ADDIS ABABA UNIVERSITY SCHOOL OF MEDICINE

DEPARTMENT OF EMERGENCY MEDICINE

ASSESSMENT OF THE KNOWLEDGE, ATTITUDE AND PRACTICE ON UNIVERSAL PRECAUTION AMONG EMERGENCY MEDICINE PROFESSIONALS IN EMERGENCY ROOM TIKURE ANBESSA SPECIALIZED HOSPITAL, AAU, ETHIOPIA, 2013 G.C

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Contents

Lists of tables and figures

Lists **page**

List of Acronyms

AAU Addis Ababa University

AD Auto disable (syringe)

AIDS Acquired Immune Deficiency Syndrome

CDC Center for Disease Control and Prevention

ER Emergency room

HBV Hepatitis B Virus

HCV Hepatitis C Virus

HIV Human Immunodeficiency Virus

HCW'S Health care workers

HLD High Level Disinfection

IP Infection Prevention

MOH Ministry of Health

NaSH National Surveillance System for Health Care Workers

NSI Needle sticks injury

OPD Out Patient Department

PEP Post Exposure Prophylaxis

PPE Personal Protective Equipment

SIGN Safe Injection Global Network

SNNPR Southern Nation, Nationalities, and Peoples Region

SPSS Statistical Package for Social Science Research

TASH Tikur Anbessa Specialized Hospital

UNAIDS Joint United Nations Program on HIV/AIDS

UP Universal Precautions

WHO World Health Organization

Summary

Background employing universal 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 was, to assess the knowledge, attitude and practices about universal precautions among emergency medical professionals and factors associated with its practice in emergency unit.

Methods: This hospital based cross sectional descriptive survey was conducted in Tikur Anbessa Specialized hospital, AAU from February through June 2013.

The study was carried out using a structured questionnaire which was self-administered to all emergency medicine personnel after preliminary introduction at a plenary session. The study was use both quantitative (which was self-administered) & qualitative(to which an Observation check-list was used to observe whether or not the staff members involved in patient management is using an appropriate technique and timing as per the set guideline) methods. Data was entered, cleaned and analyzed using SPSS for Windows version 16. Frequencies, percentage and graphs was used for descriptive purposes.

Study period –study period was from February 2013 to June 2013.The total budget for the accomplishing of this study was 18,465.50 ETB.

Key words: universal precaution, emergency medicine professionals, universal precaution related practice and hand hygiene.

Results-Only 15(24.6%) of the respondents know the presence of anti HIV prophylaxis after sustaining needle stick or sharp injuries while 46 (75.4%) didn't know. The respondents who had perceived risk of acquiring HIV infection from their health facility waste, when disposed improperly, 2 said the risk would be for HCW, 3 for supportive staff, 40 (65.6%) for both health professionals & supportive staff and 8 said would be for Health Professionals, Supportive staff, the client / patient & the community.

Among the emergency medicine professionals 36(59%) perceived that oxygen delivery materials like mask, nasal cannula & prong can be reusable whereas 25(41%) perceived as this materials can't be reused. Concerning needle recapping after use, 51(83.6%) the respondents perceived

that it should not be recapped and the remaining 10(16.4%) were said should be recapped after use.

Discussion-Poor hand washing practice by emergency medicine professionals were found before and after touching the patients were found. Emergency medicine professionals were not properly handling, and disposing used Needle/sharp materials in the study area. Personal protective devices particularly mask and eye goggles, boots etc. were not available during the survey.

Introduction

Background information

Universal precautions are the infection control techniques that were recommended following the AIDS outbreak in the 1980s. Essentially it means that every patient is treated as if they are infected and therefore precautions are taken to minimize risk. No doubt, universal precautions are good hygiene habits, such as hand washing and the use of gloves and other barriers, correct sharps handling, and aseptic techniques.

The term Universal Basic Precautions (UBP) was introduced in 1985 by Garner[6]. He defined it as: "the prevention of transmission of blood borne pathogens like HIV through strict respect by health workers of rules concerning care and nursing". Gerberding et al[7] also defined Universal pre-caution: "the routine use of appropriate barrier and techniques to reduce the likelihood of expo-sure to blood, other body fluids and tissues that may contain blood borne pathogens".

UP assumes that anybody in a hospital, especially patients, is potentially a carrier of blood borne pathogens, therefore all patients are treated in the same way as though they were infected.

In practical terms it involves the use of gloves, aprons, goggles, suitable care of needles, sharps and other contaminated instruments, house keeping with appropriate cleaning policies and ensuring strict adherence to standard practices. This requires the sustained provision of protective materials, proper training of health care providers and adherence to sterilization and disinfection protocols. One group of people at a relatively higher risk of exposure is health workers.

During the 19th century, women in childbirth were dying at alarming rates in Europe and the United States. Up to 25% of women who delivered their babies in hospitals died as a result of childbirth fever (puerperal sepsis), which later was found to be caused by Streptococcus pyogenic bacteria (14). As early as 1843, Dr. Oliver Wendell Holmes advocated hand washing to prevent childbirth fever (puerperal sepsis).

Perhaps hand washing seemed odd at the time. The lack of indoor plumbing made it difficult to

get water. In order to make the water comfortably warm, it would have been heated over a fire. Besides, contact with water was associated with diseases such as malaria and typhoid fever (14). In the 1870's in France, one hospital was called the House of Crime because of the alarming number of new mothers dying of childbirth fever within its confines.

In 1879, a noted speaker at a seminar in Academy of Medicine in Paris, stood at the podium and cast doubt on the spread of disease through the hands. When an outraged member of the audience felt compelled to protest, he shouted at the speaker that: "The thing that kills women with [childbirth fever]...is you doctors that carry deadly microbes from sick women to healthy ones." That man was Louis Pasteur. Who was a tireless advocate of hygiene, that his efforts were initially met with skepticism. Skepticism, however, was not the only problem facing advocates of hygiene. (14).

The HIV/AIDS epidemic is firmly rooted in every country all over the world today. Currently 33.3 million people worldwide are living with HIV. For the health professional, in addition to contact with infected semen, blood and blood products, HIV infection can also be acquired through exposure to other contaminated body fluids such as CSF, pericardial/pleural fluids and amniotic fluids. The risk of HIV infection may appear relatively low but this calls for worry as those infected got it through care of their patients[4, 5].

The other important component of universal precaution is hand hygiene. Despite its rocky beginnings, hand washing has become a part of our culture. Hand washing and other hygienic practices have been taught at every level of school, advocated in the work place, and emphasized during medical training (14, 15).

In Ethiopia, where the health care services is largely covered by low and mid-level health professionals, assessing the necessary knowledge, attitude and practice or the skill on universal precaution and factors in hospitals as early as possible can give way to manage the limited resource available in the sector. It also improves the quality and safety of health service for the health providers and consumers. Thus, this survey was conducted to assess the knowledge, attitude and practice (KAP) of health care workers on universal precaution and determinant factors for practice in health care facilities in TASH. So that, the health planners, health care providers, managers and evaluators can use the outcome of this study.

The world Health organization has announced globally a day for hand-washing by emphasizing the need to get once hand washed before consuming edible items or before or after completing procedures particularly that are related with patient care.

The purpose of this study is to assess the universal precaution practices and factors affecting it among emergency service providers involved in the management of emergency patients seen at emergency room of Tikur Anbessa Specialized Teaching Hospital (TASTH) in Addis Ababa.

Statement of the problem

Globally, WHO estimated 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 infections (4, 6).

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 (2,3&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, 5, and 6). These chronic infections lead to a high burden of morbidity and mortality (6).

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. Occupational exposure to blood borne pathogens from needle sticks and other sharps injuries is a serious problem, but it is often preventable. Study done in the United States (US), showed that more than 800,000 needle stick injuries occur each year despite continuing education and vigorous efforts aimed at preventing such accidents (8).

Studies have shown the risk of diseases after exposure to HBV from a single needle stick injury ranges from 27-37%, while the risk following a single needle stick exposure to HIV is much lower, 0.2-0.4%, and 3-10% for HCV (10, 11, and 12).

The New England Journal of Medicine report reminds us, one of the most effective, simple, and yet difficult to implement solutions would be for all hospital personnel to wash their hands between every patient (14)

Failure to perform appropriate hand hygiene is considered to be the leading cause of nosocomial infections and the spread of multi resistant microorganisms, and has been recognized as significant contributor to outbreaks (9). While we are potentially at risk of contracting hand transmitted illnesses, one-third of our population is especially vulnerable, including pregnant women, children, old people, and those with weakened immune systems (14, 15, 16)

In health institutions of developing countries like Ethiopia, hand washing practice, though not strict, is among the components of infection prevention techniques. However, the practice is affected by such factors like lack of detergents, water, clean wash-room, or carelessness of some staff working in health institutions. It may also be affected by lack of knowledge about the importance of hand-washing practice as a component of infection prevention.

Patients that are admitted to emergency department or receiving services on ambulatory basis are at risk of acquiring infection unless appropriate precautions are taken to prevent infection. Emergency service workers and other staff working in these settings also are at risk of exposure to serious and potentially life- threatening infections.

A study done in University of Geneva Hospital in Switzerland revealed that the hand hygiene compliance rate ranges from 23% to 87%. Overall, doctors practiced proper hand hygiene only 57 percent of the time when opportunities for hand washing arose (16). And a study done by Nigat project and Engender health in Ethiopia showed that health care workers don't usually wash their hands on arrival to work place and before putting on glove; even though, it is well practiced between clients and before leaving work place (17).

Hospital acquired infections in developing countries has always been there, it is becoming one of the areas which get attention of health providers, programmers and evaluators. HBV, HCV, HIV and many of their infectious organisms have been there for many years and continue to be a common reason for poor and ill health of health care workers and patients or clients (4).

Blood is the single most important source of HIV, HBV and other blood-borne pathogens in the occupational setting -- prevention of transmission must focus on blood and other body fluids containing visible blood. Universal precautions also apply to: semen, vaginal secretions, CSF, synovial, pleural, peritoneal, pericardial and amniotic fluids, tissues, and any body fluids in a situation where it is difficult to differentiate between types of fluids, such as in emergency response.

