ASSESSMENT OF ATTITUDE, PRACTICE AND ASSOCIATED FACTORS TOWARDS PATIENTS WITH HEPATITIS B AND C VIRUSES AMONG NURSES WORKING IN PUBLIC HOSPITALS IN ADDIS ABABA, ETHIOPIA, 2019

BY: TEKALIGN AMERA (BSC)

A THESIS REPORT SUBMITTED TO ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES, SCHOOL OF NURSING AND MIDWIFERY, DEPARTMENT OF NURSING IN PARTIAL FULFILLMENT OF THE REQUIRMENTS FOR THE DEGREE OF MASTER SCIENCE IN ADULT HEALTH NURSING

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BY: TEKALIGN AMERA (BSC)

ADVISOR: ZELEKE ARGAW (BSC, MSC, ASST.PROFFESOR)

CO-ADVISOR: TESHOME HABTE (BSC, MSC)

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By my signature below, I declare and affirm that this thesis is my own work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis.

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STUDENT

Name: Tekalign Amera **Signature: _____Date: _____**

RESEARCH ADVISORS:

1. Zeleke Argaw (BSN, MSN, Asst. Proff.) _____ _____

NAME **RANK** **SIGNITURE** **DATE**

2. Teshome Habte (BSN, MSN) _____ _____

NAME **RANK** **SIGNITURE** **DATE**

APPROVAL BY THE BOARD OF EXAMINATION

This thesis by **Tekalign Amera** is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of master in adult health nursing

Examiner:

Erdaw Tachbele (PHD) _____ _____

Name **Signature** **Date**

Research Advisors:

Zeleke Argaw (BSN, MSN, Asst. Prof.) _____ _____

Name **Rank** **Signature** **Date**

Co-Advisor:

Teshome Habte (BSN, MSN) _____ _____

Name **Rank** **Signature** **Date**

Department Head

_____ _____

Name **Rank** **Signature** **Date**

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ABBREVIATION AND ACRONYMS

AAHBIRB: Addis Ababa Health Bureau Institutional Review Board

AAU: Addis Ababa University

BBF: Blood and Body Fluid

FMOH: Federal Ministry Of Health

HBV: Hepatitis B Virus

HBIG: Hepatitis B Immune Globulin

HCV: Hepatitis C Virus

HCW: Health Care Worker

KAP: Knowledge Attitude Practice

PPE: Personal Protective Equipment

SPHMMC: Saint Paul Hospital Millennium Medical College

TASH: Tikur Anbesa Specialized Hospital

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ABSTRACT

Back ground: Patients visit health care institutions with different diagnosis some of which are potentially infectiouswhich affects health care workers behavior to care for these patients equally and effectively. Hepatitis B and C viruses are the commonest infectious viruses causing viral hepatitis; a global treat that caused 1.34 million deaths by the year 2015.

Objective: the main objective of this study was to assess attitude, practice and associated factors towards patients with hepatitis B and C viruses among nurses working in public hospitals in Addis Ababa, 2019.

Methodology: Institutional based cross-sectional study was conducted in public hospitals in Addis Ababa Ethiopia from April 01 to April 30, 2019. A total of 396 nurses were selected using simple random sampling technique. The collected data was analyzed using SPSS version 24. Binary and multiple logistic regression analyses were used to characterize the association between variables. P value < 0.05 was considered to determine levels of statistical significance and Odds ratio was used to determine the strength of association between variables.

Results: Among 383 respondents 45.6% had desirable attitude and 35.8% of them reported good practice towards patients with hepatitis B and C viruses. Working in Menelik II hospital, receiving training on infection prevention and vaccinating against hepatitis B were more likely to be associated with nurse's attitude. Nurses who served for more than ten years, vaccinated against hepatitis B and who were confident to take care of hepatitis B and C infected patients were found to have good practice. Whereas, previous needle stick injury from these patients and being reluctant to care for them influenced the respondents practice to be poor.

Conclusion and recommendation: The overall level of nurse's attitude and practice towards patients with hepatitis B and C viruses is significantly low. Compared to attitude of nurses towards patients with hepatitis B and C viruses their practice is low. Therefor FMOH along with hospitals need to create opportunities for nurses to get training on infection prevention to increase their confidence while treating these patients. Proper supply and distribution of personal protective equipments should also be assured.

Key words: attitude, practice, hepatitis viruses B and C, nurses

1. INTRODUCTION

1.1 Back ground

Viral hepatitis is an inflammation of liver caused by viruses. It is mostly caused five viruses namely hepatitis A, B, C, D and E viruses. Hepatitis viruses A and E transmit faeco-orally and mainly cause acute infections, whereas hepatitis B, C and D viruses can cause acute infection and also responsible for all cases of chronic viral hepatitis(1,2).

Viral hepatitis is a leading cause of morbidity and mortality from liver diseases worldwide. About 1.34 million deaths from viral hepatitis were reported globally by the year 2015. Hepatitis B virus (HBV) and hepatitis C virus (HCV) are the two most common viruses causing viral hepatitis. In 2015 WHO estimated that 257 million persons (3.5% of the population) and 71million (1% of the population) worldwide were infected by HBV and HCV respectively. The majority of these cases were in Asia and Africa(3). A systemic review and meta-analysis on hepatitis viruses in Ethiopia showed that the pooled prevalence of hepatitis B virus was 7.4% and that of anti-hepatitis C virus antibody was 3.1% (4).

Higher concentration of hepatitis B and C viruses circulates in infected individual's blood. These viruses also present in exudates, semen, and vaginal secretion and to the lowest amount in saliva. Easy transmission from infected blood and body fluid puts them as major occupational hazards for health care professionals especially for those who spend much time with these patients. Nurses are among the professionals spending much time with patients and reporting the highest proportion of exposure to BBF(5).

