13.37 with sd of+2.42 is less than the study conducted in Chicago, USA showed mean score of knowledge (21.1 _+2.35) out of 25 .

Knowledge level was different among components which is 61% good, 11.6% fair and 29.6 poor for standard precaution and 13.5%, 49.8% and 36.5% respectively for hand hygiene practice.Better score was results of standard precautions this might be due to being routine tasks and applications that applied by medical students during clinical set up. Whereas ignorance and giving less emphasis for hand hygiene by considering inherited knowledge might be the reason.

Particularly the knowledge level on standard precaution 61.1% had good knowledge, 25(11.6%) fair and 59(29.6%) poor knowledge. It is almost comparable with a study done in Malaysia revealed that the percentage of students who had acquired knowledge of standard precaution was slightly low(70.3%). Since 61% good knowledge scored above 80 and the fair 11% in the range between 60-80%.it was better than the study conducted in Nigeria among HCW"s towards KAP on universal precaution,one third (37%) of the respondents had fair knowledge of universal precautions while 13% had good knowledge.

Training and education have been found to be of paramount importance to developing awareness

among health care workers, as well as improving adherence to good clinical practice [26,].but significant correlation was not seen between training and knowledge on standard precaution. The level of knowledge in this study is moderately acceptable even though small number of students don‟t know about it at all.

The knowledge score in our study concerning hand hygiene leveled as follows i.e. 29(13.5%) had good knowledge 107(49.8%) had fair and 79(36.7%) poor knowledge. It is less than score of standard precaution of our study; this might show less attention has given for hand hygiene practice in prevention of infection.

Our study result which is 13.5% and 49.8% for good and fair respectively better than study conducted in Nigeria Concerning the knowledge and practice of hand hygiene, that revealed 56.7% of the health workers knew that their hands had to be washed before and after patient care. 54

The study result shows knowledge of hand hygiene mean score of 5.13+ with sd 1.27 out of 8 is less than the study conducted in Chicago, USA which revealed 7.4+ sd 1.26 out of 10…??

Concerning perceived risk of infection,95(44%) don‟t considered patients as source of infection prior to their diagnosis it is slightly higher than a study conducted in Nepal only 41.8% recognized all patients are sources of infection

Attitude towards standard precaution and nosocomial infection

Total attitude score of the respondents showed that mean of 16.5 out of 25.is almost 83 % has acceptable level of attitude. There is no correlation between attitude score and year of study seen. But positive correlation seen between two variables has been seen in a study conducted among Saudi, medical students where the attitude score showed a total of 9.6±2.7 (median of 9.0 out of 15 points), 4th year attitude score was the least (8.5±2.6, compared to 9.3±2.2, 11.0±2.7 for the 5th and 6th years respectively (Kruskall Wallis, P=0.001).

Attitude of medical students towards their satisfaction with the current curriculum shows that 41.9% agreed 27.6% disagreed and 30.4% were neutral.it shows positive attitude to the curriculum compared to the study among medical students of Saudi university.better attitude towards the curriculum might be lack of information on the curriculum content i.e. 30% were neutral

The students attitude towards PPE are HAI measures showed that 33.6% agreed strongly 61.3%agreed and 2.3% were neutral. Overall respondents have positive attitude .

Practice of standard precaution and nosocomial infection

- Practice of standard precaution is poor.It is consistent with A study conducted in Iran revealed that was poor. The practice score which is 8.96 out of 14 is similar with other studies (Askarian, 2007; Becker, 1990; Hersey, 1994; Mangione, 2007).this figure is lower than a study conducted in Ethiopia among HCWK"s whereپractice score was 9 out of 11 .This difference might be due to medical students have less experience than HCWK"s who are frequently exposed to practice

The disparity between knowledge and practice could be due to high patient load per HCW, limited knowledge of risks, inadequate personal protective equipment (PPE), inconvenient place of work over crowed of patients and ignorance (42,43,44).

This finding indicates medical students are providing poor medical service that will promote nosocomialinfection.