Rationale of the study

Infection prevention knowledge and technique, as a means to reducing transmission of infections and avoiding morbidity and mortality related to communicable diseases, is vital particularly in emergency unit at hospital settings where most infectious substances are ubiquitously distributed. Hospital acquired infections could emanate from lack of proper applications of techniques of infection prevention, particularly failure to perform appropriate hand hygiene, beside the emergence of drug-resistant strains. Healthcare providers, students and other auxiliary staff (housekeeping, maintenance and laboratory staff) working in health institutions particularly those working in infectious areas need to have adequate knowledge and skill of applying techniques required to keep universal precaution in order to prevent transmission of infections. Universal precaution practice is among the infection prevention techniques that are largely applied in most developed nations. Proper hand hygiene is the single most important infection prevention and control practice (1). In countries with limited resource, it is important to develop the health care staff knowledge, attitude and practice on universal precautions. AS well as, use of the recommended infection prevention practices to minimize their risk of accidental exposure or injuries and provide safe service to clients should be a standard practice. a study done by Nigat project and Engender health in Ethiopia showed that health care workers don't usually wash their hands on arrival to work place and before putting on glove; even though, it is well practiced between clients and before leaving work place (17).

In Ethiopia, where the health care services is largely covered by low and mid-level health professionals, assessing the necessary knowledge, attitude and practice or the skill on universal precaution particularly those working in emergency situation life-saving procedures & activities are prior and factors in hospitals as early as possible can give way to manage the limited resource available in the sector.

Finally, the result of this will help hospital management and the emergency medicine department and other concerned departments and units to design an appropriate intervention mechanism of either availing supplies and equipment or raising awareness among the emergency service workers. Again this study aims at assessing the knowledge, awareness and practice of emergency medical personnel on universal precautions so as to forward the results & the effective measures

that has to be taken by them was discussed. Finally the result of this study can be used as source of base line data for other researchers on the same area of study.

Literature review

A study conducted on knowledge, attitude and practices among health care workers on needle stick injuries revealed that 52 (74%) out of 70 had a history of needle stick injury and. Twenty subjects (29%) were of the impression that needles should be recapped after use, and only 43(61%) were aware of universal precaution guidelines. The study revealed that 59(84%) of HCWs were vaccinated (Maqbool Alam, 2002).

One study done in Africa on safety of injection (8) showed that waste disposal was problematic in Chad, Cameron, Cote-de-voire, Guinea Bissau and Uganda. In these countries there were no health centers that had a facility for safe disposal of used materials. But in Ethiopia, Rwanda, Kenya and Zambia, incineration of used syringes was reported to be the common practice.

A study done in Ethiopia at Southern Nation, Nationalities, and Peoples Region (SNNPR) showed that 32.4% of health care workers (HCW's) reported as they had sustained at least one form of accidental injury by needle or other sharps. Among these injuries, both deep and penetration injuries constitute 63.8%. Nurses and health assistants sustained the highest proportion of accidental injuries by needles or sharps ($p < 0.05$). Male HCWs had less chance of sustaining injury either by needles or by sharps than the female ($p < 0.05$) (13)

Study on Ghana Accera hospital showed that 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. In the same research done in Ghana showed that twenty four (48%) of respondents said squeezing of blood from the site of a needle prick reduces the risk of HIV infection. An equal number disagreed and 2 (4%) did not respond.

The level of knowledge of UP among the respondents is high at 92% as compared to the practice. For instance only 84% of the respondents wear gloves for invasive procedures and an equal number wear face masks. The least practiced is the wearing of protective eye shields (24%). Most research indicates that, knowledge of universal precautions does not necessarily impact on compliance. Knight V suggests that not all practitioners are as knowledgeable as they could be.[25]

Recapping of used needles is reported as one way through which health workers sustain needle pricks and in this study as many as 78% of the respondents do that.[26]

Actual Practice

Study in Ghana 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 avail-able,
• 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.(24)

Observed compliance with universal precautions procedures during practical training ranged from 95 - 99% for glove use, 76 - 77% for direct sharps disposal without needle recapping, and 56 - 78% for hand washing after glove removal during phlebotomy and intravenous catheter insertion. The study concluded that such programs were effective in increasing students' knowledge of universal precautions. Training favorably affects students' willingness to care for HIV-positive patients and their assessed risk of developing occupational blood borne infection. (29)

The observed rate of compliance with universal precautions by participants indicates that individual compliance was inversely related to the years of experience (overall compliance rate

of students was 96%; for first-year residents, 92%, second-year residents, 89%, third-year residents, 84%, fourth-year residents, 78%; r = -0.9918, P = 0.0009). The study concluded that the knowledge regarding universal precautions was nearly 100%, while overall observed compliance was only 89%.[30]

A survey was conducted on standard Precautions: Occupational Exposure and Behavior of Health Care Workers in Ethiopia. Life time risks of needle stick (30.5%) and sharps injuries (25.7%) were high. There was a high prevalence of life time 28.8% and one year (20.2% exposures to blood and body fluids. Taking training was not protective against NSI in the past one year (Reda et al, 2010). A study conducted on the Assessment of Knowledge, Attitude and Practice of Health Care Workers on Universal precaution in North wollo zone, Amhara Region, North Eastern Ethiopia revealed only 45.8% said that they ever had participated in any training dedicated to infection prevention after their respective pre-service courses on, 2006).

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, 8, 18, and 19).

Safe injection

WHO define safe injection as one that does not harm to the recipient, does not expose the provider to any avoidable risk, and does not result in waste that is dangerous to other people (5). In transitional and developing countries where unnecessary injections are common, the average number of health care injections per person was estimated to be 3.7 per year this includes all health care injections, including those given to diabetics for administering insulin. Many injections, as well as being unnecessary are also ineffective or inappropriate and unsafe (2, 6).

The WHO estimate that at least 50% of the 12 billion injections administered in the developing world each year are unsafe- posing serious health risk to recipients, health workers and the public (2, 3).

Use of new, single use syringe and needle provides high level of safety to the recipient. However, unreliable and insufficient supplies might lead to the equipment being reused.

Personal Protective Equipment

Protective barriers, now commonly referred to as personal protective equipment (PPE), have been used for many years to protect patients from microorganisms present on staff working in the health care setting (8, 18, 19, 22). More recently, with the emergence of HIV/AIDS and HCV and the resurgence of tuberculosis in many countries, use of PPE now has become important for protecting staff as well (8, 18, 19, 22)

The type of protective clothing used will depend on the extent of the risk associated with the health-care waste, so that the following should be made available to all personnel who collect or handle health-care waste: head cover or caps, face masks, eye protectors, leg protectors or boots and disposable gloves or heavy-duty gloves (8, 18, 19, and 22).

Safe Sharp Waste Management

It is important to collect and properly contain syringes and needles at the point of use in sharps container that is puncture and leak proof and that is sealed before it is completely full. Unsafe sharp waste collection causes between 5% and 28 % of needle stick injuries (18, 23, 24).

Interventions like risk communication, managing sharps waste in efficient, safe and friendly way can reduce rate of needle stick injury (11, 19, 21, 23, 25) to health care workers, clients and the community at large.

After closing and sealing, sharps containers must not be opened, emptied, reused, or sold (25). Four commonly used methods to destroy filled safety boxes or to keep them away from people are: incineration (usually this is the best option), burning in a metal drum (next best option), open burning (if incineration or burning in a drum or hearth is not possible), and burying without burning (least safe option unless the burial pit is extremely secure) (19, 25)

A study done in Africa on safety of injection showed that waste disposal was problematic in Chad, Cameron, Cote-de-voire, Guinea Bissau and Uganda. In these countries there were no health centers that had a facility for safe disposal of used materials. But in Ethiopia, Rwanda, Kenya and Zambia, incineration of used syringes was reported to be the common practice (7).

Though there were few studies were done in Ethiopia; one of the study done in SNNPR by W/ Gebreal, Y. revealed that the prevalence of unsafe injection were 74%. Thirty two point four percent of health care workers sustain sharp or needle stick injuries in one year and 64% of these injuries were deep or penetrating injuries (14). Another study done in Addis Ababa showed that 84% of health care workers dispose used needles in open plastic bucket and 54% of HCW's were observed while they were recap needles and also found that chlorine solutions were prepared and used in a very weak strength (17).

A study done in Amhara and Oromiya region by Melkamu, Y. and Kumbi, S. revealed that decontamination solutions were not prepared properly or not changed daily and health care providers did not consistently use PPE (26). As of the reports of injection safety survey in Ethiopia lack of supply of syringes, needles and equipment was considered as a reason for few of the unsafe practices (27).

Hand Hygiene

Despite its rocky beginnings, hand washing has been a part of our culture. Hand washing and other hygienic practices have been taught at every level of school, advocated in the work place, and emphasized during medical training (14, 28). According to the United States Centers of Disease Control and Prevention (CDC), "Hand washing is the single most important means of preventing the spread of infection." (14, 19) The CDC guidelines specify that hand hygiene should occur with any patient contact and HCW's hand should be washed with a non-antimicrobial soap and water or, an antimicrobial soap and water when hands are visibly soiled,

or contaminated. If hands are not visibly soiled, HCW's can use an alcohol based hand rub for routinely decontaminating hand in clinical situations as described in literature:

- Before having direct contact with patients
- Before donning sterile gloves when inserting a central intravascular catheter
- Before inserting indwelling urinary catheters, peripheral venous catheters, or other invasive devices that do not require a surgical procedure
- Before starting work, going for a break and leaving for home
- Before entering and leaving isolation area
- After contact with a patient (such as in taking pulse or blood pressure, or lifting a patient);
- After contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressing
- If moving from a contaminated body site to clean-body site during patient care
- After contact with inanimate objects.
- After using toilet
- After nose blow and
- After removing glove (28, 29)

Yet, recent studies and reports indicate that lack of or improper hand washing still contributes significantly to disease transmission. While we are all potentially at risk of contracting hand-transmitted illnesses, one third of our population is especially vulnerable, including pregnant women, children, old people, and those with weakened immune systems (14, 16). It seems reasonable to assume that hospitals have come closest to responding to this problem. Modern surgery, after all, has long since solved many of the early problems of infection. However, fundamental problems of hygiene still exist. In 1992, The New England Journal of Medicine reported on a hand washing study in an intensive-care unit.

Despite special education and monitored observation, hand washing rates were as low as 30% and never went above 48% (14).