Vaccination against hepatitis B helps to protect self from acquiring the virus. It is recommended for all children and those who are at higher risk of acquiring the virus like health care workers. However, there is no effective vaccine against HCV(6). Following infection prevention techniques is the basis for avoiding HBV and HCV transmission in health care setting. WHO recommends proper hand hygiene, safe sharp and waste disposal, and proper equipment processing, screening donated blood and training HCWs in order to prevent transmission of HBV and HCV in health care setting. Additionally individuals exposed for BBF or needle stick injury should wash the area with soap and water and get hepatitis B immune globulin (HBIG) as a prophylaxis(2).

In 2016 WHO approved global strategy to eliminate viral hepatitis as a global public health treat by the year 2030. The strategy is expected to avert 7.1 million deaths in 15 years. To achieve this countries are expected to establish policies and programs to increase infants hepatitis B birth vaccination to 90%, all blood donations to be screened, 90% of injections to be safe, 90% of people to aware their status and 80% of those infected to be treated. The overall target is to reduce new infections by 90% (from 6 -10 million to below one million) and decrease mortality by 65% (from 1.4 million to below 500,000) by the year 2030(7).

Action plans has been established in each WHO regions for the accomplishment of the global strategy for viral hepatitis. In Africa regional action plan is formulated for 2016 to 2020 targeting at preventing new HBV and HCV infection by 30%, reducing HBV and HCV related death by 10% , delivering high quality care and stopping stigma and discrimination of patients(8). However viral hepatitis prevention has many challenges in countries with limited resources. In Ethiopia FMOH has established a strategy to vaccinate all HCWs against HBV. However, community awareness on viral hepatitis is low; many infected individuals didn't get diagnosed due to lack of screening services. Furthermore lack of appropriate care and unavailability of effective drugs for diagnosed patients remain challenges to eliminate viral hepatitis especially hepatitis viruses B and C(9).

Adequate prevention as well as treatment of HBV and HCV needs alliance of the government, health care professionals, and the society. However individuals living with HBV and HCV face many challenges in getting quality and affordable care. Stigma presented as a major barrier that greatly affects social functioning as well as quality of life of infected individuals(10). The problem becomes worse when it comes from health care professionals especially when nurses who are responsible to spend more time caring them do it.

1.2 Statement of problem

Health care workers face a wide range of challenges in their work place, including exposure to BBF as well as needle stick injuries. This puts them at higher risk of contracting infectious diseases like HBV and HCV. Nurses in particular face these challenges frequently placing them at higher risk of acquiring infectious diseases(11). Nurse's occupational exposure to sharp objects, BBF is found to increase nurse's level of stress which in turn affects their performance(12).

Patients visit health care institutions with different diagnosis many of them with potentially infectious diseases. Nurses are responsible to give equal care irrespective of their diagnosis, economic status, ethnicity or other characteristics. However sometimes nurses face an ethical dilemma in deciding whether to care with dignity and equality for potentially infectious patients like HBV and HCV infected individuals. This happens when nurses are confronted to balance professional responsibility and risk(13).

Previous studies showed that some nurses feel anxious about acquiring HBV and HCV, while others feel confident to protect them self when caring for these patients. Lack of confident in protecting self from infection while caring makes nurses to be reluctant in giving appropriate care(14).

Patients with hepatitis B and C are subjected to stigmatization. Sense of stigmatization causes anxiety and isolation from the society for individuals infected by HBV and HCV. Fear of stigmatization also causes many patients not to disclose their condition for their close families. This in turn affects their quality of life and increase disease transmission and progression(15).

In one study it is found that about 50% of hepatitis B and C infected individuals suffer from stigmatization. It is characterized by bad feelings coming from colleagues, family members, and HCWs(16). High level of discrimination including avoidance against chronic hepatitis B patients is indicated. A study showed that hepatitis B patients had lower feeling of stigmatization than that of with hepatitis C. the stigmatization of hepatitis C is more severe than the stigmatization of hepatitis B. However, there is no significant difference in their quality of life(17).

Proper preventive practices to HBV and HCV are essential as 8 out of 10 new infections occurring in health care setting are due to spread from patient to HCW, HCW to patient or patient to patient(18). Research studies reveal that nurses had better knowledge of HBV and HCV but fail to comply with preventive practices against HBV and HCV. This increases nurse's exposure to HBV and HCV and compromises the quality of care given for these patients. Better knowledge, positive attitude and good practice towards caring for patients with hepatitis B and C are vital in treating as well as preventing transmission of hepatitis viruses B and C(19,20).

Nevertheless, studies done in Ethiopia addressed attitude and practice towards hepatitis B and C infections are not sufficient enough to address attitude and practice towards infected individuals. So the aim of this study was to assess attitude and practice of nurses towards hepatitis B and C patients and the factors affecting to care for these patients.

1.3 Significance of the study

Conducting a study on nurse's attitude and practice towards patients with hepatitis B and C viruses helps to investigate how nurses are willing to accept and treat these patients. It also helps to assess their level of practice and factors affecting it. The result of this study contributes a lot for the hospitals to intervene accordingly by providing information about their nurses' attitude, practice and associated factors towards patients with hepatitis B and C viruses. Furthermore, it helps nurses to evaluate their attitude and practice while responding for the questions; improve their attitude and practice based on the recommendations that will be provided for the hospital administration and nurses. Finally information obtained from this study may contribute to future research on this health issue.

2. LITERATURE REVIEW

2.1 Prevalence of hepatitis B and C infections

The prevalence of HBV and HCV varies within and among countries. According to WHO report higher proportion of HBV infected individuals were from Africa and Western Pacific region, whereas, Eastern Mediterranean and European regions reported to have relatively higher prevalence of HCV(3). A systemic review and meta-analysis on hepatitis viruses showed that the pooled prevalence of hepatitis B virus in Ethiopia was 7.4% and that of anti-hepatitis C virus antibody was 3.1% (4).

