

**ADDIS ABABA UNIVERSITY
SCHOOL OF HEALTH SCIENCES
DEPARTMENT OF EMERGENCY MEDICINE**



**ASSESSMENT OF KNOWLEDGE AND PRACTICES OF UNIVERSAL
PRECAUTION AGAINST BLOOD BORNE PATHOGENS AMONG
DOCTORS AND NURSES IN ONE FEDERAL AND THREE REGIONAL
PUBLIC HOSPITALS AT ADULT EMERGENCY ROOM IN ADDIS
ABABA, ETHIOPIA, 2018.**

BY:

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Assessment of Knowledge and Practices of Universal Precaution
against Blood Borne Pathogens among Doctors and nurses in One
Federal and Three Regional Public Hospitals at Adult Emergency
Room in Addis Ababa, Ethiopia.

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This is to certify that the thesis prepared by Yohanis Asmr, entitled: Assessment of Knowledge and Practices of Universal Precaution against Blood Borne Pathogens among Doctors and Nurses in One Federal And Three Regional Public Hospitals at Adult Emergency Room in Addis Ababa, Ethiopia and Submitted in Partial fulfillment of the requirement for the degree Master of science complies with the regulation of the University and meets the accepted standard with respect to originality and quality.

Approved by the board of examiner

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Abbreviation

AABET	Addis Ababa Burn, Emergency, and Trauma Center
BBPS	Blood Borne Pathogens
BBV	Blood borne virus
CSF	Cerebro Spinal Fluids
GP	General Practitioner
HIV	Human Immune Virus
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HCWs	Health Care Workers
MENELIK II RH	Menelik II Referral Hospital
PPE	Personal Protective Equipment
PEP	Post Exposure Prophylaxis
SNNPR	Southern Nation Nationalities and Public REGION
TASH	Tikure Anbessa Specialized Hospital
UPABBs	Universal Precaution against Blood borne pathogens
UBBFP	Universal Blood and Body Fluid Precaution
UPs	Universal Precautions
YEKATIT 12 HMC	Yekatit 12 Hospital Medical Colleges
ZEWDITU MRH	Zewditu Memorial Referral Hospital

Abstract

Background: Universal precaution against blood borne pathogens means infection control techniques to pathogenic microorganisms that are present in human blood and can cause disease in humans. This study was intended to assess knowledge and practices of universal precaution against blood borne pathogens among doctors and nurses in one federal and three regional public hospitals AddisAbaba, Ethiopia.

Objective: To assess knowledge and practice of universal precaution against blood borne pathogens among doctors and nurses in one federal and three regional public hospitals in an adult emergency room in Addis Ababa, Ethiopia 2018.

Methods: Institutional based cross sectional descriptive study was conducted, from February 19, to march 31; 2018. Data was collected by using pre tested questionnaire and stratified random sampling method was used to select respondents from four selected public hospitals. Frequencies, percentage and graphs were used for descriptive purposes and cross tabulation and chi square test were used to measure the association between variables.

Result: The mean knowledge score of universal precaution measures was 10.3 out of 14 knowledge items. Out of 32 doctors 30 (93.8%) of them have good knowledge and out of 91 nurses, 79 (86.8%) have good knowledge. The mean practices level of the study subject was 8.5 out of 12 practice items. Majority, 67 (73.6%) of nurses have good practice than doctors which accounts 7 (21.8%). Profession was significantly associated with practice level of respondents with (p -value = 0.000).

Conclusion: In conclusion both nurses and doctors have good knowledge of universal precaution measures. However, nurses have good practical level than doctors. Employment orientation and incorporated educational and training programs for the newly employed health workers and sustainable supply systems are recommended to each hospital managements.

Key words: knowledge, practices, doctors and nurses, universal precaution, blood borne pathogens.

CHAPTER: ONE

1 Introduction

1.1 Background

Universal precautions (UPs) as defined by the center for disease control(CDC) is a set of precautionary measures designed to prevent transmissions of human immunodeficiency virus (HIV), hepatitis B virus (HBV), and other blood borne pathogens when providing first aid or health care” (CDC, 1997)[1].Universal basic precautions assume that anybody in the hospital specially patients, is potentially a carrier of blood borne pathogens(BBPs) and therefore all patients are treated in the same way as though they were infected. In practical terms, it includes 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 needs provision of protective materials, proper training of health care providers and adhere to sterilization and disinfection protocols. One group of people at a relatively higher risk of exposure is health care workers[1,2].

The term universal basic precautions were introduced in 1985 by Garner. 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”. Gerber ding et al also defined universal precaution: “the routine uses of appropriate barrier and techniques to reduce the likelihood of exposure to blood and other body fluids and tissues that may contain blood borne pathogens. Universal precaution against lood borne pathogens (UPABBP) means infection control techniques to a pathogenic microorganism that are present in human blood and can cause disease in humans[2,3].

The pathogens contain important occupational hazards to health care workers who come and time to time contact with theirpatients ‘blood and body fluids (BBFs), [4]. Health care workers (HCWs) universal precaution against blood borne pathogens (UPABBP) is essential components of any strategy to prevent disease that can transmits due to BBFs[5]. Health care providers those who are prone to infections with blood borne pathogens are nurses, laboratory technicians, surgeons, housekeepers, morgue technicians and non-nursing

attendants[4,6].Nurses are likely to be exposed to microorganisms during their daily practice due to their close and frequent direct contact with patients[7].Doctors in particular, are also often exposed to infection with blood-borne pathogens, during physical examination and patient assessment and becoming new comers to medical practice and having amongst others, to take responsibility of venipunctures for the sake of collecting blood sample for laboratory investigations, or administering intra-venous medications[8].

In many countries for many years health care workers have been infected with HIV as a result of their work [9].The main cause of infection in occupational settings is exposure to HIV infected blood via a percutaneous injury. Occupational exposure to BBPs from needle sticks and other sharps injuries is a serious problem, but it is often preventable[9].

The world health organization (WHO) estimates that, of the 35 million health care workers worldwide, three million experiences percutaneous exposures to blood pathogens each year. Among these exposed health care professionals two million were exposed to HBV; 0.9 million to HCV; and 170,000 to HIV[10]. A study done in different literature indicates that the average risk of seroconversion after a single percutaneous exposure to blood borne pathogen is approximately 2% of HCV, 6% - 60% for HBV, and 0.1% - 0.3% for HIV.Over90% of these infections take place in low-income countries[10].

Interventional measures have been proposed to minimize exposure of health care workers and patients to infection with the implementation of UPs as one of the strategies. In 1983, the United States (CDC) published a document that recommended blood and body fluid precautions when a patient was known or suspected to be infected with blood and body fluid precautions. In 1987, the CDC recommended that regardless of patient's infection status, the precautions must be consistently used. However, HCWs practices have been changed to decrease the continuing risks of exposure and to prevent spread of microorganisms they are not always followed UPABBP[11].

The level of practice of universal precautions by HCWs may differ from one type of HCWs to another. The differences in knowledge of UPs by HCWs may be influenced by their variable type of training[11,12]. The absence of an enabling environment in the health institution, such as a lack of constant running water or a shortage of personal protective equipment (PPE), would lead to poor practices with UPs[13,14].

Universal precaution practices are important as uncertainties about appropriate, safe working practices may lead to occupational hazards and cause injuries to staff. On the other hand, patients may be deprived from appropriate care due to fears or misunderstanding of staff towards the handling blood or body fluids. Therefore, proper knowledge and practices of universal precaution against blood borne pathogens by HCWs prevents them from exposure to infections and avoid the non-humanistic treatment of patient due to fear of infection[10,14]. Despite, Ethiopian federal minister of health have clearly defined policies and procedures to implement UPspractice, less attention is given in facility level for the preventive strategies in reducing occupational injuries and infection in Ethiopia[14].

1.2. Statement of the problem

Blood borne pathogens such as HIV, HBV, and HCV are the most serious and can contribute as a major threat in the workplace[10]. In foreign literature as to the contraction of blood and body fluid pathogens amongst hospital workers from iatrogenic causes. For example, WHO estimated in 1995 that unsafe injection accounted for 3.9% to 7.0% of new HIV/aids infection worldwide[4].

As study conducted in Nigeria has reported that the global burden of blood borne infections from contaminated needles include HIV, 5.4%; HBV, 31.9%; and HCV, 39.9%[4].

A study done in India reported that which is taken from another source “Akuna et.al ,Iran in 2003 , about 70% medical, 74% of dental and 72% nurses reported that having at least one sharps injuries in their working place” [15].Needle stick injury prevalence in Ethiopia was17.5% annually which is attributed to risky habit and inappropriate standard precaution compliance[16].

Great efforts have been done finding ways to reduce the risk of transmissions to health workers and health service user by means of vaccine. However, HCWs practices have been changed to decrease the continuing risks of exposure and to prevent spread of microorganisms they are not always followed UPs. A recent study suggested that this is due to poor technical knowledge, lack of motivation, overwork, negative influence of inadequate behavior by more experienced staff members, failure to perceive risk, conflicts of interest, lack of equipment, stress, and difficulty in adapting to use UPABBP while they are practicing in the hospitals[9]. It is known that compliance with UPs practices requires appropriate attitudes from health workers over long periods of time, demanding motivation and technical knowledge of them[1,9].

A study done in Ethiopia TASH on emergency professionals on standard precaution among emergency professionals reported that, only 15(24.6%) of the respondents know the presence of post exposure prophylaxis after sustaining needle stick or sharp injuries while 46 (75.4%) didn't know[3].In health institutions of developing countries like Ethiopia, hand washing practice, even though not strict, it 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 the health institutions[3,14]. It also affected by lack of knowledge about the importance of hand-washing practice as a component of infection prevention[3].