A study done in University of Geneva Hospital in Switzerland revealed Anesthesiologists were the least compliant, washing up only 23 percent of the times than they were expected. Surgeons, ranking second from the bottom, had only a 36 percent compliance record of practicing proper

hand hygiene. Doctors in emergency medicine complied only 50 percent of the time. Doctors in internal medicine, by contrast, had an 87 percent compliance rate which was the best of the entire medical specialties in this particular case. Overall, doctors practiced proper hand hygiene only 57 percent of the time when opportunities for hand washing arose (16). Nosocomial infections are infections acquired by patients while they are in the hospital, unrelated to the condition for which the patients were hospitalized. CDC estimates that from 5% to 15% of all hospital patients acquire some type of nosocomial infection. Hospital personnel can also become infected. (14).

The rate of nosocomial infections can be reduced by full-scale infection control programs whose expense would be recovered by the reduction of the cost involved in treating the nosocomial infections. But, as The New England Journal of Medicine report reminds us, one of the most effective, simple, and yet difficult to implement solutions would be for all hospital personnel to wash their hands between every patient (14).

In Indonesia, UP have been implemented in all major hospitals and health care facilities; however a survey of 400 HCWs in a referral hospital revealed that 55% reported ≥1 needle-stick injury per year. (28)

A nation-wide Danish hospital survey revealed that on average 11% of all HCWs sustained a needle-stick injury every month.11 In a German university hospital 47% of medical staff in surgery and 19% of HCWs in pediatric department reported at least one needle-stick per year.(31)

A total of 180/376 (48%) respondents experienced occupational sharps injuries and 233/376 (62%) experienced splash injuries at least once in the last year. 77% of sharps injuries were sustained during patient handling situations such as giving injection/ IV line and suturing; 32% were caused by recapping needles with two hands, 15% when cleaning up instruments or discarding waste and 7% by bending a needle. Occupational sharps injuries happened frequently (44%) during the night shift, 34% occurred during the morning shift.

Objective of the study

General objective

To assess the knowledge, attitude and practices on universal precautions among emergency medicine professional in emergency unit, TASTH from January 2013 to June 2013 G.C

Specific objectives

1. To describe the knowledge of universal precaution among emergency medicine professional involved in emergency patient management in TASTH
2. To assess the attitude of emergency medicine professionals involved in emergency patient management towards universal precaution in TASTH
3. To assess the practice of universal precaution by emergency medicine professional involved in emergency patient management in TASTH
4. To determine factors associated with the practice of universal precaution at emergency unit in TASTH

Methods and Materials

Study area

The study was conducted in Tikur Anbessa Specialized Teaching Hospital (TASTH) which is located in the capital of Ethiopia, Addis Ababa City, Kirkos Sub City. It was established in 1973 EC; during the reign of Emperor Haile Selassie as part of the national effort for providing quality health care to the community. The hospital totally holds 12, 3000 m. sq. area of land and the building has settled on 45000 m sq. area. There are 1262 various rooms from the basement to the eighth floor. The hospital is currently functioning as teaching hospitals under AAU and it is the country's biggest specialized referral hospitals containing 800 total numbers of beds. This hospital sees approximately 370,000- 400,000 patients per year but the exact number is not known.

The hospital was the biggest in Ethiopia during establishment period and was regarded as an exemplary hospital without any other superior one in the continent of Africa. Even at the moment it is renowned and famed as service rendering, training providing and research conducting institution equipped and facilitated with modern medical equipment and highly skilled medical specialists.

The hospital had five major clinical departments which include department of internal medicine (B8, C8, D8 and B5), department of surgery (B4, C4, D4 and D5), department of gynecology and obstetrics (C6 and D6), department of pediatrics including Neonatology (B6, B7, C7 and D7), and department of orthopedics (B3 and D3). In addition to these major clinical departments, the hospital has other departments such as department of radiology it has seven x-ray rooms, nine surgical and two laboratory diagnostic rooms, a currently established emergency unit (pediatrics and adult emergency with critical care units), different diagnostic laboratories, radiotherapy unit, pharmacy sections and Medical and Surgical ICUs. Currently the hospital has about 850 beds that give service to adults and pediatric patients. The number of patients being served in the hospital increased over time with 363, 623 patients seen in 2006 alone. In terms of human resource, the hospitals had in 2007, 119 senior physicians, 267 graduate study students and 85 undergraduate students who participate directly on the hospital activities. The hospital had, in the same physical year, 1234 employees among which 444 were medical professionals (3).

Study period

The study period was from February, 2013 to June, 2013 G.C

Study design

Hospital based cross sectional descriptive survey with both quantitative and qualitative (observation using check-list) components was used.

To fully incarcerate the universal precaution practice among the emergency medicine professionals, an Observation check-list was used to observe whether or not the staff members involved in patient management is using an appropriate technique and timing as per the set guideline.

SOURCE AND STUDY POPULATION

Source and Study populations

All emergency medicine professionals who are working in adult emergency unit in TASTH during the study period consists of 17 residents, 3 salaried senior staff MSC emergency medicine professionals & 47 MSC Emergency medicine students, totally 67 .

Inclusion criteria

- Salaried senior staff members, emergency medicine residents & emergency medicine MSC students working in emergency room
- All the above who are willing to participate in the study

Exclusion criteria

- Those who are not working in the adult emergency rooms
- Those who are not willing to participate in the study
- Those who is assigned to work during night time

Data management

Data collection methods

A structured and pretested self-administrated questionnaire was used for the quantitative data collection. Data was collected during the working hour and morning sessions. Self-administered questionnaire was distributed to all seniors' residents and MSC students on morning sessions. All

volunteer seniors & students are requested to fill in the questionnaire following the morning session. For the qualitative part, observation by using check list by two MSC students who are not involved in quantitative data collection of this study was used for 5 consecutive days during working hours in emergency rooms.

Students and residents working in emergency unit are carefully observed whether or not they follow the techniques of universal precaution.

Data collectors

Data collectors were five MSC students who have no clinical attachment to emergency unit were used. Of which 3 was used for quantitative data collection & 2 was used for qualitative data collection. Those who involved in quantitative data collection will not be used for qualitative data collection**.**

Study variables

Dependent

The dependent variables of interest were knowledge, attitude and practice of universal precaution among emergency medicine professionals in TASTH.

Independent

The independent variables include the socio-demographic variables (sex, level of education), perceived risk/benefit of universal precaution, work experience, training (types, years of training), and qualifications.

Data entry and analysis

Data was entered, cleaned and analyzed using SPSS for Windows version 16. Frequencies, percentage and graphs were used for descriptive purposes.

Data quality assurance

Data collection instruments was designed carefully after referring appropriate literatures and 5% of the questionnaires was pre-tested in pediatric emergency unit in TASH. Data collectors and supervisor was adequately trained on the objective of the study, procedure of data collection and

organization. Data collectors and supervisor will make sure that all questionnaires are complete. Any ambiguity was solved on the spot.

Data entry was done by well-trained data clerks who have previous experience. The entered data was counter checked by principal investigator before further analysis.

Ethical consideration

Ethical clearance was obtained from school of graduate study. Permission was sought from head of emergency medicine department. Staff was asked for verbal informed consent. Only individuals who consented to be involved in the study are finally selected for the interview. Confidentiality was kept at all level. No participant is requested to write his/her identity such as name or ID number on the questionnaire. There is no physical or psychological harm related to this study. However, staff may sacrifice 15-20 minutes of their study/work time to fill in the questionnaire. The hospital workers, emergency medical professionals and ER staff will be benefited from interventions/measures to be taken by the faculty/departments on the identified gaps in improving universal precaution knowledge, attitude and practice.

Strength and limitation

Limitations

This study has limitations but is also a good starting point for more extensive future research with the aim of giving our patients optimum care whilst being careful not to compromise our own health in the process as it is lifesaving activity.

1. The study population was small making it difficult to generalize the findings
2. There was no known literature available on previous studies involving emergency medicine professionals.

Strength of the study

1. Study includes only emergency medicine professionals that may decreases confounding factors.
2. Use of observation as data collection method w/c increases the validity of the result.

Operational Definitions

Emergency medicine professionals –those who are attended the department of emergency Medicine for their MSc or specialty education, including the MSc holders in the ER.

Antimicrobial soap - Soap (detergent) containing an antiseptic agent.

Antiseptic agent - Antiseptics are antimicrobial substances that are applied to the skin to reduce the number of microbial flora.

Antiseptic hand rub - Applying an antiseptic hand rub product to all surfaces of the hands to reduce the number of microorganisms present.

Colonization – pathogenic (illness or disease causing) organism are present in person but are not causing symptom or clinical finding.

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

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

Visibly soiled hands - Hands showing visible dirt or visibly contaminated with proteinaceous body substances (e.g., blood, fecal material, urine)

Multi-drug resistant pathogens - Bacteria that cause serious infections that are very difficult to treat due to the pathogens' resistance to many commonly- prescribed antibiotics.

Safe injection- one that doesn't cause harm to the recipient, does not expose the provider to any avoidable risk, and does not result in waste that is dangerous to other people.

Confounding factors-factors that can affect directly or indirectly the dependent variables

Result

A total of 67 emergency medicine professionals with a response rate of 91% were found valid and included in the analysis for quantitative data and 10 (15%) emergency medicine professionals in emergency room were included in qualitative data compilation. Among the respondents 42 (68.9%) were males and 19 (31.1%) were females. Concerning the professional categories of the respondents, 12 (19.7%) were emergency medicine residents, 3 were emergency medicine MSc holders and 46(75.4%) were MSc students. Theirwork experience in their current profession or job title after last graduation is presented in fig 1 as follows.

Concerning the experience of the respondents 18(29.5%) served for two years, 14(23%) have served for five and above five years, 11(18%) had four years' experience, 10(16.4%) served for three years and 8(13.1%) had only one year experience since last graduation.