The prevalence of hepatitis B and C is higher in HCWs than the general population. A systemic review and meta-analysis done to assess the prevalence of hepatitis C among HCWs showed a statistically significant increase in HCWs compared to the general population based studies(19). A study done in Tanzania to assess the Prevalence of HBV infection among health care workers in a tertiary hospital showed high prevalence of chronic HBV infection (7.4%) and high risk of occupational exposure(21). In contrast to this a study done in Jimma University medical college found the prevalence of hepatitis B to be 2.5% and that of HCV antibody was 0.42% (22).

2.2 Nurses attitude towards patients with hepatitis B and C viruses

Patients diagnosed to have hepatitis B and C virus suffer from different degrees of stigma and discrimination from health care workers as well as the society. In a study done in Vietnam to assess nurse's willingness to care for patients with HIV, hepatitis B/C about 73.3% of the respondents agree or somewhat agree as they are willing to care for a patient infected with hepatitis B/C(23). Another study from Japan found that only 18% of Japanian nurses agreed or somewhat agreed as they are unwilling to care for hepatitis B/C patient(14).

According to a study in Kutahya western Turkey among the HCWs participated 35.2% were willing to treat hepatitis C patients. About 54.3% of the HCWs and 60% of nurses showed negative attitude the remaining having positive attitude(24). Similarly a cross sectional study done to assess nurses' attitude in Pakistan showed that 69.8% of the participants were unwilling to care for hepatitis C patients(25).

In a study done in South East Brazil to evaluate HCWs knowledge and attitude of hepatitis B and C 79% didn't agree with disliking treating these patients. However, only 0.7% strongly agreed and 19.9% agreed to care for hepatitis B and C patients willingly. Nearly three forth (72.6%) of them like to care for these patients as they do for others. About 21.1% of the respondents in this study need hepatitis B and C patients to be given the last appointment for the day(26).Another study on medicine and health sciences student's knowledge, attitude and practice towards prevention of hepatitis B done in Northwest Ethiopia 82% of students agreed that they are comfortable to treat hepatitis B patients(27).

Regarding to confidence in protecting self while caring for HBV/HCV infected individuals a approximately 70 % nurses felt confident in a study finding from Vietnam(28). Relatively lower proportion (59%) of nurses participated in a study aimed to assess reluctance to care for patients with hepatitis B/C agree or somewhat agree that they feel confident to protect self while caring for hepatitis B/C patients(14).

Some HCWs avoid going near HBV/HCV patients for fear of getting infection from hepatitis B and C. In the Japan study 39% of nurses somewhat agree and 15% agree to have anxiety related to the risk of acquiring hepatitis B/C while caring for these patients (14). About 65.8% of nurses participated in the Vietnam study didn't have care of acquiring these viruses from infected colleagues (28).

Higher percentage to this (79%) of participants in Japanian study didn't care of acquiring infection from infected colleagues(29). In the study done in Vietnam about 9.4% of nurses agreed on avoiding going near HBV/HCV infected individuals (23). In line with this finding from a study in Japan found that 88% of nurses disagree and somewhat disagree to avoiding HBV/HCV infected colleagues (29).

The study from Pakistan also revealed that more than two third (68.9%) of nurses agree and strongly agree to deliver equal standard of care for hepatitis C patients. The remaining 6.3 % of the participants strongly disagreed and 7.2% disagreed to deliver the same standard of care for hepatitis C patient as done to other patients. However, 41.4% were agreed and 42.3% strongly agreed as they don't have the skills to effectively and safely treat Hepatitis C patients. Only 10% thought to have the skills to effectively and safely treat Hepatitis C patient(25).In reverse to this the study from South East Brazil found that more than half (53%) didn't agree with this idea (26).A study in Adama revealed that 75.9% of HCWs strongly agree to the higher risk of developing HBV related to job(30). In line with this 89.3% of HCWs in a study in Gondar agree and strongly agree on it(31).

Following infection control guidelines is the corner stone for preventing infections from hepatitis B and C. For instance 86.8% of HCWs participated in the study from Brazil strongly agree and agree with the preventive purposes of infection prevention strategies. Above three forth (74.8%) of them believe on using additional infection prevention techniques for hepatitis B and C patients. Additionally 53.8% of the respondents need all patients to be tested for hepatitis B and C and 75.2% of believe that infected individuals should be identified to care them safely (26). Results from a study in North West Ethiopia also indicate that 83.3% of respondents believe on preventive purposes of these guidelines (27). Similarly a study in Adama hospital and medical college 85.2% of HCWs found to have positive attitude towards infection control measures(30).

2.3 Practice towards patients with Hepatitis B and C virus

Nurses and other HCWs are expected to deliver a standardized care for patients living with hepatitis B and C following appropriate preventive practices. A study done to assess HCWs knowledge and attitude towards Hepatitis C patient in Kutahya revealed that 84.3% of HCWs stated as they took additional infection prevention precautions while treating hepatitis C patient; for instance 69.3% of them preferred using double gloving in managing hepatitis C patient having bleeding (24).

Hepatitis B preventive practice among nurses was assessed in selected hospitals in Dhaka city, Bangladesh that found 92.7% of the study participants used sterilized instruments while 69.3% of them screened for hepatitis B virus. Almost three fourth (73%) of the respondents use gloves appropriately. Majority of them (95.3%) didn't practice recapping of syringes. Generally nearly half 49.3% of the participants had good preventive practice (19).

Similar study done on nurses in Dhaka medical college hospital majority of them (92.8%) used sterilized surgical instruments, where as 88.9% used gloves and gowns while caring for a patient. Recapping of syringe after use is practiced by 89.9% of the respondents. Overall 87.4% of the participants in this study scored above the average and regarded as having good preventive practice(32).

Another study done on nursing students attending tertiary care hospitals in Agartala city, India, regarding their knowledge and practice of hepatitis B found that 94% of the respondents use sterile syringes from them 82.9% practice it always. Majority of them (94%) use sterile gloves for injection and blood draw. More than two third of the participants' (69.3%) recap needles after use while 83.1% of them discard used needles in puncture proof containers (33).