Universal precautions (UPs) have been widely promoted in high-income countries to protect HCWs from occupational exposure to blood, and the consequent risk of infection with BBPs. In low-income countries the situation is very different. Universal precautions are often practiced partially if at all, thereby exposing the HCWs to unnecessary risk of infection with BBPs[10].

Therefore this study primarily intended to assess knowledge and practices of universal precaution against blood borne pathogens among doctors and nurses in the emergency room. Which is very is important differentiating the gap and implementing universal precautions against infectious pathogens.

And also there is no single study conducted specifically on knowledge and practices of UPABBBPs and assessing the necessary knowledge and practices of UPABBBPs or the skill on UPs and factors in hospitals as early as possible can give way to manage the limited resource available in the sector.

1.3. Significance of the study

The objective of the study is to assess knowledge and practice of universal precaution against blood borne pathogens among doctors and nurses working in adult emergency room of one federal (TASH) and three regional public hospitals. Assessing the necessary knowledge and practice of universal precaution against blood borne pathogens particularly those working in emergency situation is a life-saving procedures & activities are prior and identify factors affecting full compliance in hospitals as early as possible can improve quality of service and way to manage the limited resource available in the sector.

Findings from this study will be used by federal ministry of health, hospital management, and other stakeholders in planning and targeting appropriate measures/interventions to improve compliance to UPs mainly related to BBPs among doctors and nurses.

The result of this study 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 or equipment or create awareness among the emergency service workers mainly UPs related to BBPs. Finally, the result of this study will also serve as baseline information for further studies in the same area of study.

CHAPTER TWO: Literature review

Blood is the single most important source of HIV, HBV and other BBPs in the occupational setting, prevention of transmission must focus on blood and other body fluids containing visible blood. Emergency service workers and other staff working as a health care provider are at risk of exposure to serious and potentially life- threatening infections. Protective barriers reduce the risk of exposure to blood and other body fluids to which UPs apply.

Guidelines for universal blood and body fluid precautions (UBBFPs) developed by US center of disease control which have been adopted by the New South Wales department of health and all major Australia hospitals. These guide lines designed protect health care workers from occupational exposure to BBPs. Study done in Australian nurses to determine the degree of understanding and utilization of (UBAFPs)among 192 study participants 73% of nurses used (UPBBFPs)at all time, yet only 58% of nurses they always used glove when handling blood and blood equipment's[17]. Respondents aware of UPs reported use of protective equipment such as gloves, eye wear, mask and aprons. More women use protective barrier than men and more nurses reported use followed by medical technologists and medical doctors. Compliance for wearing gloves was 79%, masks 46%, eye goggle 25% and for using gowns/plastic aprons was 45% among medical doctors working in a hospital in Pakistan[18].

Protective barriers reduce the risk of exposure of the health care workers skin or mucous membranes to potentially infectious materials. Just a study over one half of the respondents indicated that they were provided with protective equipment most times[13]. However, the risk of occupational BBV infection for HCW in low-income countries is exacerbated by a range of factors, including the following: hospital overcrowding; lower ratio of HCWs to patients; limited awareness of the risks associated with exposure to blood; failure to implement UPs; inadequate supplies of basic safety equipment, including sharps containers, and disposable needles; and the need to handle contaminated needles and other sharps that are processed for reuse[18].

According to world health organization (WHO) estimates, in year 2002, sharp injuries resulted in 16 000 hepatitis C virus, 66 000 hepatitis B virus and 1000 HIV infections in

health care workers worldwide. Over 90% of these infections are occurring in low income countries, and most are preventable[15,18]. Healthcare associated infections (HCAIs) are a global problem worldwide both in developed and developing nations. In an advanced country like USA, in hospitals alone a health associated infection account for an estimated of 1.7 million infections and 99,000 associated deaths each year[19].

Developing countries, especially those in Sub-Saharan Africa, that account for the highest prevalence of HIV-infected patients in the world also report the highest incidences of occupational exposures. It has been estimated that 6200 HBV infections occur each year among HCWs in Sub-Saharan African (Pruss-Ustun et al., 2005)[20].

Recapping, disassembly, and inappropriate disposal increase the risk of needle stick injury[21]. The level of practice of UPs by health care workers may differ from one type of health care worker to another. The differences in knowledge of UPs by health care workers may be influenced by their different type of training. Various studies carried out among different categories of health care workers found that exposure to blood or other body fluids was approximately 9.3%[11].

2.1. Knowledge of universal precaution against blood borne pathogens

A study done in south Eastern Europe in Bosnia and Herzegovina knowledge among healthcare workers of the epidemiological characteristics of blood-borne infections, the risk of acquisition and available preventative measures is insufficient. The knowledge about transmissibility of BBPs was poor among HCWs. Gaps in knowledge were found relating to transmission of blood borne virus(BBVs) by saliva, stool, urine and cerebrospinal fluid. More than half of respondents believe that HIV, HBVs and HCVs can be transmitted through saliva and cerebrospinal fluid, and 30% of them believe it is transmitted through urine and feces[22].

A cross-sectional survey conducted on 215 HCWs in Malaysia 96.3% were above the mean score for knowledge of blood borne disease. Analysis of the groups showed staff nurses were the most educated (63.9) followed by medical doctors (19.5%) and assistance medical officers(16.6%).of the four major blood borne illness evaluated in this survey knowledge regarding HIV and HBV scored the highest, at 98.6% and 94.3% respectively[1].

A cross-sectional survey conducted amongst 277 HCWs working in 4 general hospitals in south Lebanon 67.1% were aware that needles should not be recapped after use; registered nurses and nursing students were more aware than physicians and nursing assistants (nurse) in this subject 30% of HCWs declared having had at least one occupational exposure to BBFs; 62.7% of all accidental exposure was reported to the department responsible for managing exposures. Percutaneous injuries were the most frequently reported [23].

A study done in Thailand on 468 doctors and 4539 nurses respondents 94.9% of doctors and 85.5% nurses were knowledgeable of UPs[24].

A study was conducted on UPs' practice among staff nurses in 2002 in Nehru hospital Pgimer Chandigarh shows that seventy 78% subjects had attained excellent knowledge score and 22% attained good knowledge[12].

A cross-sectional study done in India on in December 2016 with semi structured self-administered questioners almost all of them have knowledge about UPs and personal protective equipment's. Only 44.3% nurses mentioned all the correct measures for universal precautions, 89.77% nurses were aware about health hazards of needle stick injury but only 67.05% correctly reported about how needle stick injury can be prevented[25].

A study was undertaken, in the same country involving 266 HCWs (response rate, 87%) from 7 rural north Indian health care settings. Information was gathered regarding compliance with UPs and a range of other relevant variables that potentially influence compliance (e.g., demographic information, perception of risk, knowledge of blood borne pathogen transmission, perception of safety climate, and barriers to safe practice). The study revealed that knowledge and understanding of UPs were partial, and UPs compliance was suboptimal. For example, only 32% wore eye protection when indicated, and 40% recapped needles at least sometimes. after controlling for confounding, compliance with UPs was associated with being in the job for a longer period, knowledge of blood borne pathogen transmission, perceiving fewer barriers to safe practice and a strong commitment to workplace safety climate[18].

A study conducted in western Saudi Arabia to assess knowledge and practices of healthcare workers (HCWs) in relation to blood borne pathogens self-administered questionnaire was distributed assessing demographic characteristics, knowledge and practices of physicians, nurses and technicians on risks of exposure and prophylaxis against HIV, HBV and HCV infections. A total of 466 participants (151; 32.4 % physicians and 315; 67.6 % nurses/technicians) completed the questionnaire. Almost two thirds of the physicians (60.9 %) and half of the nurses/technicians (47.6 %) had history of exposure to risks of blood borne infection[26].

A study under taken in December 2009 in south east Nigeria the knowledge of UPs measures for both doctors and nurses were good which account 97.0% and 92.0% respectively [4].

A cross-sectional study conducted in Jamaica university of West Indies the majority (64.0%) of the health care workers had knowledge of UPs while just over one-quarter had no knowledge. The knowledge of universal precautions was highest among women compared with men, and among nurses (90.0%), followed by medical doctors (88.0%) and medical technologists (70.0%) were knowledgeable[11].

A cross-sectional recent study conducted on the knowledge, attitude and practice of universal precautions among medical and nursing students in tertiary care hospital of India the overall correct knowledge response of nursing students were 85.6% whereas 75.6% were medical students[27].

Study done in eastern Ethiopia about 80.8% HCWs reported that regularly follow UPs, 20.2% of HCWs were exposed to BBF in the past 12 months and about 44.8% of HCWs reported that they were dissatisfied with supply of infection prevention materials[16].

A cross sectional study design both qualitative and quantitative done in Ethiopia at TASH health care workers to investigate the compliance of UPs the knowledge of possible infection prevention measure for HIV exposure through accidental injury 86(82.7%) answered washing immediately with soap/antiseptics. Most of respondents 93 knew that

personal protective materials are necessary if procedures and patient care activities likely to cause splashes of blood and deep body fluids[14].

A study done in the same country 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 [3].

2.2. Practices of universal precaution against blood borne pathogens

Blood born infection like HBV,HIV and HCV potentially fatal infection which have no cure and vaccine (except hepatitis b) and the corner stone of prevention in the health care setting is a simple practice of UPs[28].

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 or single-use disposable injection equipment for all injections is highly recommended, serializable injection should only be considered if single use equipment is not available and if the sterility can be documented with time, steam and temperature 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 [2,29].