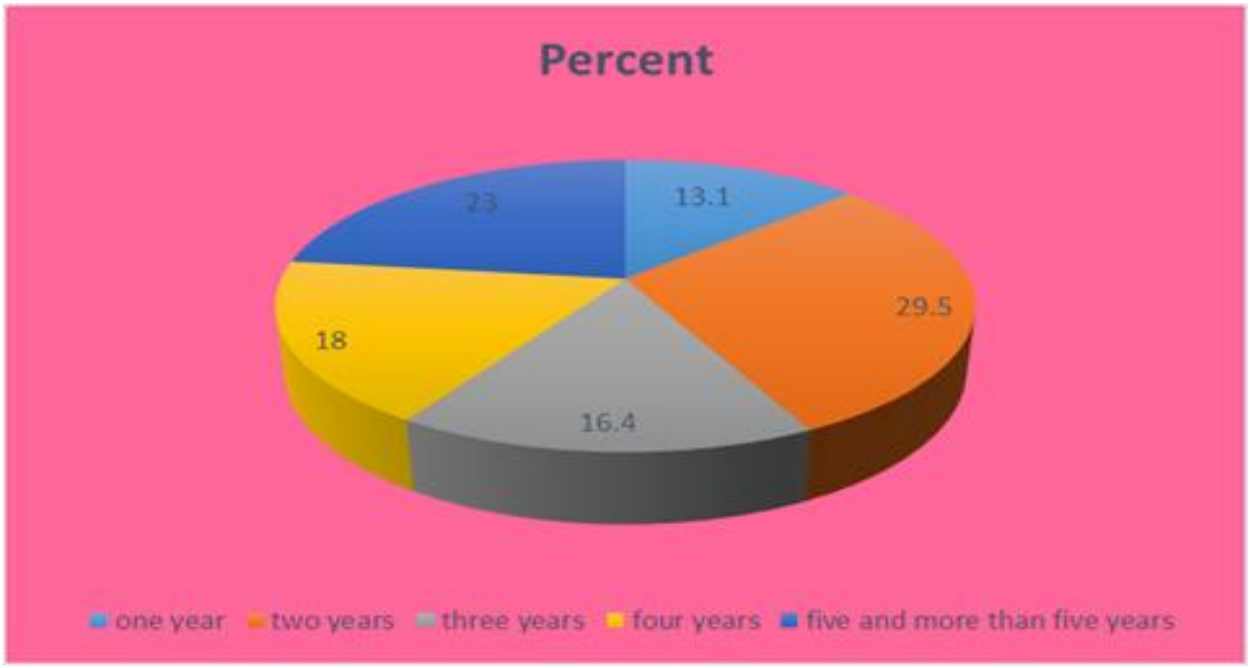

Fig 1: Years of experience of the emergency medicine professionals in emergency room, Tikur Anbessa Specialized Hospital, May 2013 G.C

Table 1:-Distribution of respondent by their status of training on infection prevention in emergency room, Tikur Anbessa Specialized Hospital, May 2013 G.C

profession of the respondent	**Did you take training on infection prevention?**		**Total**
	NO	yes	
Residents	6	6	12
Emergency medicine MSc holders	3	0	3
MSc student	22	24	46
Total	31	30	61

Among the respondents, half of them 30(49.2%) had training on infection prevention which were directly related with universal precaution, of which 24(80%) were MSc students whereas the remaining 6 were residents. But more than half of respondents 31(50.8%) had no training on infection prevention at all. Of the respondents 24(39.3%) were know the presence of infection prevention office in TASH, 21(34.4%) were said that there was no infection prevention & waste management office in Tikure Anbessa specialized hospital and 16(26.2%) didn't know the presence of the office. Concerning the infection prevention guideline 15(24.6%) of the respondents were know the presence of infection prevention guideline in TASH, whereas 32(52.5%) or more than half of them said no guideline at TASH and 14(23%) didn't know the presence or absence of the guideline.

Safety of injections

Among the respondents 31(50.7%) of emergency medicine professionals ever had participated in any training program dedicated to infection prevention after their respective pre-service courses and 30(49.2%) were never participated on infection prevention training. All respondents know that dirty needles and sharp materials could transmit disease-causing agents. Some of the common diseases known by the respondents were HIV only 3, HBV, HCV & HIV were

27(44.3%), HBV, HCV,HIV & malaria were 8 , HBV, HCV, HIV, Tetanus & Malaria 8, HBV, HCV, HIV & Tetanus 13(21.3%), HBV,HCV,HIV & TB were 2 (fig 2).

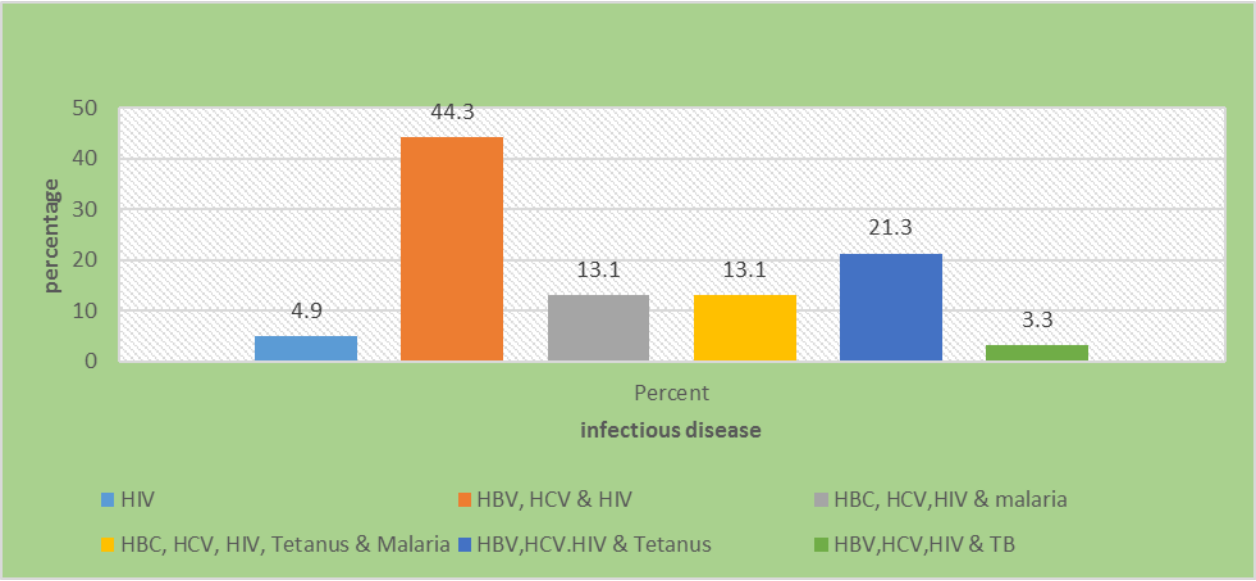

Fig 2: Knowledge of emergency medicine professionals about infectious disease transmitted by needles and sharps in emergency room, Tikur Anbessa Specialized Hospital, May 2013 G.C

Only 15(24.6%) of the respondents know the presence of anti HIV prophylaxis after sustaining needle stick or sharp injuries while 46 (75.4%) didn't know. The respondents who had perceived risk of acquiring HIV infection from their health facility waste, when disposed improperly, 2 said the risk would be for HCW, 3 for supportive staff, 40 (65.6%) for both health professionals & supportive staff and 8 said would be for Health Professionals, Supportive staff, the client / patient & the community.

Majority 54(88.5%) of the respondents knows the benefits of proper waste disposal as it is important to reduce the risks of spreading infections to staff, clients, visitors provides clean working compounds and rooms, and decreases odors.

Twenty-eight (45.9%) of the respondents were washing their hands sometimes, 19(31.1%) washes always, 8 washes often, and 6 never wash their hands after touching surfaces near patients in emergency room.

Those who washed their hands after touching intact skin of the patients in emergency room on sometime bases 10(16.4%), on always bases 31(50.8%), often bases 10(16.4%) and never were

10(16.4%). Concerning the blood or body fluid splash to body parts in emergency room who said no were 41(67.2%), who said yes 15(24.5) and those who did not remember were 5 respondents. Among those who had blood or body fluid splash 14(93.3%) were MSC students whereas the remaining were residents.

Table 2: Proportion of emergency medicine professionals who identified types of waste materials to be discarded in to safety box in emergency room, Tikur Anbessa Specialized Hospital, May 2013 G.C

Types of waste materials to be discarded to safety box	**Frequency**	**Percent**
Syringe, Needle, Needle from IV bags, Lancets & other contaminant sharps	29	47.5
Needle, Needle from IV bags, Lancets & other contaminant sharps	17	27.9
Syringe, Needle, Needle from IV bags & Lancets	8	13.1
syringe & needles	3	4.9
needles & needle from IV bags	4	6.6
Total	**61**	**100.0**

With regard to the measures to be taken after exposure to blood and body fluid by emergency medicine professionals in emergency room only 8 respondents were able to respond correctly four answers out of four exact choices as washing with soap and water, Visiting VCT, Seek PEP & Report to the head person.

Table 3: Measures to be taken after exposure to blood and body fluid by emergency medicine professionals in emergency room, Tikur Anbessa Specialized Hospital, May 2013 G.C

Measures taken after exposure to blood and body fluid	Frequency	Percent
washing with soap & water	1	1.6
wash with alcohol, iodine, chlorine	4	6.6
seek PEP	3	4.9
washing with soap & water & visiting VCT	1	1.6
Wash with alcohol, iodine & chlorine, Visiting VCT, Seek PEP & Report to the head person	3	4.9
Washing with soap and water, Wash with alcohol, iodine & chlorine, Seek PEP & Report to the head person	2	3.3
Washing with soap and water, Visiting VCT, Seek PEP & Report to the head person	8	13.1
Washing with soap and water, Wash with alcohol, iodine & chlorine & Seek PEP	6	9.8
Washing with soap and water, Seek PEP & Report to the head person	3	4.9
Washing with soap and water & Seek PEP	3	4.9
washing with soap & water and washing with alcohol, iodine chlorine	6	9.8
washing with soap & water, seeking VCT & seek PEP	10	16.4
All	11	1.8
Total	**61**	**100.0**

Table 4: knowledge of emergency medicine professionals toward the source of infection in hospital setting, Tikur Anbessa Specialized Hospital, May 2013 G.C

Sources of infection	Frequency	Percent
health personnel	1	1.6
contaminated equipment	5	8.2
Contaminated equipment, polluted air & other patients	7	11.5
Health personnel, Contaminated equipment & Other patients	9	14.8
Health personnel, Contaminated equipment & polluted air	1	1.6
contaminated equipment & polluted air	5	8.2
Health personnel, Contaminated equipment, polluted air & other patients	33	54.1
Total	61	100.0

Among the respondents 29(47.5%) were commonly using savalon, iodine and alcohol as antiseptic/decontaminant in emergency room, 8 were using savalon & alcohol.

Those who were using Savalon only 3 and those who were using chlorine 3, while those who reported using alcohol were 10 (16.4%). Fifteen (24.6%) were experienced blood or body fluid splash to eyes, mouth or nose and 41(67.2%) were not faced any splash to their eyes, mouth or nose 5 were not remember.