Nurse's knowledge, attitude and practice regarding hepatitis B infection studied in Hayatabad medical complex; Pakistan revealed that 7% of the respondents care patients with HBV in isolated room. Sixty five percent of nurses also replied as they use separate dressing set, whereas 45% of them use disposable gloves while handling these patients (34).

A study done in Nigeria to assess HCWs Knowledge, Attitude and Practice towards Hepatitis B Infection found that 76.7% of participants wear gloves for contact with patients. However, only 15.2% use glasses and 50.0% of them wear face-mask when performing procedures. More than 97.1% of the respondents responded as they dispose sharps properly (35).

Another study done in Egypt showed that above half (54.5%) of nurses use gloves when dealing with patients whereas 56.1% of them change gloves after each patient contact. Regarding use of safety boxes almost half (49.2%) of them practice it properly(20).

KAP of HCWs towards HBV infection studied in White Nile state, Sudan showed that occupational exposure to HBV is a major source of anxiety. However, more than half (60%) did nothing despite being suspicious of infection with hepatitis B. Majority of the respondents in this study wear gloves for activities having risk of contact with blood. Moreover, 87.8% of HCWs sterilize equipment to use for patients (36).

HCWs of Jimma university medical college were assessed for prevalence of hepatitis B and C and KAP towards standard precautions that found 41.3% usually or always use personal protective equipment. Less than one third of the respondents (28.9%) usually or always wash hand before patient examination. Over all less than half (40.9%) always comply with standard precautions(22).

A cross sectional study done in Bantama Ghana to assess HCWs KAP towards hepatitis B infection revealed that 5.7% thought as they are not at risk of getting HBV infection whereas, 10.4% believed they are always doing carefully. For the above and other reasons about 29.1% of the respondents don't need to take hepatitis B vaccine (37).

Patients with hepatitis B and C suffer from stigma and discrimination by their families, the community including health care professionals. In a study done to assess stigma and discrimination from the patients voice; patients who disclose their status face discrimination from their families (24.6%), friends (46.9%) and 23.8% from social events. These participants also reported as health care professionals give care at a certain distance from them. Six point nine percent of them felt as denied by health professionals(38).

Significant numbers of health professionals become exposed for BBF while performing day to day activities. About 47.3% of HCWs working in Adama hospital and medical college were occupationally exposed for BBF and needle stick injury (30).

Similarly 49.2% HCWs participated in the Gondar study reported that they have exposed to conditions that may cause HBV infection (31). Another study in Jimma revealed that the life time exposure to risky conditions was reported by 60% of HCWs for BBF exposure and 43% sustained needle stick injury(22). The most common measure taken after exposure was washing the area with soap and water practiced by 71.3% and 48.6% of respondents from the Adama and Gondar studies respectively (30,31).

A study in Pakistan showed that more than half (58.1%) of nurses responded history of needle stick injury(25). In a study from Vietnam also revealed that 15.8% of nurses participated in the study sustained needle stick injury while caring for hepatitis B and C patients(23). About 43% of HCWs working in Jimma university hospital ever sustained needle stick or sharp injury (22).

Regarding vaccination against hepatitis B in the study from Bangladesh 59% of nurses vaccinated for it (19).In the Nigeria study 58% of the respondents took at least one dose of hepatitis B vaccine but only 29% completed all three doses(35). In Ethiopia a study from Adama reported that less than half (44.5%) of HCWs took the vaccine (30).

2.4 Factors affecting nurses attitude and practice towards patients with hepatitis B and C viruses

There are a number of factors affecting attitude and practice of nurses and other HCWs towards hepatitis B and C patients. In the study in Vietnam nurses above the age of 40 were found to be 2.5 times more positive to accept colleagues infected by hepatitis B and C(28). However, in the Pakistan study focused on nurses' attitude towards hepatitis B/C patients' attitude had no significant association with sex, age, experience or qualification(25).

In the study in Japan being female was positively associated to the willingness in accepting infected coworkers(29).However, in the study in Kutahya male HCWs were more likely to have positive attitude towards hepatitis C. Additionally those who are older in age, physician by profession and worked for more than 10 years were found to have positive attitude (24).

A study done in Dhaka city, Bangladesh showed that nurses with higher monthly income, and those working in public institutions had good practice against hepatitis B. Respondents having good knowledge were also better comply with preventive practices (21).

Another study in Pakistan revealed that nurses working in Hayatabad medical complex with work experience of more than 4 years better use gloves(25).

In the Egypt study physicians were found to have good practice than nurses. Furthermore, in this study residence and attending infection prevention training were found to have significant association to nurse's practice towards hepatitis C. Nurses working in Cairo and those who didn't take infection prevention training had good practice(20).

According to the study from Vietnam willingness to care for hepatitis B and C patients was found to have positive relationship with confidence to protect against infection; but negatively associated with avoiding going near infected patients(23). Fear of acquiring the disease while caring for hepatitis B and C patient is found to have a negative effect on nurse's willingness to treat people with the diseases whereas, confidence in protecting self from these infections had positive relationship(23,25).

Nurse's willingness to accept work colleagues infected by hepatitis B and C was found to be negatively associated with attitudes towards avoiding contact with a hepatitis B/C colleague. Previous professional contact with a patient with hepatitis B/C and previous needle stick injury or BBF exposure from a patient infected with HBV/HCV were positively associated with willingness to accept a colleague infected with hepatitis B/C viruses (29).

In another study those nurses who agreed to HBV/HCV status disclosure of infected collogues were 3.02 times more likely to have good attitude to their infected colleagues(28).In the study from Nigeria it was revealed that that positive attitude had significant association with good practice (35).