Practice score standard precaution showed that 125(56.8%) had fair 69(32.6%) poor and 23(10.6%) good practice.A study conducted in Ghana assessing KAP of medical residents to wards universal precaution showed that Forty-two (88%) of respondents indicated that they wore gloves routinely when performing invasive procedures on patients but 8 (16%) did not for the reasons that(??55)

The prevalence of sharp and needle stick injury which is 24.5% out of the respondents is less when compared toA study conducted in Americashowed that (30%) reported needle stick injuries. related injury among these almost half 22(44.9%) sustained during recapping 11(22.4%) sustained during collection of sharp instruments . .59

It was high when compared to a study conducted among medical students in Malaysia which is 14%.this disparity may be due to our study includes all sharp injuries but the Malaysian was only hollow bore needles. The other factor might be because of their limited clinical experience comparing to the Malaysian all of them were 6^{th} year medical students. 52

- Hepatitis b vaccination status of the students that 49(22.7%) have vaccinated. This is very low than Malaysians which is 93%.this is due to the reasons that,36(23.1%) due to lack of availability 12(7.7%) due to lack of awareness 45(28.8%) due to being costy and

55(35.3%) negligence, fear of side effects and without reasons. 52

Over all Hand hygiene Practice was poor. But it was better i.e. (12.9%) had good practice than A study conducted in Srilanka which showed 5.3% .

Findings observed in our study shows that 12.9% had good practice while 21% fair and 66.1% poor practice.it is less than A study conducted in Srilanka concerning hand hygiene practice 53% had good practices, while 26.9% had moderate practices and the majority (67%) had poor hand hygiene practices (56).This study examined the factors that influence medical students compliance with Standard Precautions in order to avoid occupational exposure to microorganisms

Several factors may contribute to these poor practices of hand hygiene and compliance to PPE such as breach of infection prevention guidelines, limited availability of basic supplies and infection control materials, poor supply of water, lack of facility , shortage of time and reasons PPE were not convenient and considering not always necessary.

. The discrepancy between knowledge and attitude could be due to inadequate supply of personal protective equipment, carelessness, improper disposal of medical waste, and belief that practice of standard precautions may interfere with patient care. Naing L, Nordin R, Musa R. The prevalence of, and factors related to, compliance with glove utilization among nurses in Hospital UniversitySains Malaysia. *Asian J Trop Med Public Health*. 2001; **32:** 636 – 642.

Limitations of the study

- One of the limitations to this study was weshould supervise the respondents‟ practice and, therefore, had to rely on their subjective self-assessment. Therefore their response might have accurately reflected the true practice and the reported level of practice might have been higher than the real level.
- The questionnaire was not standardized

- Lack of similar studies done in Ethiopia concerning students particularly in medical students

Chapter Seven

Conclusion and Recommendation

7.1. Conclusion

This study was conducted to determine knowledge, attitude and practice of medical students of 4^{th} 5^{th} and 6^{th} year on standard precaution, infection prevention and hand hygiene. Based on the finding, the study concludes the following

1. Medical students had a better Knowledge and acceptable level of attitude towards standard precaution.
2. Medical students had poor knowledge and practice towards hand hygiene
3. Medical students didn‟t consistently use personal protective
4. Medical Students attitude and practices toward standard precaution in TASH were not sufficient, favorable and safe enough to the expected standard.
5. Having knowledge and positive attitude alone doesn't guarantee practice. In addition the necessity of standard precaution in prevention of disease in patients in all duration of education must be emphasized and facilities should be improved.
6 Knowledge of UP had a weak association with attitude, perceived adherence and suffering of occupational sharp injuries. Attitude on UP was weakly associated to perceived adherence. These results might lead to conclusion that other factors than individual knowledge; i.e., attitude and adherence may play a role in the occurrence of occupational sharp injuries.
7 Vaccination status for HBV was low
8 Medical students are at high risk for sharps injuries and blood borne pathogen exposure.
9 Number of trained medical students on standard precaution is low
10 This study examined factors that influence medical students compliance with Standard Precautions which are limited availability of basic supplies and infection control materials, poor supply of water, lack of facility , shortage of time and PPE were not convenient and considering not always necessary.
11 The reasons not to be vaccinated were lack of availability, lack of awareness, being costy , negligence and fear of side effects .