Forty-seven (77%) the respondents were checking patients for those infectious diseases like HCV, HEP-B & HIV in emergency room when patients suspected of the diseases, 10(16.4%) were checking on admission and 4(6.6%) were not check at all. 48(78.7%) of the respondents were strongly agreed and 13(21.3%) were agreed that in absence of infection prevention/UP hospital setting can be the source of infection. Among the respondents 46(75.4%) were given BP cuff for decontamination after using it for bleeding patients but the remaining 15(24.6%) were not given it for decontamination.

Among the emergency medicine professionals 36(59%) perceived that oxygen delivery materials like mask, nasal cannula & prong can be reusable whereas 25(41%) perceived as this materials can't be reused. Concerning needle recapping after use, 51(83.6%) the respondents perceived that it should not be recapped and the remaining 10(16.4%) were said should be recapped after use. On use of laryngoscope in emergency room 17(27.9%) strongly agreed as they were used it after decontamination, 41(67.2%) agreed and 3 were disagreed.

All the emergency medicine professionals perceived toward contribution of displaying infection prevention posters in hospitals to universal precaution and 23(37.7%) washing their hands before touching the patients and 38(62.3%) were not washing their hands before touching the patient.

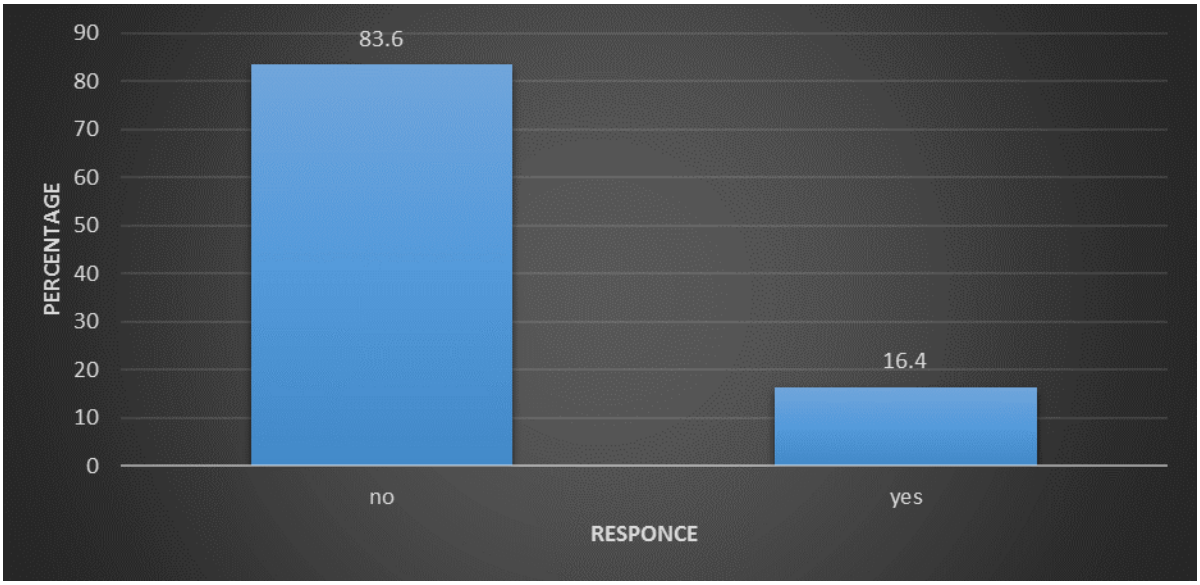

Fig 3:- Perception of emergency medicine professionals on the status of needle after use in emergency room, Tikur Anbessa Specialized Hospital, May 2013 G.c

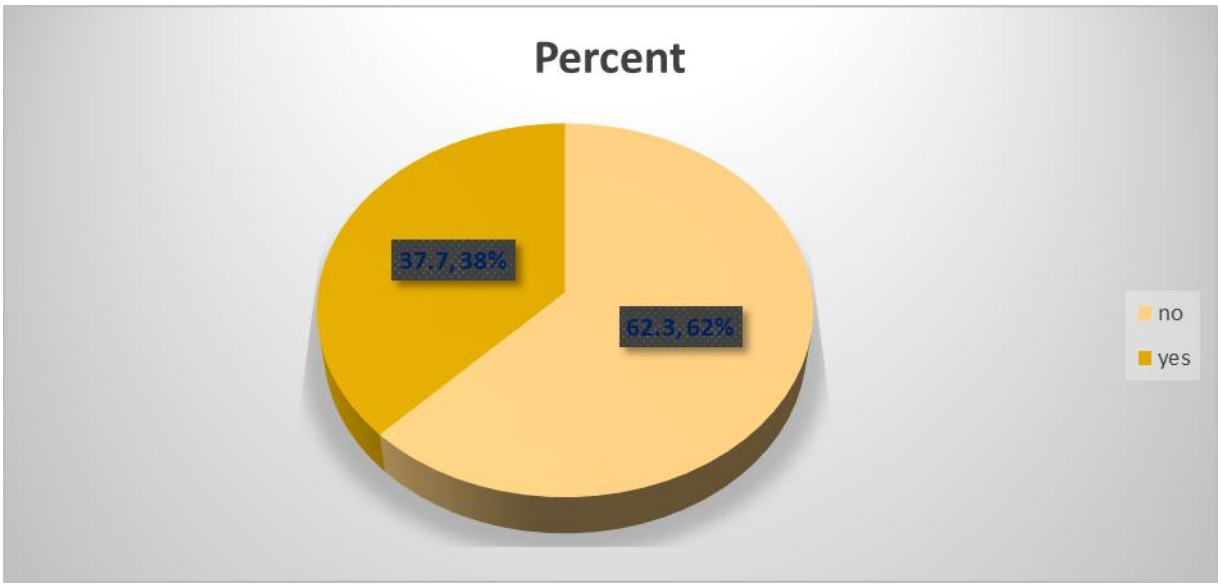

Fig 4:- showing the practice of emergency medicine professionals on hand washing before touching the patients in emergency room, Tikur Anbessa Specialized Hospital, May 2013 G.C

Among the respondents only 23(37.7%) were washing their hands before touching their patients whereas 38(62.3%) were not washing their hands before touching the patients in emergency room at Tikur Anbessa Specialized Hospital.

Table 5: Reasons cited by emergency medicine professionals for not washing their hands & washing sometimes in emergency room, Tikur Anbessa Specialized Hospital, May 2013 G.C

Reasons for not washing their hands or washing some times	Frequency	Percent
Inaccessibility of hand washing materials	22	36.1
emergency condition	9	14.8
absence of hand washing materials in ER	1	1.6
I am using glove	5	8.2
Other	1	1.6
Inaccessibility of hand washing materials, Emergency condition & I use glove	9	14.8
Emergency condition & I use glove	1	1.6
Not always necessary & I use glove	1	1.6
inaccessibility & emergency condition	7	11.5
Total	56	91.8

Forty-nine (80.3%) were wearing personal protective equipment before touching the patients and 12(19.7%) were not wearing personal protective equipment before touching the patients in emergency room. Reason of the respondents for not using personal protective device were 4 because of inaccessibility of the equipment's, 16.7% said absence of PPE in ER,25% it is emergency situation & Inaccessibility of equipment's and 25% said because of inaccessibility of equipment's & absence of PPE in ER.

Table 6:-personal protective device utilization by emergency medicine professionals in emergency room, Tikur Anbessa Specialized Hospital, May 2013 G.C

		Frequency	Percent
Valid	double glove	3	4.9
	Gown	2	3.3
	double glove, Boots/shoes & Gown	26	42.6
	double glove, Boots/shoes, Masks & Gowns	9	14.8
	double glove, Boots/shoes, goggle & Gown	7	11.5
	apron, double glove, Boots/shoes, Masks & Gown	2	3.3
	Total	49	80.3
Missing	System	12	19.7
Total		61	100.0

Concerning needle prick injury 22(36.1) had sustained needle prick injury whereas 39(63.9) had no needle prick injury. From those sustained needle prick injury 14(23%) were sustained once a year and 8 were sustained twice within a year. of the total respondents 45(73.8%) were properly discard used materials as universal precaution guideline and 15(24.6) were not using as per the guideline. Among the emergency medical professionals 53(86.9%) do not use and throw materials like nasal cannula, prong and face mask and 8 were use and throw nasal cannula/prong and face mask. Concerning laryngoscope decontamination after using it for intubation 46(75.4%) was giving it for decontamination, 14(23%) was not giving it for decontamination and 1 had never used laryngoscope to incubate the patients. Of those respondents who don't give laryngoscope for decontamination 12(19.7%) were putting it there on the trolley.

Results of observation

Out of the 10 observed emergency professionals 6 were males. Among them 5 were residents and the remaining were emergency MSC students. Among the respondents 6 have explained the procedures to the patients since this is ethics of any health professionals.

A total of 24 hand washing opportunities were observed. Of these all or 3 opportunities were observed while properly washing their hands with alcohol hand rub, medicated soap and water after completing the procedures. The highest hand washing practiced in the emergency room were 2 emergency medicine MSc students and followed by 1 resident.

From the actual observation of ten (10) respondents 7 had not washed their hands. From Socio demographic characteristics, male (70%) had better hand hygiene adherence than female.

Among 10 of the respondents were observed as they ever wore at least one type of personal protective device. Among respondents who wore personal protective devices during observation were all observed emergency professionals wore utility glove, 3 wore masks, 2 wore used apron, 2 wore boots or shoes which cover toes, no one had wore head cover and eye protectors. Some of the reasons for not wearing any of the stated personal protective devices specially head cover and goggle were stock out of the desired PPE.

Among the observed emergency professionals 5 have disposed off after recapping the needles. Of these, 4 used two hand recapping method. Despite providing 30(49.2%) had training on infection prevention which were directly related with universal precaution, of which 24(80%) were MSc students whereas the remaining 6 were residents. still two hand recapping technique continued. Seven observed emergency care providers do not wash their hands after removing the gloves. Almost all observed emergency medicine professionals discarded used needles properly in the safety box.