A study undertaken in southeastern Europe in Bosnia and Herzegovina 65% of HCWs reported that they carried out at least one procedure involving contact with blood or other body fluids daily. The frequency of occupational injuries, inclusive of the month preceding the survey, was high: 59.4% of healthcare workers reported having had skin contact with patient's blood (1–10 times), 36.6% experienced accidental needle sticks injuries (1–3

times), 29.6 % had sharps injuries (1–10 times), and 27.0% reported contact of eye and other mucosa with patients' blood (1–3 times). Slightly less than half of respondents (47.9%) protected themselves regularly in every procedure. If contact with patient blood or other body fluid is possible 16.9% of HCWs would always wear gloves, 17.7% mask and 2.9% protection glasses, less than 30% of HCWs reported use of safety containers for disposal of contaminated medical waste, and 65.4% put it together with other waste into plastic bags[22].

A cross-sectional study conducted in Malaysia showed that the mean score for practice of UPs was 7.95 (SD 2.15), with the highest score being 10.0 and the lowest being 2.0. a total of 75.6% scored above the mean score, 34.4% (74/215) scored the maximum total score of 10[1].

A study conducted in Lebanon general hospital towards HCWs 43.3% of HCWs expressed that they use gloves all the time for every activity of care[23].

Study done in Thailand 75% of doctors and 47% of nurses washed their hands after caring for patients, and 16% of doctors and 50% of nurses rubbed their hands with alcohol after washing them with an antiseptic. Among all doctors and nurses in the study only 47.1% of the doctors and 27.9% of nurses reported that they would take precautions with all patients[24].

A study was conducted on universal precautions' practice among staff nurses in 2002 in Nehru hospital PgimerChandigarh mean compliance with hand washing was 7.42%, which was poor. Compliance with wearing gloves was also poor (14.97%), mean compliance with wearing gloves was 80.95%, compliance with safe disposal of sharps was poor i.e. 7 % [12].

A cross-sectional descriptive study design undertaken in south east Nigeria regarding knowledge and practices of universal precaution on nurses and doctors the practice of both nurses and doctors 75.0% and 15.2% respectively[4].

A study aimed at assessing the observance of UPs by HCWs in Abeokuta, Ogun state, Nigeria was conducted in May 2006. There were 433 respondents, 211 (48.7%) of which were trained nurses. About a third of all respondents always recapped used needles.

Compliance with no recapping of used needles was highest among trained nurses and worst with doctors. Less than two-thirds of respondents (63.8%) always used PPEs, 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. ahigh percentage (94.6%) of HCWs observed hand washing after handling patients. The use of barrier equipment was variable in the institutions studied[13].

Study done in Ghana forty-two (88%) of respondents indicated that they wore gloves routinely when performing invasive procedures on patients, but 8 (16%) did not wore glove due to no time to look for in emergency situation, sometimes gloves are not readily available, better control over the iv cannula without glove 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[2].

A cross-sectional study conducted atthe Jamaica university of West Indies there was a significant ($p < 0.001$) statistical relationship between utilization of protective gear and gender of the respondents. Approximately 29% of men reported that they did not use any protective gear compared with 6% of women. This indicates that men are 4.6 times more likely not to use protective gear than their female counterparts. Furthermore, women are 2.2 times more likely to use protective gears (12.3%) at all times than men (5.7%). Men, on the other hand, were most likely to utilize protective gears sometimes (47.1%) and women most times (48.5%). More nurses reported frequent use of protective gear followed by medical technologists and medical doctors. Over half of the porters (54%) reported no use of protective gear and none reported using it most or all of the time. The majority of the respondents (59.3%) indicated that there were no penalties for not wearing protective gears[11].

A cross-sectional recent study conducted on knowledge, attitude and practice of universal precautions among medical and nursing students compliance regarding universal precaution was poor and majority of medical and nursing students were not using goggles when

required. Forty four percent (44%) of medical students and 62% of nursing students had habit of recapping needles[27].

A study conducted 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[30]. 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 was 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[31].

A recent study done in Gondar university hospitals among HCWs response rate of 96.2% out of which 263(64.6%) were males. The mean age of the respondents was 27.9(4.6) years. The most professional categories were nurses162 (39.8%), followed by intern doctor 80 (19.7%). The mean (SD) work experience was 3.7 (3.58) years ranging from 1 to 36 years. The participate in this study 80.6%, 18.4%,and39.6%reported that they always wash hands after removal of gloves, before touching patient, and before clean or aseptic techniques, respectively. Only 32.4%of the respondents reported that they always protect themselves against body fluid exposure regardless of the diagnosis of patient's while88.7% of HCWs reported that they always wear gloves whenever there is a possibility of exposure to any body fluids. The compliance of the HCWs with wearing a waterproof apron and eye goggles whenever there is a possibility of body fluid splashing and the compliance of HCWs in segregation of infections and noninfectious wastes in to appropriate dust bins were found to be below50%[32].

CHAPTER THREE: Objective

3.1. General objective

- To assess knowledge and practice of universal precaution against blood borne pathogens among doctors and nurses in one federal and three regional public hospitals in an adult emergency room in AddisAbaba, Ethiopia 2018.

3.2. Specific objectives

- To assess knowledge of doctors and nurses towards universal precaution against blood borne pathogens
- To assess practice level of doctors and nurses towards universal precaution against blood borne pathogens
- To determine factors associated with the knowledge level of universal precaution against blood borne pathogens
- To determine factors associated with the practice level of universal precaution against blood borne pathogens

CHAPTER FOUR: Materials and Methods

4.1. Study area

The study was done in Tikure Anbessa specialized hospital(TASH), Yekatit 12 hospital medical college (Y12 HMC), Menelik II referral hospital (Menelik II RH) and Zewditu memorial referral hospital(Zewditu MRH) hospital in AddisAbaba, Ethiopia. The study conducted in an adult emergency room of those four selected public hospitals. The TASH one of the emergency center in AddisAbaba, which was established in 1973 during the regime of emperor Haile Selassie[3]. In adult emergency room of this hospital there is the high patient flow rate where people get emergency medical and nursing care services[3].

Zewditu MRH also found in central AddisAbaba which was built, owned and operated by the seventh - day Adventist church, but it was owned by government during the durg regime in 1976[33]. This hospital is the leading hospital in the treatment of ART patient and currently treats over 6,000 patients each month, and also giving general emergency health services[33]. Menelik II RH and Yekatit 12 HMC are also the oldest hospitals, which are providing general emergency management services and other health and health, related services[34].

Therefore, all four public hospitals were selected as a study area due to their crowded working environments which is expected as having a high prevalence of blood borne infectious disease and since giving urgent emergency medical services which could result in occupational exposure unless universal precaution measures are undertaken.

4.2. Study design and period

Institutional based cross sectional descriptive study was carried to assess knowledge and practices of universal precaution against blood borne pathogens among doctors and nurses who works in TASH, Menelik II RH, Yekatit 12 hospital, Zewditu memorial referral hospital adult emergency room from February 19, 2018 to March 31, 2018

4.3. Population

4.3.1. Source of population

All physicians and nurses who are working in TASH, Yekatit 12HMC, Zewditu MRH and Menelik IIRH of the adult emergency room.

4.3.2. Study population

All doctors and nurses who were working in TASH, Yekatit 12HMC, Zewditu MRH and Menelik II RH adult emergency room during the study period .

4.4. Inclusion and Exclusion criteria

4.4.1. Inclusion criteria

- All physicians (seniors and residents, general practitioners) and nurses (Diploma, BSC and MSC) who were working in adult emergency department and who were willing to participate in the study.

4.4.1. Exclusion criteria

- All physicians and nurses who were not directly participate in patient care activities.
- All physicians and nurses who were not present during the study period
- All physicians and nurses who were in their annual leave.

4.5. Variables

4.5.1. Dependent variables

- Knowledge of physicians and nurses on UPSABBP
- Practices of physicians and nurses on UPSABBP

4.5.2. Independent variables

- Socio demographic characteristics (age, sex)
- Educational level
- Year of work experience
- Training on infection prevention
- Presence of infection prevention guideline
- Availability of personal protective equipment

4.6. Sampling techniques and procedures

The study was conducted in AddisAbaba city in four selected public hospitals. These hospitals were selected purposively. To obtain study subjects from selected hospitals, stratified random sampling method was used. Stratification was into two strata (doctors and nurses). Then, the number of doctors and nurses in the selected public hospital who were participating in emergency management activities were proportionally allocated in accordance with the total number of source population, which is (191) obtained from each emergency department coordinator's as sampling frame. Finally, the respondents were selected by simple random sampling using lottery method from the framed list.