2.5 Conceptual frame work

The conceptual frame work is adapted from researches done on attitude and practice of nurses and other HCWs towards HBV and HCV infected patients. Factors affecting nurse's attitude and practice towards patients with HBV and HCV include social demographic factors like age, educational level, working unit. The levels of nurse's attitude also affect their degree of practice.

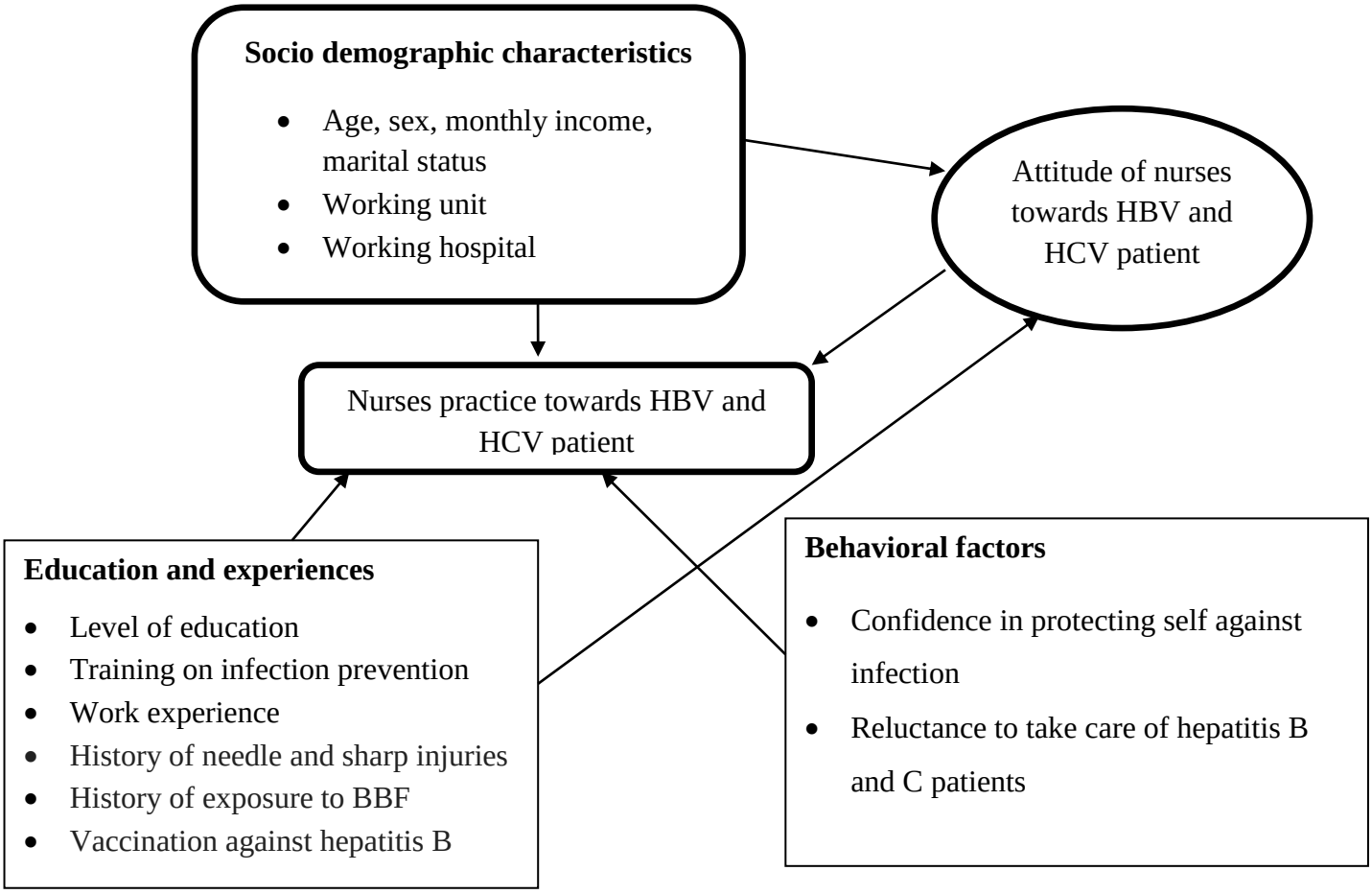

Figure 1: Conceptual framework used to show the relation between dependent and independent variables (20, 21, 23-25, 27-29, 35)

3. OBJECTIVES

3.1 General objective

To assess attitude, practice and associated factors towards patients with hepatitis B and C viruses among nurses working in public hospitals in Addis Ababa, 2019

3.2 Specific objectives

- ✓ To determine attitude towards patients with hepatitis B and C viruses among nurses working in public hospitals in Addis Ababa, 2019
- ✓ To investigate practice towards care of patients with hepatitis B and C viruses among nurses working in public hospitals in Addis Ababa, 2019
- ✓ To identify the factors affecting attitude and practice towards patients with hepatitis B and C viruses among nurses working in public hospitals in Addis Ababa, 2019

4. METHODS AND MATERIALS

4.1 Study area

The study was conducted in Addis Ababa, the capital city of Ethiopia and where the African union is headquartered. Addis Ababa is a home to almost all ethnic groups in Ethiopia with a population of 3,147,000 according to the 2007 census. Its area is estimated to be 530Km^2 with altitudes ranging from 2200 to 3000m above sea level, average temperature of 22.8C° and average rainfall of 1,180.4mm(39, 40).

The city has 51 hospitals of which 14 are governmental. Governmental hospitals in Addis Ababa are; TASH, STPHMMC, Zewuditu Memorial Hospital, Alert Hospital, Yekatit 12 Hospital, Ras Desta Damtew Memorial Hospital, St. Peters Hospital, Menilik II Hospital, Tirunesh Beijing Hospital, Armed Forces Hospital, Bella Defense hospital, Federal Police hospital, Amanuel Hospital and Gandhi Hospital. The study was done on nurses working in five randomly selected governmental hospitals namely TASH, Alert hospital, Zewditu memorial hospital, Yekatit 12 hospital and Minilik II hospital.