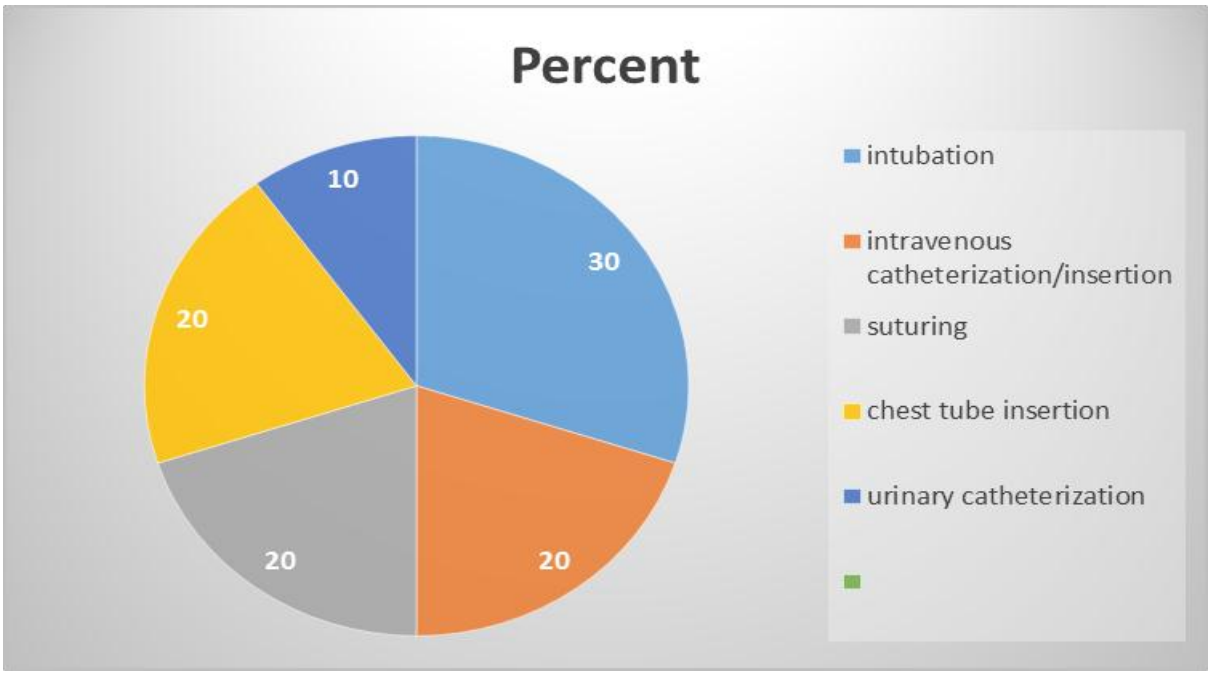

Fig 6:- shows percentage of procedures observed during qualitative data collections in emergency room, Tikur Anbessa Specialized Hospital, May 2013 G.C

Materials Available (observed) in Emergency Room, TASH 2013 G.c

The presence of adequate infection prevention materials including PPE is some of the factors that directly affect the practice of infection prevention. Therefore the main aim of observation of materials in emergency room is to assess why emergency medicine professionals not utilizing some of the materials that are important for infection prevention.

Table 7: - shows some of the materials used in infection prevention in emergency room TASH 2014 G.c

Available material	Unit of measure	Amount (number)
Chlorine	**Liter**	**Not available**
Utility glove	**Pk/box**	**4**
Examination glove	**number**	**10pairs**
Mask	**number**	**Not available**
Apron and goggle	**number**	**Not available**
Boots	**number**	**Not available**
Safety boxes	**number**	**8**
Syringe	**5cc** **10cc** **20cc**	**10/day** **5/day** **2/day**
Dressing set	**number**	**4/day**
Nasal cannula	**number**	**4**
Oxygen mask	**number**	**7**

According to observation of the materials used in emergency room utility glove, examination glove, safety boxes, dressing set, nasal cannula, oxygen mask alcohol swab and different types of Syringes were available. The emergency room was observed for storage of soiled/socked linen, it is stored in hamper bag and the dressing/suturing materials were autoclaved and packed with cloths in emergency room. The sharp/needle collection boxes (safety boxes) which were available in all emergency rooms i.e. at the back, front and resuscitation rooms in which sharps

mixed with other wastes in some boxes at resuscitation room during observation. Again there was plastic waste container in all rooms i.e. at the back, front and resuscitation rooms but the waste were not properly disposed.

However, anti-septic solution (especially chlorine), , some of personal protective devices like mask, goggle and boots were not available in emergency room also functional water sources, written or infection prevention pictures not available in all emergency rooms. Windows were observed in all emergency rooms; most of the windows in back and front were not open during observation and absent in back orthopedics (ward B) and procedure room which ends the rooms with poor ventilation.

Discussion

In Ethiopia, there are few studies on universal precaution and related topics. This study contributes to determine the knowledge, attitude, and practices of emergency medicine professionals toward infection prevention in adult emergency room and other related factors in Tikur Anbessa Specialized Hospital, Ethiopia.

According to this study 30(49.2%) had training on infection prevention which was directly related to infection prevention of which 24(80%) were MSc students whereas the remaining 6 were residents. This is similar with the study conducted in North Wollo zone, Amhara Region, North eastern Ethiopia among health professionals which was 45.8% of the respondents said that they ever had participated in training dedicated to infection prevention after their respective pre-service courses. Though there is a national guideline on infection prevention, almost all participants agreed on lack of teaching and learning materials in local language for health care workers, clients and communities on infection prevention. On top of these there was no continuous support and supervision to improve the universal precaution. The in-service training given for health care workers also had complaints of short in duration ending with poor skill. The short duration might compromise the qualities and contents of the training.

Also, only provision of a lot of information at a time may not convince staff about the duty of care to client/patient, environment and safe practice of health care workers. As to the knowledge of respondents about diseases transmitted via blood or body fluid from contaminated needles and sharps were HIV only 3(4.9%), HBV, HCV & HIV were 27(44.3%), HBV, HCV,HIV & malaria were 8, HBV, HCV, HIV, Tetanus & Malaria 8, HBV, HCV, HIV & Tetanus 13(21.3%), HBV,HCV,HIV & TB were 2 (Fig 2).

According to this study the knowledge of respondents about diseases transmitted via blood or body fluid from contaminated needles and sharps were, those who said only HIV were 3 but all the respondents 100% said HIV, 48(95.1%) said HepB virus, 48(95.1%) said HCV, malaria 16(26.2%), tetanus 13(21.3%) and TB were 2. This study showed that the emergency medicine professionals had better knowledge on diseases transmitted via blood or body fluid from contaminated needles and sharps than similar study done on health professionals who were BSc and lower in their profession by W/Gebreal, Y. in SNNPR where 197 (92.9%) HIV, 65 (30.7%)

HBV, 55(25.9) tetanus, and 19 (9.0%) HCV. (13) This might be difference in professions and level of education of the respondents.

In this study only 15(24.6%) of the respondents know the presence of anti HIV prophylaxis after sustaining needle stick or sharp injuries. This finding is lower than the result of the study conducted in North Wollo zone, Amhara Region, North eastern Ethiopia among health professionals (32) was One hundred ten (31.3%) of the respondents know the presence of anti HIV prophylaxis after sustaining needle stick or sharp injuries. This difference could be explained by lack of information among the students and lack of orientation before assigning the students to emergency rooms from the very beginning of their attachment to this hospital.

According to this study among emergency medicine professionals 22(36.1%) had sustained needle prick injury. This is much better than a study conducted on knowledge, attitude and practices among health care workers on needle stick injuries revealed that 52 (74%) out of 70 had a history of needle stick injury. This difference could be most of the respondents were university instructors so that they were not spent their time mostly with hospital patient care that may reduce their time of exposure to needle prick injury. But this study is higher than the study done in Ethiopia at Southern Nation, Nationalities, and Peoples Region (SNNPR) showed that 32.4% of health care workers (HCW's) reported as they had sustained at least one form of accidental injury by needle or other sharps this could be lack of training and less exposure to patient care that can give more experience to the study subjects particularly for those on teaching duties since most of they are from university.

Based on this study which was on knowledge attitude and practice among emergency medicine professionals showed that 16.4% of the respondents perceived that needle should be recapped after use. However, similar study conducted on knowledge, attitude and practices among health care workers on needle stick injury revealed that twenty subjects (29%) were of the impression that needles should be recapped after use. This could be explained on the bases of their professions and the level of their education because my study subjects were MSc students and residents.

According to this study which showed that almost all (100%) of the respondents were wearing gloves during invasive procedures similar study on Ghana Accera hospital showed that forty-two (88%) of respondents indicated that they wore gloves routinely when performing invasive procedures on patients. This showed that the emergency medicine professionals have better practiced the use of gloves in emergency rooms than the practice of Ghana Accera hospital health professionals. This could be fear of the infectiousness of diseases like HIV and HEP-B virus due to the higher prevalence of infectious disease in Ethiopia.

Even though, 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: - Using protective barriers such as gloves, gowns, aprons, masks, goggles for direct contact with blood and other body fluids. In this study the 100% wear gown as hospital protocol despite this 77% of the respondents were wear gloves, 22.4% wear mask, for invasive procedures and those who put on goggle were 14.3%. But study done in Perceptions and Practice of universal blood and body fluid precautions by registered nurses at a major Sydney Teaching Hospital showed that84% of the respondents wear gloves for invasive procedures and an equal number wear face masks. The least practiced is the wearing of protective eye shields (24%).this shows significant difference because of inaccessibility and absence of personal protective device particularly goggle and face masks in emergency room.

According to this study measures to be taken after needle stick or sharp injury among emergency medicine professionals were 40(65.6%) said washing with soap& water, 38(62.3%) were seeking post exposure prophylaxis, 22(36%) were testing for HIV, 21(34.4%) were washing with alcohol and chlorine and 16(26.2%) were reporting to the head person. This study has revealed that emergency medicine professionals have comparatively a better knowledge on counseling & testing for HIV, taking post exposure prophylaxis and reporting to head personal after needle stick injury than the previous study done on knowledge, attitude and practice of health care workers on universal precaution in north Wollo zone, Amhara region, north eastern Ethiopia(32), showed that measures HCW's had taken after needle stick or sharp injury includes 171 (91.9%) washing with water and soap, 145 (78.0%) washing with alcohol or chlorine solution,37 (19.9%)

counseling and testing for HIV, 6(3.2%) taking post exposure prophylaxis and 34(18.3%) reporting to their supervisors. This may be the difference in the level of their knowledge and educational status MSC and residents' vs. BSC nurses and diploma health professionals.