7.2. Recommendations

- Strengthen and integrate standard precaution with the routine services through providing training for all medical students who are in clinical practice.
- Hospitals and health centers Training for daily infection control practice (i.e., bedside instructions training and course work)
- Improved education about HBV is necessary for university students to increase their knowledge about HBV. This will hopefully also increase number of students getting vaccinated against HBV.
- provide sustainable supplies, which include all types of personal protective equipment‟s, water supply, washing utensils, and other related materials are mandatory to correct the unsafe practice
- Introduce close supportive supervision, monitoring and evaluation of universal precaution and infection prevention as one of the health services activities.
- Prepare vaccination campaigns which are accessible for medical students
- Further survey should be done to identify predictors which determine KAP of medical students

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Annexes

Annex -1 Informed Consent

How are you, I am _____. This is an interview to be done with you for a study that is being conducted by Addis Ababa University, department of emergency medicine. I would like to ask you few questions and your willingness in the study. This study is prepared to obtain relevant information about the KAP of medical students towards standard precautions at AA university, TASH. Your participation in the study is very important in reducing nosocomial infection, work related sharp injuries, morbidity and mortality rate, which is caused by improper use of standard precautions.

Your name & address will not be written in this form and will never be used in connection with any information you tell us. All the information given by you will be kept strictly confidential and only used for this study. Your participation is voluntary and you are not obligated to answer any question which you do not wish to answer. If you fill discomfort to respond to any of the question, please fill free to drop it any time you wish to do so. Thank you in advance for your participation in the study.

I have read all the process and the objective of the study and I have understood the same as written. I understood that the research imposes no risk and no composition would be provided to me.

Could I have your permission to continue?

1. Yes

2. No Stop the interview and thank the respondent.

Witness's signature certifying that the informed consent has been given.

Witness: Signature_____ Date _____

Data collector: Name_____

Signature _____ Date_____

Result: Questionnaire completed _____

Questionnaire partially completed _____

Participant refused _____

Checked by Supervisor/PI: Name _____

Supervisor‟s Signature _____ Date _____

Annex-2 Questionnaire

Number _____

Direction: Put **(√)** mark on the boxes in front of options provided.

PART ONE. SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. Sex A.Male B**.** Female

2. Age _____(in years)

3. Ethnicity

   A**.** Amhara B. Tigray C. Oromo D. Gurage
   Other (specify)_____

4. Religion

A. Orthodox C. Muslim B. Protestant D. Catholic Other (s) ___

5. Year of study

A. 4th year B. 5^{th} year C. 6^{th} year

6. Which department you have been attached? **Circle all that mentioned**

A. Emergency department

B. Surgery

C. Gyne/Obs

D. Pediatrics

E. Internal Medicine

7. Average numbers of patients exposed in the last 30 days, figure out_____

PART TWO. KNOWLEDGE OF MEDICAL STUDENTS TOWARDS NOSOCOMIAL INFECTION,STANDARD PRECAUTION AND HAND HYGIENE

1. Do you know nosocomial infection? Yes No
2. If yes, Could you describe it----------
   ---
3. Do you know standard precautions? Yes No
4. If yes, which components do you know?(circle all mentioned)

   A. Use of barriers (gloves, gown, cap and mask);

   B. Care with devices, equipment and clothing used during care;

   C. Environmental control (surface processing protocols and health service waste handling); adequate discarding of sharp instruments;

   D. Patient‟s accommodation in accordance to requirement levels as an infection transmission source.

5. Have you taken training on infection prevention? Yes No
6. Have you taken hepatitis b vaccination?

   A. Yes B. No

7. If no, what is the reason not to be vaccinated? ----------
8. If vaccinated what is your immunization status?

   A. Complete 3 doses B. Not complete 3 doses

9. All patients are sources of infection regardless of their diagnoses.

   A. True B. False

10. Hand washing is indicated between tasks and procedures on the same patient.

A True B False

11. Which of the following disease can be transmitted through dirty needles and sharps? (**Tick yes, no or don't know for each item)**

Type of disease	Yes	No	Don't know
Hepatitis (HBV)			
Hepatitis (HCV)			
HIV (AIDS)			
Tetanus (Clostridium tetani)			
Malaria (Plasmodium Species)			
Tuberculosis (Mycobacterium tuberculosis)			
Other (specify)			

12. When it is required to dispose a suction catheter?

A. Immediately after one single use

B. Can be cleaned and used twice

C. Can be used without being cleaned

D. I don't know

13. Which of the following should be avoided associated with increased likelihood of colonization of hands with harmful germs?

Yes No

A. Wearing jewelry

B. Damaged skin

C. Artificial fingernails

D. Regular use of hand cream

14. When do you wash your hands?

No yes

A . Hand washing between every patient encounter

B . Before every patient encounter

C .After gloves are worn off

D .Touching every part of hospital environment

PART THREE: ATTITUDES TOWARDS NOSOCOMIAL INFECTION,STANDARD PRECAUTION AND HAND HYGIENE

15.Wearing gloves, mask, and protective eyewear are a HAIs control Measures?