4.2 Study design and period

Institution based cross sectional Study design was implemented. The study was conducted from April 01 to 30, 2019.

4.3 Population

4.3.1 Target population

All nurses who were working in public hospitals in Addis Ababa

4.3.2 Source population

All Nurses who were working in selected public hospitals in Addis Ababa.

4.3.3 Study population

Nurses who were selected randomly from selected public hospitals in Addis Ababa.

4.3.4 Eligibility criteria

4.3.4.1 Inclusion Criteria

Nurses included in this study were those who were working in the public hospitals in Addis Ababa, had at least 1 year work experience and willing to participate in the study.

4.3.4.2 Exclusion criteria

Nurses who had less than 1 year work experience and those who were not available during the data collection period due to annual, maternity or sick leave.

4.4 Sample size determination

The sample size was determined by using formula for estimating a single population proportion formula. Based on the assumption 5% marginal error, 95% confidence interval (CI) and taking P 42.6% (from a study in Jimma 42.6% of HCWs had good preventive practice towards hepatitis B and C) (22), the actual sample size for the study was calculated as follows.

$$ni = \frac{(Z_{\alpha/2})^2 pq}{d^2}$$

Where ni = the minimum sample size required

$Z_{\alpha/2}$ = standard normal deviation, set at 1.96, to correspond to the 95% confidence interval

P = 0.43 (taken from previous study)
q = 1.0-p

d = margin of error/an absolute precision = 5% = 0.05

$$ni = \frac{(1.96)^2 (0.43) (1-0.43)}{(0.05)^2} = 377$$

By adding 5% for non-responses the final sample size became 396.

4.5 Sampling technique and procedure

Five government hospitals in Addis Ababa (Tikur Anbesa Specialized hospital, Alert hospital, Zewditu memorial hospital, Menlik II hospital and Yekatit 12 hospital) were selected using simple random sampling technique. To determine the number of nurses participated in study from each of the selected hospitals proportionate sampling was applied. Finally study participants from each hospital were selected by simple random sampling technique.

Population proportionate sampling is given by the formula:

n= (nf * N)/ N total

Where,

n= number of nurses to be participated from the selected hospital

nf= Final sample size

N= total number of nurses in the selected hospital

N total= total number of nurses in all selected governmental hospitals

Table 1: proportional allocation of study participants

s.no	Name of selected hospital	Total no of nurses in the hospital	Number of nurses to be participated from the hospital
1	TASH	783	(396*783)/2012 = 154
2	Yekatit 12 hospital	357	(396*357)/2012 =70
3	Alert hospital	338	(396*338)/2012 = 67
4	Menilik II hospital	281	(396*281)/2012 = 55
5	Zwditu memorial hospital	253	(396*253)/2012 = 50
6	Total	2012	396

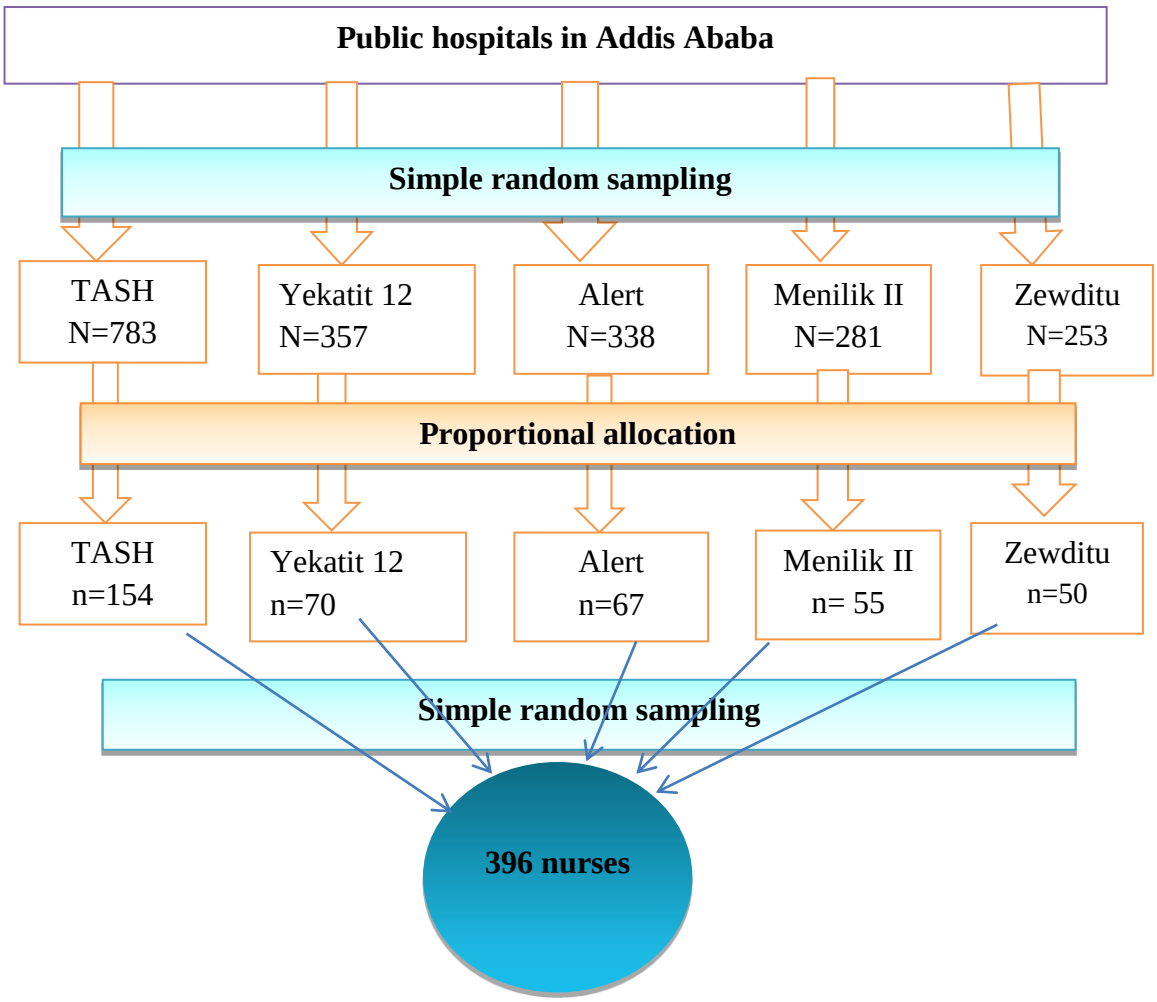

Figure 2: schematic presentation of sampling procedure used to select study participants from public hospitals in Addis Ababa, Ethiopia, 2019