4.7. Sample size determination

The sample size was determined using single population proportion formula, based on the

following:
$$ni = \frac{(z_{\frac{\alpha}{2}})^2 p(1-p)}{d^2}$$

$$ni = (1.96)^2 \cdot 0.5(1-0.5) / (0.05)^2 = 384$$

Where: ni= sample size

$Z_{\alpha/2}$ =standard normal value corresponding to the desired level of confidence

d= error of precision

p=estimated proportion of an attribute

Assumptions:

Margin of error d= 5% is accepted

A confidence interval of 95% is assumed ($Z_{\alpha/2} = 1.96$)

50 %(0.5) of population proportion was considered

For population less than 10,000 we use correction formula as follows:-

$$nf = \frac{\frac{ni}{1+ni}}{N} = \frac{N \times ni}{N + ni}$$

Where:

nf = the desired sample size when the population is less than 10,000

ni= 384, i.e. non corrected sample size

N = 191, i.e. the size of the source of the population

$$nf = \frac{191 \times 384}{191 + 384} = 127.5 = 128$$

$$n1 = \frac{N_{TASH} \times nf}{N} \text{ Where } N_{TASH} = 116 \text{ (number of doctors and nurses in TASH)}$$

$$n2 = \frac{N_{ZMRH} \times nf}{N} \text{ } N_{ZMRH} = 30 \text{ (number of doctors and nurses in Zewditu MRH)}$$

$$n3 = \frac{N_{MIIRH} \times nf}{N} \text{ } N_{MIIRH} = 23 \text{ (number of doctors and nurses in Menelik II RH)}$$

$$n4 = \frac{N_{Y12MCH} \times nf}{N} \text{ } N_{Y12MCH} = 22 \text{ (number of doctors and nurses in Yekatitt 12 MCH)}$$

N=191 (total number of doctors and nurses in the selected hospitals)

$$n1 = \frac{116 \times 128}{191} = 78 \quad n3 = \frac{23 \times 128}{191} = 15$$

$$n2 = \frac{30 \times 128}{191} = 20 \quad n4 = \frac{22 \times 128}{191} = 15$$

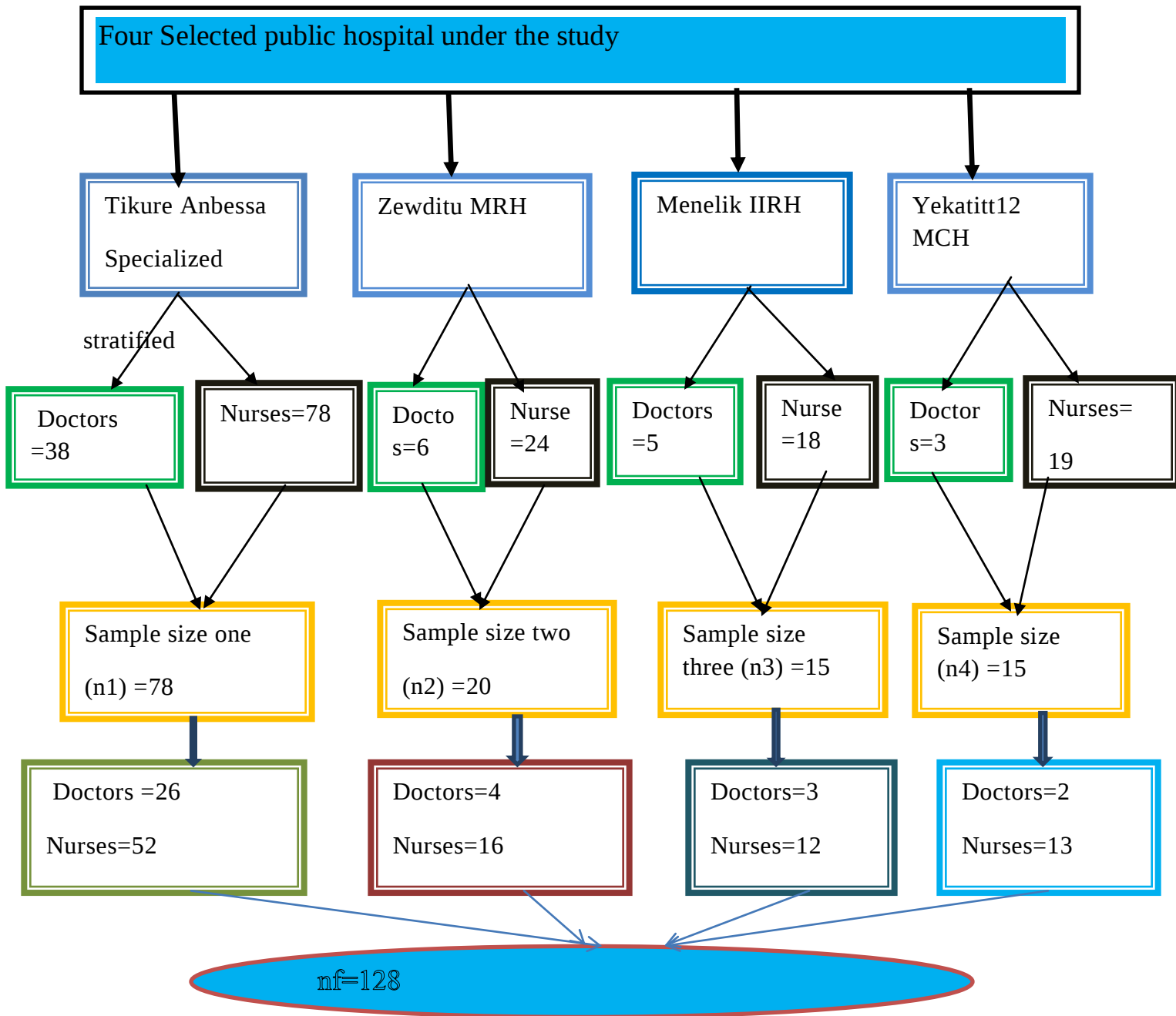


Figure 1:Proportional allocation number of doctors and nurses inTASH, Zewditu MRH, Yekatit12HMC and MIIRH, February 19, to march 31; 2018

4.8. Data collection tools and techniques

Data collected by using self-administrated structured questionnaire which was adopted from published literatures[3].The questionnaire consist of three parts: sociodemographic information, assessment of knowledge and practices. Knowledge was assessed using 14 questions which include multiple choice and “yes” or “no” questions. Practices were assessed in a similar way using 17 questions. Questionnaires were administered to doctors and nurses during working time and morning sessions. The data collectors were 10 BSC nurses, with one EMCCN masters supervisors with one data collector’s facilitator. Training was given for one day on clarification of some terms and assessment tools, aim of the study, concerning the need for strict confidentiality of respondent’s information, time of data collection, timely collection and reorganization of the data from the study area. The data collected for 12 days including training and pretest, facilitated by data collector’s facilitators and supervisors.

4.9.Data quality management

Data quality was managed during collection, coding, entry and analysis. Before the actual data collection time pre-test was conducted among 10% of the study population in AABET hospital to assess reliability of data collection instruments. Based on the pre- test result, corrective measures were taken on the data collection tools. At least one senior supervisor with proper training for each selected hospital was engaged and monitors each level of data collection to guide and ensure the data collectors follow the proper and preplanned method of data collection. At least 10 data collectors were recruited after having training on the overall objectives, methods and data collection instruments of the study. The supervisor has checked each collected data on a daily basis to make sure completeness.

4.10.Data entry and analysis

The data were entered into epi info version 7 and exported to SPSS version 23 for statistical analysis. At the beginning of the analysis, for those who got greater than or equal to the mean score of knowledge questions taken as good knowledge and for those responds practical questions above the mean were taken as good practices. For both knowledge and practical question that score below the mean were taken as poor knowledge and poor practices and coded as (1) good and (0) poor. Next the summations of 31 items were made. Then the variables were recorded and dichotomized (good/poor). Descriptive statics were carried out to illustrate means, standard deviations and frequency of the study variables. Frequencies, percentage, tablesand graphs were used for descriptive purposes. Cross tabulation and chi square test were used to measure the association between dependent and independent variables.

4.11.Ethical consideration

Ethical clearance was obtained from school of graduate study. Formal letter of cooperation was written from the department of emergency medicine, to TASH emergency nursing service directorate, Zewditu MRH, Yekatit 12 MCH, and to Addis Ababa health bero ethical review committee. Consent was obtained from the respondents and response of participants was kept confidentialities. Participants were informed that the benefit of the study, potential risk, about equity and the security of the data. Participants were informed that they can refrain from the study whenever they feel to do so. Only research team members were allowed to access the questioners and the responses given by the participants were not used for performance appraisal or as a component of work efficiency audit.

4.12.Dissemination and use of the result

The results of this study will be disseminated through publication in local or international reputable journals, presentation on annual scientific meetings, research conferences and AddisAbaba university department of emergency medicine, TASH nurses and doctor's directorate, and Yekatit 12 MCH, Menelik II RH and Zewditu MRH.And also to the office of all the four selected public hospital medical directors.

4.13. Operational definition

Knowledge: is awareness and understanding of doctors and nurses regarding UPs.

Good knowledge: about UPs: Refers to those study participants who scored points greater than or equal to the mean score of knowledge questions about the UPs.

Poor knowledge about UPs: refers to those study participants who scored points less than the mean score of knowledge questions about the universal precautions.

Practice: In this study it refers to the nurse's actions done them on the subject regarding UPs

Good practice: refers to those study participants who correctly respond to practice questions and score above the mean value.

Poor practice: refers to those study participants who correctly respond to practice questions and score mean value and below means value.

CHAPTER FIVE: RESULT

5.1. Socio demographic characteristics

From a total of 128 doctors and nurses, about 123 of them fulfilled inclusion criteria and participated in the study, yielding the response rate of 96.1%. Among those respondents 57 (46.3%) were females and 66 (53.7%) were males. The majority of the respondents age ranges were 22 to 27 years which accounts 64 (52%) with the mean age of 28 years. The work experience of the majority 91 (74.0%) of the respondents were less than 5 years (see table 1).