Despite this the emergency medicine professionals have less preferred to use washing the site with soap, water, washing with chlorine & alcohol after needle stick injury as compared to the previous study. (32) This may be explained by their preference to use the other methods mentioned above rather than soap, water, washing with chlorine & alcohol.

According to this study,47(77%) the respondents were checking patients for those infectious diseases like HCV,HEP-B &HIV in emergency room when patients suspected of the diseases, 10(16.4%) were checking on admission and 4 were not check at all. In the setting of above results that can be good opportunity which may exposes the respondents to infectious diseases like HCV, HEP-B &HIV. Fifteen (24.6%) were experienced blood or body fluid splash to mucus membrane. This indicates few number of respondents experienced blood or body fluid splash as compared to similar study done at SNNPR in which splash of blood or body fluid on the mucus membrane 32.4%. (18) This difference is because of the time that they cover on duty, since my study subjects were students they may have vacation within a year and more off-duty days and because of shortage of personal protective equipment's supplies in emergency room.

Based on this study among the respondents only 23(37.7%) were washing their hands before touching their patients. This is consistent with similar study done in university of Geneva hospital on practice of the hand washing rate range 23 to 87% (22) and According to the Access Excellence Collection publications, hand-washing rates were as low as 30% and never exceed above 48% .(20)

According to this study the respondents who had perceived risk of acquiring infection from their health facility waste when disposed improperly were 58(93%) for emergency /health care worker, 59(96.7%) were supportive staffs ,16(26.2%) were the community and 16(26.2%) were for clients/patients. This shows significant difference in knowledge of the respondents because of

their educational level as compared with similar study done by Mesele Damte which was 260(74.1%) for health professionals and 247 (70.4%) for supportive workers.(32)

Among the observed emergency professionals (50%) were disposed off used needles after recapping of it. Of these, (80%) used two hands recapping method. Despite providing 30(49.2%) of the respondents in Tikur Anbessa Specialized Hospital had training on infection prevention which were directly related with universal precaution, among the respondents who had taken infection prevention training 24(80%) were MSc students whereas the remaining (20%) were residents still two hand recapping technique continued. This indicates majority/large number of the respondents was using two handed method which was higher as compared to similar study done in Addis Ababa, two hands recapping of 53.8% was found. (23) This could be explained by the small sample size of this study and the respondents might be from those who were not taken infection prevention training at all. The finding in this study on recapping of used needles were lower than another study conducted in north Wollo out of the 90 observed injections, 55 (61.1%) were disposed off after recapping of needles. This could be because of difference in the number of observations by the studies.

Among 10 of the respondents observed almost all were ever wore at least one type of personal protective device. Among respondents who ever worn personal protective devices during observation was 10 wore utility glove in emergency room, as glove use for all patient care contacts is a useful strategy for reducing risk of transmission of organism. Similar study done on the use of personal protective device in provision of cares ever wore were 98.9% only for gown and also low as 59 (16.9%) goggle and shoe/boot 107 (30.7%) could be related to absence of this materials in emergency room as confirmed by observation during qualitative data collection.(32)

Conclusions and Recommendations

- Poor hand washing practice by emergency medicine professionals were found before and after touching the patients were found.
- Emergency medicine professionals were not properly handling, and disposing used needle/sharp materials in the study area.
- Personal protective devices particularly mask and eye goggles, boots etc were not available during the survey.
- All emergency professionals were wear gloves during invasive procedures
- Inaccessibility of hand washing materials and absence particularly water in all emergency rooms
- Emergency medicine professionals have comparatively better knowledge on counseling &testing for HIV, taking post exposure prophylaxis and reporting to head personal after needle stick injury.
- Only 3/4 of the respondents were know the presence of anti HIV prophylaxis after sustaining needle stick or sharp injuries.
- All the emergency medicine professionals perceived toward contribution of displaying infection prevention posters in hospitals to universal precaution
- The risk of health institution acquired infection to heath care workers, clients, patients, children and the communities were very high.
- Majority of the emergency medical professionals do not use and throw materials like nasal cannula, prong and face mask in emergency room was observed.
- In emergency room utility glove, examination glove, safety boxes, alcohol swab and different types of Syringes were available during observation of the materials used.
- Infection prevention indicators like posters were not displayed in all emergency rooms.
- Two handed recapping of the used needles were observed.
- Windows were observed in all emergency rooms; most of the windows in back and front were not open during observation and absent in back orthopedics (ward B) and procedure room which ends the rooms with poor ventilation.

Recommendations:

1. Emergency department should provide early orientation regarding infection prevention for emergency professionals at the time of commencement of their training and before they assigned to the emergency practice.
2. The involvement of emergency medicine professionals in different activities regarding infection prevention should be encouraged and events such as exhibitions, poster making, quizzes, debates and other competitions regarding infection prevention should be organized consistently.
3. Emergency directorate should try to provide personal protective devices to the emergency rooms particularly eye goggles, masks and boots.
4. Emergency directorate should facilitate the maintenance of the non-functional water system and hand washing materials in emergency rooms.
5. The emergency care providers should be encouraged to open windows and discouraged for recapping of used needles in emergency rooms
6. Administration should initiate in increasing the knowledge and understanding of emergency medicine professionals and emergency care workers regarding infection prevention by providing adequate trainings.

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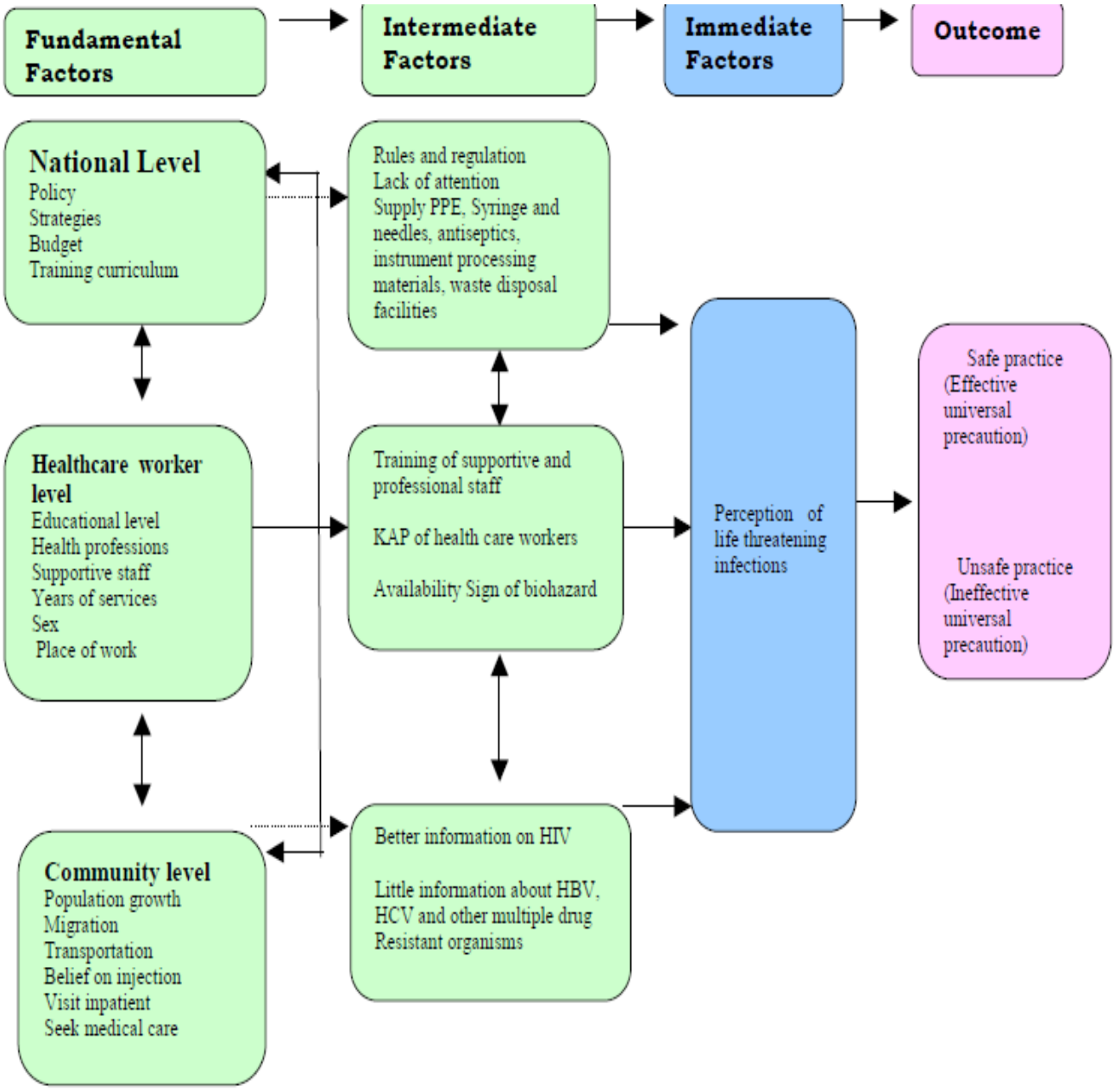
Annex I: Conceptual framework

Figure 1: modified Conceptual framework to study the KAP of health care workers on universal precaution, July 2006



ADDIS ABABA UNIVERSITY SCHOOL OF MEDICINE
DEPARTMENT OF EMERGENCY MEDICINE

Annex II

Informed Consent Form for Quantitative survey questionnaires:

Date_____ Code number of the checklist----------

Hallo! Good morning?

My name is Sr. / Ato ---------- and my friend is Sr. / Ato----------. We are a research team member of AAU, Department of Emergency medicine. Today we are here to collect data on the assessment of knowledge attitude & practice of emergency medicine professionals on universal precaution which will be done by Afework Alemayehu who is the member of emergency medicine MSc students.

The objective of this questionnaire is to assess the knowledge, attitude and practice of emergency medicine professionals on universal precaution in the emergency room, TASH.

We would like to assure you that the study is confidential. We will not keep a record of your name and address. You have a right to skip any question that you do not want to answer. Your correct answer can make the study to achieve the goals. Therefore, you are kindly requested to respond genuinely and voluntarily with patience. The questions may take about 10-15 minutes.

Do you have any question?