4.6 Study variables

4.6.1 Dependent variables

- ✓ Attitude and practice of nurses towards patients with hepatitis B and C viruses

4.6.2 Independent variables

- ✓ Age
- ✓ Sex
- ✓ Years of work experience
- ✓ Marital status
- ✓ Working hospital
- ✓ Working unit
- ✓ Level of education
- ✓ Position
- ✓ Training on infection prevention
- ✓ History of needle and sharp injuries from HBV and HCV infected patients
- ✓ History of exposure to BBF from HBV and HCV infected patients
- ✓ Confidence in protecting self against infection
- ✓ Reluctance to take care of hepatitis B and C patients
- ✓ Vaccination against hepatitis B
- ✓ Attitude towards patients with HBV and HCV (for practice)

4.7 Data collection tool and procedure

Data was collected from the study individuals using semi structured self-administered questionnaire. The tool was adapted from published articles(19, 22-24).The tool consists four parts. The first part contains 9 questions requesting socio-demographic characteristics of the respondents. The second part contains 9 statements to assess attitude of nurses towards patients infected with HBV and HCV. The third part constructed to assess nurses practice towards hepatitis B and C and the last part asked their hepatitis B vaccination status as well as their exposure to blood and body fluid and measures taken. Data was collected over a period of one month by five data collectors who had BSc in nursing and supervised by one MSc nurse and the principal investigator. Training was given for data collectors and the supervisor by the principal investigator before the actual data collection time. Respondents were also provided with adequate information about the purpose of the study.

4.8 Operational definition

Attitude: Belief and intention towards patients with hepatitis B and C viruses. Likerts five point scales was used in rating of attitude related questions and were scored 1 to 5 (1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree for positive statements (question numbers 204 and 205) and the reverse for negative statements). The scores for each statement were added to give maximum of 45 and minimum of 9. Desirable attitude was given for respondents who scored 32 and above whereas; undesirable attitude was given for respondents who scored below 32 (29).

Practice: Nurses way of giving care for patients with hepatitis B and C viruses. Rating of practice related questions was from 0-4(0 never, 1 seldom, 2 sometimes, 3 usually, and 4 always for recommended practices and the reverse for non-recommended practices (question numbers 304, 305, 309, 310)). The scores for each item were added giving maximum of 40 and minimum of 0. Nurses scored 28 and above were considered to have good practice and those who scored <28 taken to have poor practice (29).

4.9 Data processing and analysis

The data was coded, some items reverse coded, cleaned, and entered into Epi info version 7.2.0.1 and then, exported to SPSS window version 24 for analysis. Descriptive statistics, frequency, and proportion were computed. The association between each independent variable and the outcome variables was assessed by using binary logistic regression. All variables with $P \leq 0.2$ in the binary logistic regression analysis were further taken to multiple logistic regression analysis in order to control all possible confounders. Adjusted odds ratio along with 95% CI and P-value < 0.05 were considered to declare factors that have statistically significant association with nurse's attitude and practice towards patients' hepatitis B and C viruses.

4.10 Data quality Assurance

The questionnaire was pre-tested by 5%of the study population on nurses working in Ras Desta hospital one week before the actual data collection period. The aim was to evaluate reliability, validity and internal consistency of the instruments and identify potential problems. Internal consistency was checked by Cronbach's alpha which was 0.75 for attitude items, 0.73 for practice items and 0.79for both. After pretest the necessary modifications were made on the tool before actual data collection like modifying vague statement with clear and understandable one and reordering questions. Additionally training was given for data collectors; continuous supervision and daily checkup for content completeness and accurateness of the collected data was done. The respondents were also informed as ethical clearance has gotten to conduct the study and they were assured for confidentiality of the information they provide.

4.11 Ethical consideration

Letter of approval was obtained from institutional review board of Addis Ababa University, College of health sciences, school of Nursing and midwifery. Official letter of permission from the department was then submitted to Addis Ababa Health Bureau, Alert hospital and TASH. Ethical clearance obtained from Addis Ababa public health research and emergency management core process was taken to Yekatit 12, Menelik II and Zewditu memorial hospitals. All the study participants were informed about the purpose and procedure of the study and their right to refuse was respected and consent was obtained from all study participants prior to the interview. The respondents were also told that the information obtained from them be treated with complete confidentiality and do not cause any harm to them.

4.12 Dissemination of the finding

The result of this study will be submitted to Addis Ababa University College of Health science, School of nursing and midwifery, Department of Nursing and it will also be disseminated to the hospitals, Addis Ababa health bureau and federal ministry of health. Furthermore, the paper will be presented on workshops, seminars and annual nursing association meeting. Finally, the manuscript will be submitted to scientific journals for possible publication.

5. RESULT

5.1 Socio-demographic characteristics of nurses

From the total of 396 study participants 383 respond to the questionnaire with the response rate of 96.7%. As shown in the table below about two third (67.1%) of the respondents were females and more than half (52.5%) in the age group of 22-29 with mean age of 31.4 ±7.52.Nearly half (51.7%) were single, 173 (45.2%) had monthly income of 3500 to 5000 ETB, 334 (87.2%) were BSC nurses, 90.3% staff and 9.7% head nurses, 189 (49.3%) had work experience of 1 to 5 years.