Table 1: sociodemographic characteristics of doctors and nurses in TASH, Zewditu MRH, Yekatit 12 HMC and Menelik II RH, February 19, to March 31; 2018

Variables		Doctors (n=32)		Nurse (n=91)	
		Number	Percent (%)	Number	Percent (%)
Age (year)	22-27	13	40.6	51	56.0
	28-33	16	50	30	33
	34-39	2	6.3	5	5.5
	>40	1	3.1	5	5.5
	Total	32	100	91	100
Sex	Male	20	62.5	46	50.5
	Female	12	37.5	45	49.5
	Total	32	100	100	100
Marital status	Divorced	1	3.1	1	1.1
	Married	11	34.4	40	44.5
	Single	20	62.5		55.5
	Total	32	100	91	100

Year of experience	<5	28	87.5	63	69.2
	5-10	4	12.5	23	25.3
	>10	0		5	5.5
	Total	32	100	91	100

5.2. Training status of the study participants

Among the study subject 77 (62.6%) had training on infection prevention. Of which 67 (73.6%) were nurses, whereas the remaining 10 (31.2%) were doctors. But from the total participants less than half of the respondents 46(37.4%) had no training on infection prevention at all.

5.3. Availability of infection prevention officer and guideline

About 79 (64.2%) of the respondents were knew about the presence of infection prevention office in the study area and, 44 (35.8%) were not knew. And also 76(62%) of the respondents were knew the presence of infection prevention guideline in the study area, whereas 47 (38%) of them said no guideline at all.

5.4. Knowledge score of study participants towards diseases transmission

Regarding diseases transmission majority of study respondents 119 (96.7.7 %) HIV, followed by 114 (92.7%) HBV, were reported as these diseases transmitted by dirty needle, sharps and blood or body fluids (figure 3).

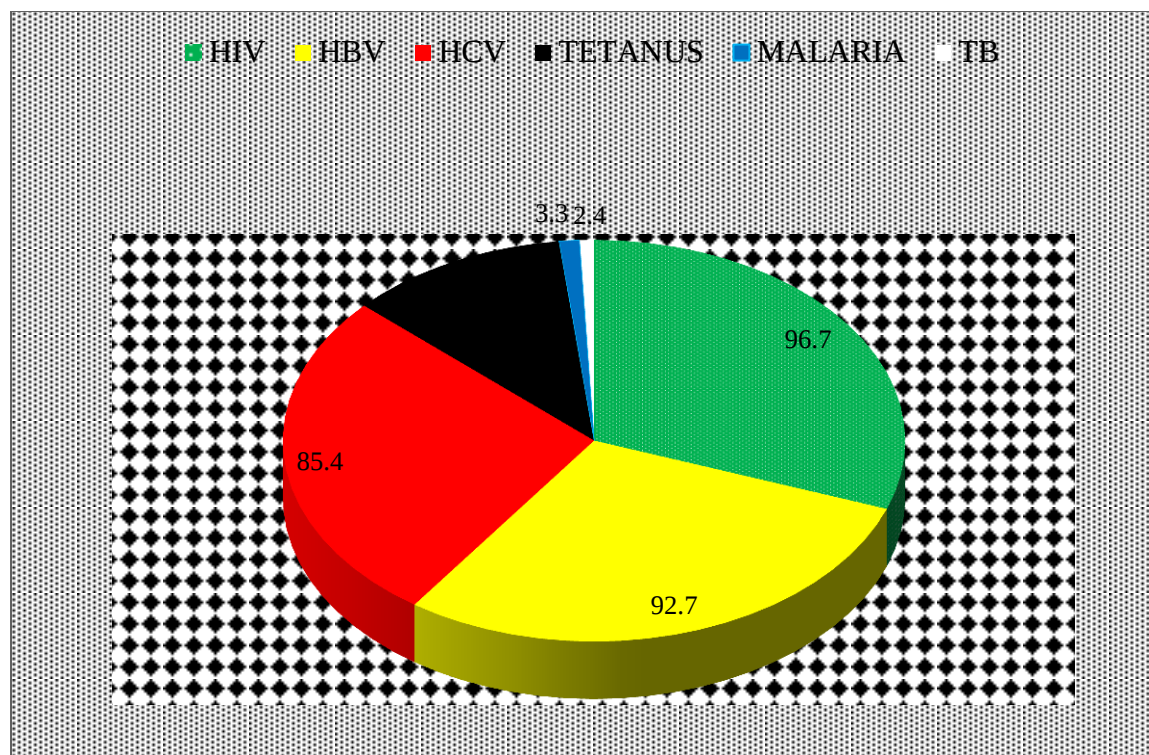


Figure 2: Knowledge level of doctors and nurses about disease transmission in TASH, Zewditu MRH, Yekatit 12 HMC and Menelik II RH, February 19, to march 31; 2018

5.5. Knowledge of benefit of proper waste disposal

Majority 119 (96.7%) of the respondents know the benefits of proper waste disposal as it is important to reduce the risks of spreading infections to staff, clients, visitors and cleaners. concerning improper waste disposal risks, majority 114(92.7%) of the respondents reported as it was risk for emergency /HCWs, 106(86.2%) for support staffs, 81 (65.9%) for community, 76(61.8%) for children, 99(80.9%) for clients& 24 were said for patient attendants.

5.6. Knowledge of study participants towards universal precaution against blood borne pathogens

About 64 (52.0%) of the study respondents were reported as they wash their hands always which is followed by 40 (32.5%) washes sometimes after touching surfaces near patients in the emergency room . Regarding blood or body fluid splash to body parts in the emergency room about 74 (60.2%) of them reported as they have history of splash and 45 (36.6%) were said no history of splash. Furthermore, about 121 (98.4%) of study

participants reported as needle was type of waste discarded in safety box which is followed by needle from IV bag tubes which accounts 106(86.2) . Concerning measures taken after exposure to blood or body fluid majority 105(85.4%) of them reported as they wash their hand with soap and water which is followed by visiting VCT which accounts 80(65%) (See Table 2).

Table 2: Knowledge towards universal precaution against blood borne pathogens among the study respondents in TASH, MIIRH, ZMRH and Y12HMCTASH, February 19, to march 31, 2018

Variables	Frequency	Percent
Handwashing after touching surface near patients		
Always	64	52
Often	15	12.2
Sometimes	40	32.5
Never	4	3.3
Total	123	100
Handwashing after touching patient intact skin		
Always	63	51.2
Often	15	12.2
Sometimes	39	31.7
Never	6	4.9
Total	123	100

Types of wastes to discarded in safety box		
Syringe	77	62.6
Needle	121	98.4
Dressing materials	1	0.8
Needle IV bag tubes	106	86.2
Lancet	105	85.4
Plastic materials	5	4.1
Latex gloves	1	0.8
Empty vials	8	6.5
Other contaminated sharps**	75	61.0
Total	499	405.7
Reason for reuse of syringe and needle		
Shortage of supply	23	18.7
Knowledge deficit	67	54.5
Carelessness	24	19.5
To reduce cost of treatment	9	7.3
Total	123	100
Chemicals used for decontamination	84	68.3
Chlorine	66	53.7
Savlon	19	15.4
Formaldehyde	87	70.7
Iodine	90	73.2
Alcohol	38	24
Other ***		
Total	384	305.3

Had blood or body fluid splash to eye, mouth or nose		
Yes	45	36.6
No	74	60.2
Don't remember	4	3.3
Total	123	100
Time of checking patients for infectious pathogens		
When patients suspected for it	60	48.8
During admission	59	48
Not all	4	3.3
Total	123	100
Measures taken after exposure to blood and body fluids		
Wash with soap and water	105	85.4
Wash with alcohol , iodine , chlorine	42	34.1
Visiting VCT	80	65.0
Seek PEP	74	60.2
Report to head person	61	49.6
Others *	25	20.3
Total	387	314.6
Source of infection		
Health personnel	87	70.7
Contaminated medical equipment	111	90.2
Contaminated air	93	75.6
Other patients	62	50.4
Others****	24	27.6
Total	387	314.6

Other contaminated sharps**=broken glasses others****=insect & small animals

Other***=H₂O₂other* =consulting physicians

NB each of the percentage cannot be add up to 100 % because respondents should choices several responsesit could be more than one responsefor multiple answer question*

5.7. The mean knowledge score of the study participants

The mean knowledge score of all participants was 10.3 out of 14 knowledge items. (See figure 3).

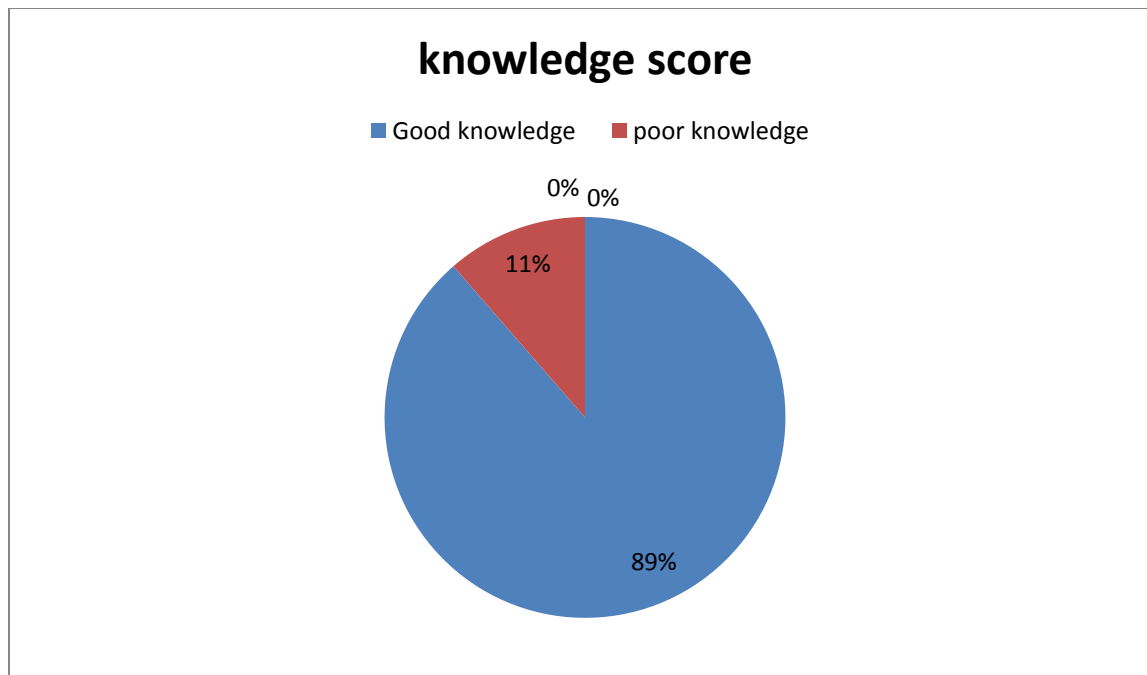


Figure 3:Knowledge score of the study participants inTASH, Zewditu MRH, Yekatit12HMC and MenelikiIRH, February 19, to march 31, 2018