A. Agree

B. Strongly agree

C. Disagree

D. I don‟t know

16. How do you follow standard precautions?

A. Regularly B. Sometimes C. Never

17. Do you have infection prevention guideline in your healthcare facility?

A. Yes B. No C. I don‟t

18. The use of guidelines for HAIs control practices reduce the risk of infection

A. Agree B. Strongly agree C. Disagree D. Neutral

19. Do you think the organizations HAI policies are practical in your setting?

A. Agree B. Strongly agree C. Disagree D. Neutral

20. Who could you think at risk of infection from your health facility waste?

A. Health Professionals

B. Supportive staff

C. The client / patient

D. The community

E. Children Other (specify)----------

21. When do you think standard precautions should be observed?

A. At all times C. For HIV patients

B. In the operation D. At all times, for all patients

22. Health care associate organisms are commonly resistant to alcohol.

A. Agree

B. Strongly Agree

C. Disagree

D. Strongly disagree

E. I don‟t know

23. In the absence of standard precaution, health care facilities can be the source of infection and epidemic diseases.

A. Agree

B. strongly agree

C. Don‟t know

D. strongly disagree

E. I don‟t know

24. Use of gloves for all patients care is a useful strategy for reducing risk of transmission of organism.

A. Agree

B. strongly agree

C. Don‟t know

D. strongly disagree

E. I don‟t know

25. What do you think the reasons for poor adherence to standard precautions?

A. lack of facility

B. shortage of time

C. lack of awareness

D. I don‟t know

E. other specify

26. Do you think needles should be recapped?

A. Yes B. No C. I don‟t know

27. Why do you wash your hands? (circle all mention)

A. Hand washing between every patient encounter is necessary

B. Hand washing does affect clinical out come

C. Hand washing is necessary even when gloves are worn

D. Hand washing facilities are conveniently placed or well designed

E. Hand washing do not take too much time

F. Other (specify) ----------

PART FOUR: Practiceof medical students towards standard precaution ,infection prevention and hand hygiene

28. When do you wash your hands?

No yes

Hand washing between every patient encounter

Before every patient encounter

After gloves are worn off

Touching every part of hospital environment

Other (specify)_____

29. What disposed in to the safety box? **(circle all that apply**)

A. Needles

B. Lancet

C. Empty vials

D. Cotton pads

E. Dressing materials

F. Latex gloves

G. Other contaminate sharps

30. Is there persistent water source in the health facility? Yes No

31. Is there alcohol swab in the room always? Yes No

32. Have you ever had blood or body fluid splash to your eye, mouth and/or nose?

A. Yes B. No C. I don‟t know

33. If you exposed to blood or body fluid what measure did you take?

Yes No I don‟t know

Washing with soap and water

Wash with alcohol, iodine, chlorine

Applying pressure to stop bleeding

Dress the wound

Squeezing to extract more blood

Take TAT

Visiting VCT

Seek PEP

Report to the head person

Other (specify)_____

34. Have you ever had needle stick /sharp injury? A. Yes B. No C. Don‟t know

35. How did you sustain the injury?

A. During recapping

B. By sudden movement of the patient

C. During sharp collection

D. Other specify

36. Do you wear personal protective equipment? **Circle all mentioned**

A. Apron

B. Utility glove/ double glove

C. Head cover

D. Boots/ shoe

E. Eye protectors / goggle

F. Mask

G. Examination glove

H. Gown

I. Other (specify)_____

37. When did you use glove?

Yes No Don‟t always

For all people when needed

For only HIV Suspected cases

For only HIV Positive cases

For procedures which needs glove

Other specify_____

38. If you answer is No for Q.38, Why?

Yes No I don‟t know

Difficult to work with

Not always necessary

Uncomfortable

Out of stock

Other specify_____

38. How often do you clean your hands after touching an environment surface near to the patient (for example, table wall or bed)

A. Always
B. Often
C. Sometimes
D. Never

39. Which method do you use to clean your hands at work?

Yes	No
Plain soap and water	
Anti-microbial	
Alcohol based hand rub	

Other specify_____

Thank you for your cooperation!!!!

Annex 7: Declaration

This thesis is my original work, has not been presented for a degree in any other university and that all sources of material used for the thesis have been duly acknowledged.

Principal investigator

Name_____Signature_____Date_____

Advisor

Name_____Signature_____Date_____