Are you willing to participate in the interview?
If Yes, Go to the next page

If No, Thank them and interrupt it.
Signature of the consenting interviewer----------

A. Questionnaires responded 1. Completed 2. Partially completed
3. The interviewee refused 4. Others----------

Data collector's Name: 1. ---------- Signature ---------- 2. ---------- -------- Signature ----------

Supervisor's name---------- Signature ----------

ANNEX III

KNOWLEDGE, ATTITUDE AND PRACTICE QUESTIONNAIRES

SECTION I: MARK √ IF THE ANSWER IS RIGHT & ✕ IF THE ANSWER IS WRONG

A. Socio-demographic characteristics

Sex 1. Male

2. Female

B. Respondents background /qualification

Profession: 1. Resident 2. Emergency medicine MSc holder 3. MSc student

Years of experience after last gradation----------

Did you taken any training on infection prevention/IP? 1. YES 2. NO

If yes, which type of training ? Specify----------

Do you have waste management and infection control officer in TASH? 1. YES 2. NO

Do you have infection prevention guideline in your emergency room? 1. YES 2. NO

Part I: knowledge:

1. Which of the following disease(s) is/ are transmitted by dirty needles and sharp? **Circle all that apply**
   1. HBV 2. HCV 3.HIV 4. Tetanus 5. Malaria 6. TB
2. Do you know whether there is Post Exposure Prophylaxis (PEP) in your hospital? 1. YES 2. NO
3. Who could be at risk of infection from your hospital waste if not disposed properly in ER?
   1. Health Professionals 2. Supportive staff 3. The client / patient
   4. The community 5.Children 6. Other specify----------
4. What is/are benefits of proper waste disposal?
   1. Reduces the risks of spreading infections to staff, clients, visitors
   2. Reduces the risk of accidents to both client and staff
   3. Provides clean working compounds and rooms
   4. Decreases odors
   5. Others specify ----------
5. How often do you clean your hands after touching an environment surface near to the patient (for example, table wall or bed rail?
   1. Always 2. Often 3. Sometime 4. Never
6. How often do you clean your hand after touching a patient's intact skin (for example, when measuring a pulse, or blood pressure? 1. Always 2.Often 3.Sometime 4.Never

7. What goes in to the safety box? **Please, circle all that apply**

1. Syringe	2. Needle	3. Needle from IV bags
4. Lancets	5. Their plastic materials	6. Empty vials
7. Cotton pads	8. Dressing materials	9. Bag or extension tubes
10. Latex gloves	11. Other contaminate sharps	

8. What do you think are the main reasons for reuse of syringe and needles?

1. Shortage of supply 2. Knowledge deficit 3. Carelessness
4. To reduce the cost of treatment 5. Other specify

9. After exposure to blood or body fluid what measures did you take**? Circle all that apply.**

1. Washing with soap and water 2. Wash with alcohol, iodine, chlorine
3. Visiting VCT 4. Seek PEP
5. Report to the head person 6. Other specify----------

10. What is the chemical you use to decontaminate? **Circle all that apply.** 1. Chlorine 2. Savalon 3. Formaldehyde 4. Iodine 5.Alcohol 6. Other specify----------

11. Do you know decontaminant available in your ER at this time? 1. Yes 2.NO

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

1. Yes 2. No 3. Don't remember

13. When do you check patients for those infectious pathogens like HIV & Hep B in ER?

1. When patient suspected for it 2. During admission in all patients 3. Not at all

14. What are the sources of infection in hospital setting? **Circle all that apply.**

1. Health personnel 2. Contaminated equipment 3. Contaminated air
4. Other patients 5.others specify----------

PART II Attitude

1. Do you agree that, in the absence of universal precaution hospital facilities can be the source of infection and epidemic diseases?

   1. Strongly agree 2. Agree 3. Don't know 4. Disagree 5. Strongly disagree
2. Have you ever given BP cuff for decontamination after using it for bleeding patients in ER?
   1. Yes 2. No
3. Do you think that oxygen delivery materials like mask, nasal cannula & prong reusable?
   1. YES 2. NO
4. Do you think that needles should be recapped after use? 1. Yes 2. No
5. Do you think that recapping is the cause for needle prick injury 1. Yes 2. No
6. Do you agree the reuse of laryngoscope in ER after decontamination? 1.agree 2.disagree
7. How do you estimate the importance of hand washing in ER? 1. High 2. Medium 3.minimum

8. Do you think the recognitions and support of ER heads is important for successfulness of universal precaution practice? 1.yes 2.NO
9. Do you agree, distribution of infection prevention materials in ER is important for successfulness of universal precaution practice? 1.yes 2.NO
10. Does displaying of infection prevention postures in hospitals can contribute to universal precaution?
    1. Yes 2.NO

Part III Practice

1. Did you wash your hands before touching the patients? 1. YES 2. NO
2. If **yes** Q 1 how often does you wash your hands? 1. Always 2. Sometimes
3. If your answer is NO or some times for Q 1, what were the reasons?
   1. Inaccessibility of hand washing materials 2. Not always necessary 3. Emergency condition
   4. Absence of hand washing materials 5. I use glove 6. Other ----------
4. Did you wear PPE before touching the patients? 1. YES 2. NO
5. If yes in Q 4 Which device did you use in bleeding patients in ER?
   1. Apron 2. Utility gloves (double glove) 3. Boots/shoes
   4. Eye protectors/ Goggle 5. Masks 6. Gowns
6. If NO Q 4 why? 1. It is emergency situation 2. Inaccessibility of equipment 3. Absence of PPE in ER
7. Do you wear gloves during invasive procedure? 1. Yes 2. NO
8. Have you ever had needle stick injury? 1. Yes 2. No
9. If yes how many times? 1. One / 1year 2. 2times/year 3. >3 times
10. Did you properly discard used materials per UP guideline? 1. Yes 2. No
11. If NO for Q 10 why? 1. Absence of waste container 2.inaccessablity to waste container
    3. I don't know where to discard 4. Other specify ----------
12. Have you ever reused needle or syringe? 1. Yes 2. No
13. did you use & throw nasal cannula/prong & mask per patient in ER? Yes No
14. If NO for Q 13 why? 1. Few in number 2. It is reused in ER
    3. Decontaminated always 4.Doesn't harm p'ts
15. When reusing it Q 13, did you check whether it is decontaminated or not? 1. Yes 2. No
16. Do you give laryngoscope for decontamination after intubation? 1. Yes 2.NO
17. If NO for Q 16 why? b/c 1. I simply put it there after use 2.I have never used it 3.it is re-usable

Do you have any suggestions for improving universal precaution in ER? ----------
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SECTION II

Observation checklist

A. **Materials available in ER**

1. Amount of chlorine available in the store or department ( ) in liter
2. Amount of utility glove available in the store or department ( ) in number
3. Amount of examination glove available in the store or department ( ) PK of 100
4. Amount of mask available in the store or department ( ) in number
5. Amount of apron available in the store or department ( ) in number
6. Amount of boots available in the store or department ( ) in number
7. Amount of safety box available in the store or department ( ) Pk
8. Amount of Syringe and needle available in the store or department

   I. 5 ml II. 10ml III. 50 ml IV. Others ---------

   ( ) Pk of 100 ( ) Pks of 100 ( ) Pks of 100

   ( ) Pks of 100 ( ) Pks of 100

1. How much prepared dressing set observed? ( )number
2. Is there alcohol swab in the emergency room? Yes No
3. Is there functional water source in ER facility? Yes No
4. Is there nasal cannula in ER? Yes(#) No
5. Is there oxygen mask in ER? Yes((#) No
6. Is the water available in all ER rooms?
7. Where is the soiled linen stored? I. On the ground II. In the drum III. Hamper bag
8. How are dressing sets stored? I.Socked in chlorine solution

   II.Socked in savalon solution

   III.In the boiler with water

   IV.Boiled/autoclaved and packed with clothes

   v. Other specify----------
9. Is there any sharp /needle collection box? I .Yes II. No
10. If yes in which rooms? mark I all II front III back IV critical room

    IV. procedure room
11. Type of sharp collection material I. Safety box/ card box/ II. Plastic pail with lid

    III. Plastic pail without lid I V. Other specify ---------
12. In which rooms? mark I all II front III back IV resuscitation room

    V. procedure room

13. How was the condition of the safety box or sharp container in ER?

I. Over filled

II .Torn and needles seen through the hole

III. Empty or few dirty syringed and needles

IV. Sharps mixed with other waste

14. In which rooms? mark I all II front III back IV resuscitation room

IV. Procedure room

15. Is there waste container in ER? I .Yes II. No III. Not available

16. In w/c rooms? mark I. all II front III back IV resuscitation room

IV. Procedure room

17. Is there a written material or picture for risk Communication in ER/ working room? I. Yes II. No

18. Are there adequate windows for ventilation in ER? YES NO other conditions -------

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SECTION III

B. **OBSERVATION OF ACTIVITIES**

1. Sex of observed health professional? I. Male
   II. Female
2. Qualification /Profession: 1. Resident 2. Emergency medicine Msc holder 3. MSC student
3. Does the emergency professional explain the procedure to the patient?
   I. Yes II. No
4. When did the health care provider wash his or her hand?
   I. Before commencing the procedure
   II. After completing the procedure
5. At the time of observation does the emergency care provider wear personal protective Equipment /PPE? I.YES II.No III.Not available
6. Does the health professional checks weather the beds are decontaminated or not before admission of the patients? I.YES II. NO
7. Which one of the PPE was witnessed? Mark when observed

I. Apron	I.YES	II.No	III.Not available
II. Utility gloves (double glove)	I.YES	II.No	III.Not available
III. Head cover	I.YES	II.No	III.Not available
IV. Boots/shoes	I.YES	II.No	III.Not available
V. Eye protectors/ Goggle	I.YES	II.No	III.Not available
VI. Masks	I.Yes	II.No	III.Not available
VII. Gowns	I .Yes	II.No	III.Not available

8. Have you observed when recapping of the needle occurring?
   I. Yes II. No
9. How was the technique of recapping?
   I. Single hand scoop technique II. Two hand technique III. Not recapping
10. Does the health care provider swab the vial tops?
    I. Yes II. No
11. Does the health care provider decontaminate medical instrument /equipment after procedure?
    I.YES II No
12. The decontamination solutions is prepared properly or changed daily? I. Yes II. No
13. At the time of observation was the examination/procedure coach decontaminated after procedure?
    I. Yes II. No
14. Did he/she discard the needle without recapping? I. Yes II. NO
15. Did the emergency professional wash his/her hand after removing the gloves? I. Yes II. No
16. The professionals discard the used needles properly in safety box? I. Yes II.No
17. Procedure observed during data collection? specify ----------
    ----