5.8. Practices level of respondents towards universal precaution against blood borne pathogens

Among the total of the study participant majority 63 (51.2%) of them were reported as they were didn't wash their hands before touching the patient and 60 (48.8%) were washed their hands. Concerning the reasons of not washing their hand or wash sometimes, majority 31(51.7% were said due to inaccessibility of hand washing materials followed by emergency condition of the activities which accounts 27(45%). Regarding utilization of PPE about 80 (65%) was wearing PPE before touching the patients.

Regarding needle prick injury 39 (31.7%) had sustained needle prick injury and from those sustained needle prick injuries majority 27 (22%) were sustained once a year, followed by 9(7.3%) were sustained twice within a year. The majority of the study participants 117(95.1%) didn't use and throw materials like nasal cannula, prong and face mask .from the total respondents about 90 (74%) were reported as they were decontaminate Laryngoscope after using it for intubation. (See Figure 4) and (see table 3).

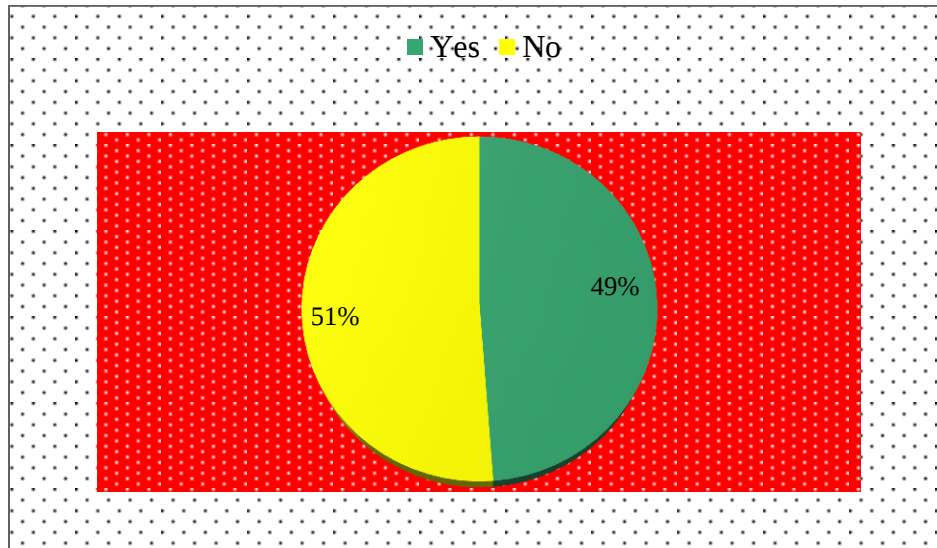


Figure 4:The practice level of doctors and nurses on hand washing before touching the patients TASH, Zewditu MRH, Yekatit12HMC and MenelikIIRH, February 19, to march 31, 2018

Table 3:Practice level of study participants towards universal precaution against blood borne pathogens among study respondents in TASH, MIIRH, ZMRH and Y12HMC, February 19, to march 31, 2018

Variables	Frequency	Percent
Reasons for not washing hands		
Inaccessibility of hand washing materials	31	51.7
Not always necessary	21	35
Absence of hand washing materials	15	25
Emergency condition	27	45
I use glove	12	20
Other*	1	1.7

Wearing PPE before touching the patient		
Yes	80	65
No	43	35
Device used as PPE		
Apron	37	46.3
Mask	59	73.8
Utility glove	71	88.8
Gown	61	76.3
Eye protector glove	29	36.3
Boots shoes	42	42.5
How many times you sustained needle stick injury		
One/1 year	27	22
2 times/year	9	7.3
>3 times	3	2.4
Reused of medical equipment's		
Yes	6	4.9
No	117	95.1
Giving or decontaminate laryngoscope after use		
Yes	79	64.2
No	44	35.8

5.9. Practices score of the study participants

The mean practices score of over all the study participants' were 8.56 out of 12 practices item (see figure 5)



Figure 5:Practices score of the study participantsin TASH, Zewditu MRH, Yekatit12HMC and MenelikIIRH February 19, to march 31, 2018

5.10. Chi-square test Results

According to chi square test result there were significant associationsbetween knowledge score of respondents with presence of infection control officers($P=0.018$), infection prevention guidelines($P=0.033$) and respondents response of hand washing before touching patients($P=0.035$). Significant statistical association also found between practices score with professional categories ($P=0.000$)(Table 4 and table 5).

Table 4: Distribution of Knowledge of the study subject with Chi-square test Results in TASH, Zewditu MRH, Yekatit 12 HMC and Menelik II RH February 19, to March 31, 2018

Characteristics		Knowledge score				x ² P	
		Poor		Good			
		Number	%	Number	%		
Training Yes	No	8	17.4	38	82.6	2.631	0.105
		6	7.8	71	92.2		
Profession	Doctors	2	6.2	30	93.8	1.298	0.862
	Nurses	12	13.2	79	86.8		
Infection control officer Yes	No	9	20.5	35	79.5	5.590	0.018
		5	6.3	74	93.7		
Infection control guideline in ER	No	9	19.1	38	80.9	4.549	0.033
	Yes	5	6.6	71	93.4		
Wearing gloves duringinvasive producersYes	No	0	0.0	2	100	0.261	0.609
		14	16.6	107	88.4		
Discarded, used material per universal precaution guidelineNo Yes	No	2	5.3	36	94.7	2.641	0.153
	Yes	12	14.1	73	85.9		
Reused needle or syringe Yes	No	8	9	81	91	1.828	0.176
		6	17.6	28	82.4		
Wash hands before touching the patients No Yes	No	11	17.2	53	82.8	4.458	0.035
	Yes	3	5.1	56	94.9		
Wearing personal protective equipment’s before touching the patientsNo Yes	No	7	16.3	36	83.7	1.572	0.210
	Yes	7	8.8	73	91.3		
Have you ever had NSI Yes	No	8	9.5	76	90.5	0.907	0.341
		6	15.4	33	84.6		

Table 5: Distribution of Practices of the study subject with Chi-square test Results in TASH, Zewditu MRH, Yekatit12HMC and MenelikIIRH February 19, to march 31, 2018

Characteristics	Practices				x ²	P	
	Poor		Good				
	Number	%	Number	%			
Training	No	36	78.3	10	21.7	22.806	0.000
	Yes	26	33.8	44	55.7		
Profession	Doctors	25	78.1	7	21.9	27.028	0.000
	Nurses	24	26.4	67	73.6		
Infection control officer	No	27	61.4	17	38.6	3.290	0.070
	Yes	35	44.3	44	55.7		
Infection control guideline in ER	No	32	68.1	15	31.9	9.510	0.002
	Yes	30	39.5	46	60.5		
Wearing gloves during invasive procedures	No	1	50	1	50	0.00	0.991
	Yes	61	50.4	60	49.6		
Discarded, used material per universal precaution guideline							
	No	27	71.1	11	28.9	9.376	0.002
	Yes	35	41.2	50	58.8		
Reused needle or syringe	No	35	39.3	54	60.7	15.814	0.000
	Yes	27	79.4	7	20.6		
Wash hands before touching the patients	No	42	65.6	22	34.4	12.361	0.000
	Yes	20	33.9	39	66.1		
Wearing personal protective equipment's before touching the patients	No	36	83.7	7	16.3	29.352	0.000
	Yes	26	32.5	54	67.5		
Have you ever had NSI	No	36	42.9	48	57.1		
	Yes	26	66.7	13	33.3		

CHAPTER: SIX

6. Discussion

The finding of this study shows that, the mean knowledge score of all participants was 10.3 out of 14 knowledge items and the mean score of practice was 8.56 out of 12 practice items. The total knowledge score for both categories were 109(88.6%) had good knowledge score and 14(11.4%) were had poor knowledge score, as well about 30(94.5%) of doctors had good knowledge whereas 79(87%) of nurses had good knowledge score which is comparable with study conducted in south east Nigeria in which about 97.0% of doctors had good knowledge score whereas 92.0% nurses had good knowledge score[4]. This similarity might be the reflection of the fact that universal precautions have been incorporated in the nursing and medical student curriculum in the universities of these study areas.

Regarding practice level of the respondents, the total practices score for both categories shows that about 74(60.2%) had good practices and the remain 39.8% had poor practices. Nurses in this study had good universal precautions practice against blood borne pathogens accounts 67 (74%) as compared to a doctor which accounts 7 (21.8%). This study result slightly higher with the finding in the study done in southeast Nigeria among nurses and doctors which was 75% good practices for nurses and only 15% for doctors [4]. This difference might be the difference in sample size and methods.

According to this study 77(62.6%) of the study participants had training on infection prevention which was directly related to infection prevention of which 67(73.6%) were nurses whereas the remaining 10(31.2%) were doctor which was slightly higher than study conducted in TASH among emergency medicine professionals which accounts 30(49.2%) [3]. And study conducted in north wollo zone, Amhara region among health professionals which only 45.8% of the respondents had participated on training [30].

This difference might be due to lack of national guideline on infection prevention and learning materials in local language for HCWs, clients and communities on infection prevention. And also could be due to absence of continuous support and supervision to improve the UPs.

According to this study finding there was no significant knowledge difference among male and female on universal precaution against blood borne pathogens which accounts 59(89.0%) for male and 50(88.0%) for females were had good knowledge score which does not concur with the study done in Jamaica at the university hospital of the West Indies which was highest among women compared with men, and among nurses (90.0%), followed by medical doctors (88.0%) and medical technologists (70.0%)[11].

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 119 (96.7%) HIV, 111(92.7%) HBV, 105(85.4%) HCV, 36(29.3%) tetanus and only 7 respondents were said malaria and TB transmitted by dirty needle, sharps and BBFs which is similar with a study done in TASH among emergency medicine professionals those who said only HIV were 3 but all the respondents 100% said HIV, 48(95.1%) said HBV virus, 48(95.1%) said HCV, malaria 16(26.2%), tetanus 13(21.3%) and TB were 2[3]. This might be due to similarity in educational curriculum.

In this study only 53(43.1%) of the respondents knows the presence of PEP after sustaining needle stick or sharp injuries which is higher than the study conducted in TASH among emergency medicine professionals 15(24.6%) respondents knows the presence of PEP after sustaining needle stick or sharp injuries[3]. This might be due to the difference in sample size and methods.

According to this study 121 (98.4%) of the respondents were wearing gloves during invasive procedures. However, similar study done on Ghana Accra hospital showed that forty-two (88%) of respondents indicated that they wore gloves routinely when performing invasive procedures on patients. This showed that in this study have better practiced in use of gloves in emergency rooms than the practice of Ghana Accra hospital health professionals[2]. This could be fear of the infectiousness of diseases like HIV and HBV 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 88.8% respondents wear utility gloves, 76.8% wear mask, for invasive procedures and those who put on goggles were 36.3%. But study done in perceptions and practice of universal blood and body fluid precautions by registered nurses at a major Sydney teaching hospital showed that 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%)[17]. This shows significant difference because of inaccessibility and absence of personal protective device particularly goggles and faces masks in emergency room.

In this study, 60 (48.8%) of the respondents were checking patients for those infectious diseases like HCV, HBV & HIV in emergency room when patients suspected of the diseases, 59 (48.0%) 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, HBV & HIV. Forty five (36.6%) were experienced BBFs splash to mucus membrane. This indicates high number of respondents experienced blood or body fluid splash as compared to similar study done at SNNPR in which splash of BBFs on the mucus membrane 32.4%[31]. This difference might be because of the type of service given, and the nature of the department of work, for instance, in Greece, the study participants were nurses who were working in the emergency department of general hospitals, which has a higher risk of exposure to BBFs than other departments. The results of the Ethiopian findings were obtained in a hospital with a high patient flow and intensive health care services, whereas this study included HCWs working in health centers, which provide less intensive health care than hospitals[10].

Based on this study 56 (61.5%) of nurses were washing their hands always after touching patient intact skin whereas 7 (21.9%). This study disagree with the study done in Thailand 75% of doctors and 47% of nurses washed their hands after caring for patients, and 16% of doctors and 50% of nurses rubbed their hands with alcohol after washing them with an antiseptic[24]. Low level of hand washing practice among doctors in this study may be attributed to the absence of information during introductory on job training courses and orientation. In this study significantly higher number of trained study participants had good

compliance of hand washing practices than those who had no training on infection prevention.

According to this study the respondents who knows the risk of acquiring infection from their health facility waste if disposed improperly were 114(92.7%) for emergency /health care worker and 106(86.2%) were for supportive staffs. This study almost agree with the study done in TASH among emergency medicine professionals were 58(93%) for emergency /health care worker, and 59(96.7%) were for supportive staffs[3].

According to this study measures to be taken after needle stick or sharp injury among doctors and nurses were 105(85.4%) said washing with soap& water, 74(60.2%) were seeking PEP, 80(65.0%) were testing for HIV, 42(34.1%) were washing with alcohol and chlorine and 64(49.6%) were said reporting to the head person. This study disagree with previous study done on knowledge, attitude and practice of health care workers on universal precaution in north wollo zone, Amhara region, north eastern Ethiopia[30]. this might be training and occupational difference on counseling &testing for HIV, taking PEP and reporting to head personal after needle stick injury.

6.1. Strength and Limitation

6.2. Strength

- ❖ The study tools adapted from another study that who use standardized questionnaire.
- ❖ High response rate.
- ❖ Since there were no studies conducted specifically on knowledge and practices of universal precaution related to blood borne pathogens it can be contribute as baseline information to the facility.

6.3. Limitations

- ❖ There may have been recall bias
- ❖ Social desirability bias since the self-care practices of the study participants were based on self-reports and performance of these behaviors was not observed and could not be confirmed.
- ❖ There is limited literature available on previous studies involving doctors and nurses in the country

CHAPTER: SEVEN

7. Conclusion and recommendation

7.1. Conclusion

The study has demonstrated good knowledge of universal precaution against blood borne pathogens among both categories of respondents with the mean knowledge score of 10.3 out of 14 knowledge items and 8.6 mean practices score out of 12 practices item. However; nurses in this study exhibited a significantly higher compliance to UPs practices compared to doctors. Education and training of staffs on UPs principles and practice need to be implemented to provide the necessary knowledge on this important subject go a long way towards improving staff compliance to UPs practices. In addition, strict supervision, policy/operational guidelines/UPs guideline/ and information on job training courses and orientation need to be implemented. Factor influencing UPs practice training, absence of operational guideline or universal precaution guideline, don't knowing or absence of waste management and infection control officers were identified. Other factors include inaccessibility or absence of hand washing materials, emergency nature of the producers, and inaccessibility of equipment's has been identified.

7.2. Recommendation

Based on the findings of the study, the following recommendations are made:

To both professional categories

- ❖ Should check the patient for blood borne infection to all patients at admission.
- ❖ Should attempt to practice UPs always irrespective of the patient diagnosis.

To hospital management of each hospital

- ❖ Should facilitate to have employment orientation courses and incorporate educational and training programs for the newly employed health workers.
- ❖ Should facilitate and provide regular training including, UPs, initial biohazard handling, safety policies, safety activities, safety equipment and materials, ongoing monitoring and potential exposure of staff.

- ❖ Ensure the regular and adequate supply of needed materials and equipment's for effective UPs practices.
- ❖ Should facilitate the development of local guidelines to ups, including guidelines on PEP, which should then be placed at strategic locations in the hospitals as a reminder to all hospital workers.
- ❖ Furthermore, establish an infection control committee, and an infection control team to ensure the day-to-day monitoring, and surveillance of the availability of the necessary equipment's for, as well as the proper compliance to, UPABBP's by all hospital workers.
- ❖ Should collaborate with the Ethiopian ministry of health to ensure regular adequate supply and other related issues.

To Ethiopian federal ministry of health

- ❖ Should focus and work on UPs for those health professionals who are working with an increase handling or large number of intervention performance area like emergency departments.

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Annex

AnnexI: Assurance of principal investigator Declaration

I, undersigned, declare that this is my original work and have not been presented in this or any other university and all sources of materials used for this thesis research have been fully acknowledged.

Name: Yohanis Asmr signature: _____date: _____

Place: AddisAbabaUniversity, college of health sciences, department of emergency medicine and critical care

This thesis research has been submitted for examination with my approval as university advisor

Hywet Engida (DR)

Signature: _____

Date: _____

MSCs. Lemlem Beza (MSC.EMCCN) signature: _____

Date: _____

Place: AddisAbabaUniversity, college of health sciences, department of emergency medicine

Annex II. Conceptual frame work

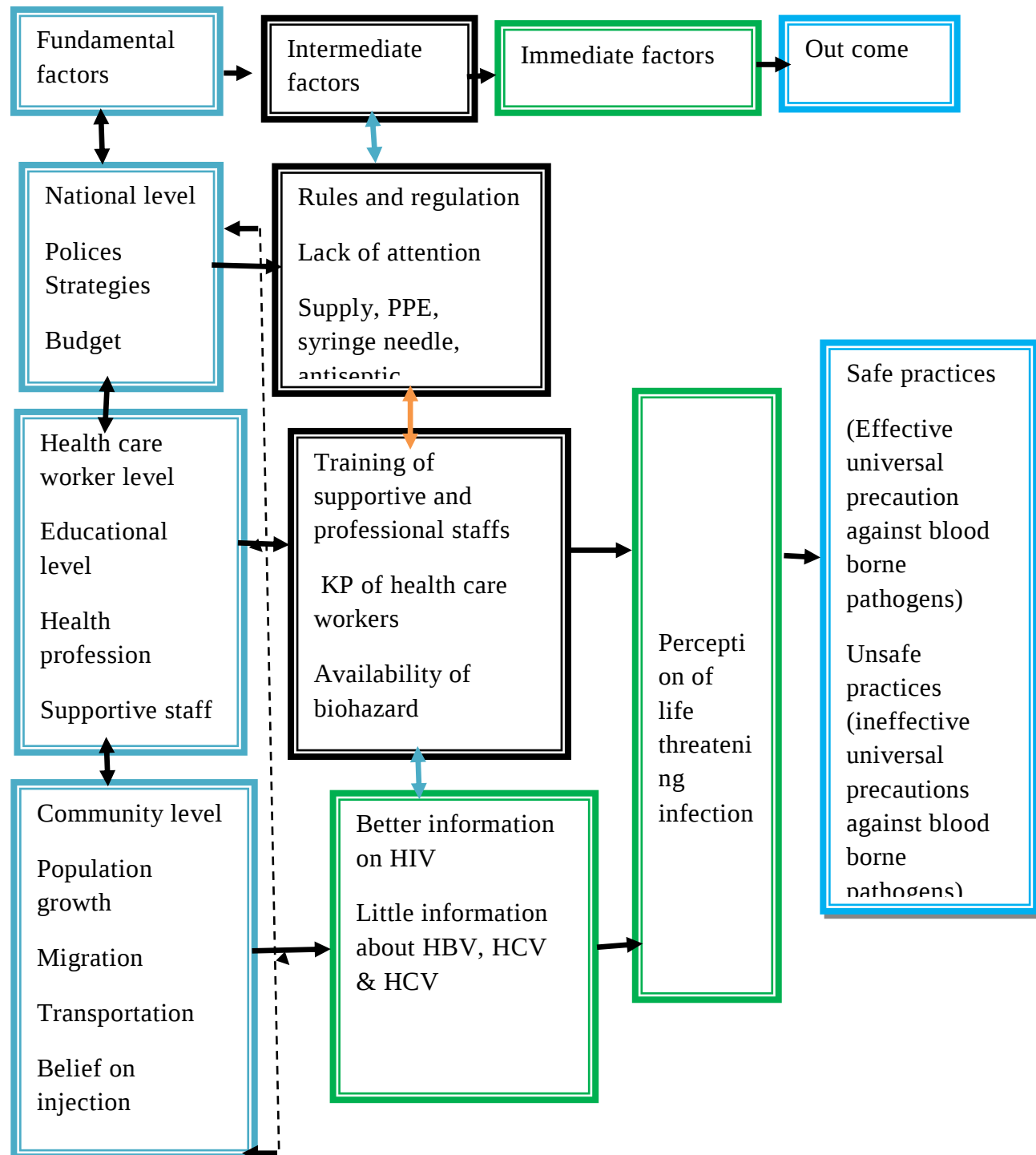


Figure 6. A conceptual frame work showing factors that associated with knowledge and practices of UABBP in TASH, Zewditu MRH, Yekatit12HMC and MIIRH, February 19, to march 31; 2018

This conceptual framework adopted and modified from previous research done in TASH hospital on the topic of knowledge, attitude and practices on standard precaution among emergency professionals, Addis Ababa, Ethiopia[3].

Annex III:Sociodemographic question

Code no. name of your institution..... date.....				
Part I: Socio-demographic characteristics: (should be answered by ticking in the space provided)				
s/n	Question	Response	Code	Skip
001	Age	year		
002	Sex	Male Female	1 2	
003	Marital status	☐ Single ☐ Married ☐ Divorced ☐ Widowed	1 2 3 4	
004	Type of your institution	☐ Federal hospital ☐ Regional hospital ☐ Other specifies	1 2 3	
005	What is your profession?	☐ Senior emergency specialist ☐ Emergency medicine and critical care resident ☐ General practitioner doctor ☐ EMCCN ☐ Bsc nurse ☐ Diploma nurse	1 2 3 4 5 6	
006	Year of experience	in year		
007	Did you take any training on infection prevention/Ip?	☐ Yes ☐ No	1 2	
008	Do you have waste management and Infection control officer ER?	☐ Yes ☐ No	1 2	
009	Do you have infection prevention guide line in your emergency rooms?	☐ Yes ☐ No	1 2	

Annex IV: Question on knowledge of universal precaution against blood borne pathogens

Section I; question on knowledge of universal precaution against blood borne pathogens among doctors and nurses (Should be answered by ticking in the space provided)				
s/n	Question	Response	Code no.	Skip
101	Which one is/are transmitted by dirty, needles, sharp and BBF? Tick for all that apply	☐ HBV ☐ HCV ☐ HIV ☐ Tetanus ☐ Malaria ☐ TB	1 2 3 4 5 6	
102	Do you know whether there is post exposure prophylaxis (PEP)?	☐ Yes ☐ No	1 2	
103	Who could be at risk of infection from your hospital waste if not disposed properly in the ER?	☐ Health professional ☐ Supportive staff ☐ The client / patient ☐ The community ☐ Children Other, specify-----	1 2 3 4 5 6	
104	What is/are the benefits of proper waste disposal?	☐ Reduces the risks of infections to staff, client & visitors ☐ Reduces the risk of accidents to both client and staffs ☐ Provides clean working compounds and rooms ☐ Decreases odors Other, specify.....	1 2 3 4 5	
105	How often do you clean your hands after touching an environmental surface near to the patient (for example, table wall or bed rail)?	☐ Always ☐ Often ☐ Sometime ☐ Never	1 2 3 4	
106	How often do you clean	☐ Always	1	

	your hand after touching a patient's intact skin(for example, when measuring a pulse, or blood pressure?)	☐ Often ☐ Sometime ☐ Never	2 3 4	
107	What goes into the safety box? Please, circle all that apply	☐ Syringe ☐ Cotton pads ☐ Needles ☐ Dressing materials ☐ Needles from iv bags ☐ Bag or extension tubes ☐ Lancets ☐ Latex gloves ☐ Their plastic materials ☐ Empty vials ☐ Other contaminate sharps	1, 7 2,8 3,9 4,10 5 6 11	
108	What do you think are the main reasons for reuse of syringe and needles?	☐ Shortage of supply ☐ Knowledge deficit ☐ Carelessness ☐ To reduce the cost of treatment Other specify	1 2 3 4 5	
109	After exposure to blood or body fluid what measures did you take? Circle all that apply.	☐ Washing with soap and water ☐ Wash with alcohol, iodine, chlorine ☐ Visiting VCT ☐ Seek pep ☐ Report to the head person other specify-----	1 2 3 4 5 6	
110	What is the chemical you use to decontaminate? circle all that apply.	☐ Chlorine ☐ Sava Lon ☐ Formaldehyde ☐ Iodine ☐ Alcohol ☐ Other specify-----	1 2 3 4 5 6	
111	Do you know decontaminant available in your ER at this time?	☐ Yes ☐ No	1 2	
112	Have you ever had blood or body fluid splashed to your eye, mouth and/or nose?	☐ Yes ☐ No ☐ don't remember	1 2 3	
113	When do you check patients for those infectious pathogens like HIV & HBV IN ER?	☐ When patient suspected for it ☐ During admission in all patients ☐ Not at all	1 2 3	

114	What are the sources of infection in a hospital setting? circle all that apply.	☐ Health personnel ☐ Contaminated equipment ☐ Contaminated air ☐ Other patients Others specify-----	1 2 3 4 5	
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Annex V:question on practices of universal precaution against blood borne pathogens

Section II; Practices universal precautions against blood borne pathogens among doctors and nurses (Should be answered by ticking in the space provided)				
s/n	Question	Response	Code no	Skip
01	Did you wash your hands before touching the patients?	☐ Yes ☐ No	1 2	
02	If yes Q 1 how often does you wash your hands?	☐ Always ☐ Sometimes	1 2	
03	If your answer is no or sometimes for Q 1, what were the reasons?	☐ Inaccessibility of Hand washing materials ☐ Not always necessary ☐ Emergency condition ☐ Absence of hand washing materials ☐ I use a glove Other ----- -	1 2 3 4 5 6	
04	Did you wear PPE before touching the patients?	☐ Yes ☐ No	1 2	
05	If yes in Q4, which device did you use in bleeding patients in the ER?	☐ Apron ☐ Utility gloves (double glove) ☐ Boots/shoes ☐ Eye protectors/ google ☐ Mask ☐ Gowon	1 2 3 4 5 6	
06	If no q 4 why?	☐ It is an emergency situation ☐ Inaccessibility of equipment ☐ Absence of PPE in ER	1 2 3	
07	Do you wear gloves during invasive procedure?	☐ Yes ☐ No	1 2	
08	Have you ever had needle stick injury?	☐ Yes ☐ No	1 2	
09	If yes how many times?	☐ One / 1year ☐ 2times/year	1 2	

		[] >3 times	3	
10	Did you properly discard used materials per up guideline?	[] Yes [] No	1 2	
11	If not for q 10 why?	[] Absence of the waste container [] Inaccessibility to waste container [] I don't know where to discard Other, specify----- -	1 2 3 4	
12	Have you ever reused needle or syringe?	[] Yes [] No	1 2	
13	Did you use & throw nasal cannula/prong, oral air way & mask per patient in ER?	[] Yes [] No	1 2	
14	If no for Q 13 why?	[] Few in number [] It is reused in ER [] Decontaminated always [] Doesn't harm pt.'s	1 2 3 4	
15	When reusing it Q13, did you check whether it is decontaminated or not?	[] Yes [] No	1 2	
16	Do you give or decontaminate laryngoscope for decontamination after intubation?	[] Yes [] No	1 2	
17	17. If no for q 16 why? b/c	[] I simply put it there after use [] I have never used it [] It is re-usable	1 2 3	

Do you have any suggestions for improving universal precaution against blood borne pathogens in ER?

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.....