Table 2: Socio-demographic characteristics of nurses working in public hospitals in AA, Ethiopia, 2019 (n=383)

Characteristics	Category	Number	Percent
Sex	Male	126	32.9
	Female	257	67.1
Age (min=22, max=56, mean=31.4, SD=7.52)	22-29	201	52.5
	30-39	132	34.5
	>40	50	13.1
Marital Status	Single	198	51.7
	Married	172	44.9
	Divorced	8	2.1
	Widowed	5	1.3
Monthly income	<3500ETB	52	13.6
	3500-5000ETB	173	45.2
	>5000ETB	158	41.3
Educational level	Diploma	33	8.6
	BSC	334	87.2
	MSC	16	4.2
Working hospital	TikurAnbesa	151	39.4
	Yekatit 12	70	18.3
	Alert	63	16.4
	Menelik II	51	13.3
	Zewditu	48	12.5
Working unit	Emergency	54	14.1
	OPD	82	21.4
	Pediatrics ward	26	6,8
	Medical wards	66	17.2
	Surgical wards	54	14.1
	Orthopedics ward	11	2.9
	ICUs	31	8.1
	OR	48	12.5
	Others	11	2.9
Work experience (min=1, Max=34, Mean=7.58, SD=7.09)	1-5 years	189	49.3
	6-10 years	108	28.2
	>10years	8622.5	

5.2 Nurses attitude towards patients with hepatitis B and C Viruses

176 (46%) of the respondents disagree and strongly disagree to be reluctant to take care of patients with hepatitis B and C viruses. Sixty-six percent of them disagree and strongly disagree to the statement I am afraid of going near patients infected with hepatitis B and C; while 6.8% strongly agreed to it. Regarding fear of getting infection from these viruses 164 (42.8%) disagreed, 112 (29.2%) strongly disagreed and 5.7% strongly agreed. About 163 (42.4%) of the respondents agreed and 76 (19.8%) strongly agreed that they are confident to treat hepatitis B and C patients effectively and safely. Infection control guidelines are believed by majority (85.4%) of the respondents to protect self against these viruses. About one third (34.2%) disagreed and 21.1% strongly disagreed on discouragement from patient contact of HBV and HCV infected health professional. As presented in the table below higher proportion of nurse (32.4% strongly disagree and 39.4% disagreed) on the statement patients with hepatitis B and C viruses should not be appointed for follow up care.

Table 3: Attitude towards patients with hepatitis B and C viruses of nurses working in public hospitals in AA, Ethiopia, 2019 (n=383)

Variable	Category				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
	NO (%)	NO (%)	NO (%)	NO (%)	NO (%)
I am reluctant to take care of patients with hepatitis B and C viruses	58 (15.1)	114 (29.8)	35 (9.1)	103 (26.9)	73 (19.1)
I am afraid of going near patients infected with hepatitis B and C viruses	26 (6.8)	73 (19.1)	31 (8.1)	134 (35.0)	119 (31.1)
I have no concern of being infected with hepatitis B and C viruses	22 (5.7)	50 (13.1)	35 (9.1)	164 (42.8)	112 (29.2)
I am confident that I have the skills needed to effectively and safely treat patients with hepatitis B and C viruses	76 (19.8)	163 (42.4)	52 (13.6)	68 (17.8)	24 (6.3)
Following infection control guidelines protects me from being infected with hepatitis B and C viruses	177 (46.2)	150 (39.2)	26 (6.8)	24 (6.3)	6 (1.6)
People with hepatitis B and C should be treated in a separate room in a hospital	61 (15.9)	114 (29.8)	36 (9.4)	115 (30.0)	57 (14.9)
Health professionals who are HBV or HCV positive should be discouraged from having contact with patients	51 (13.3)	73 (19.1)	47 (12.3)	131 (34.2)	81 (21.1)
Relatives of patients with hepatitis B and C should be notified of the patient's status even without patients consent	64 (16.7)	97 (25.3)	52 (13.6)	111 (29.0)	59 (15.4)
Patients with hepatitis B and C viruses should not be appointed for follow up care	24 (6.3)	48 (12.5)	36 (9.4)	151 (39.4)	124 (32.4)

5.2.1 Nurses level of attitude towards patients with hepatitis B and C viruses

As shown in the figure below higher proportion (54.4%) of the respondents had undesirable attitude whereas, 45.6% had desirable attitude towards patients with hepatitis B and C viruses.

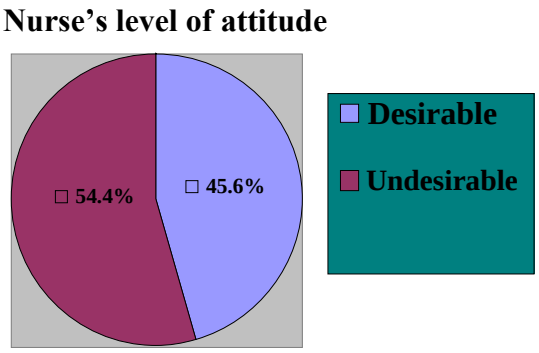

Figure 3: Level of attitude towards patients with hepatitis B and C viruses among nurses working in public hospitals in AA, Ethiopia, 2019 (n=383)

5.3 Nurses practice towards patients with hepatitis B and C viruses

Regarding preventive practices majority of nurses (82.5%) always use gloves for hepatitis B and C patient contact and 71.8% of the respondents always change gloves after contacting to these patients. About three fourth (76.2%) of nurses always dispose sharp and needles used for hepatitis B and C patients properly. Nearly half (49.1%) of the respondents always use additional infection control measures while, 27.7% always double gloves for hepatitis B and C patient care that they didn't use for other patients. More than half (52.0%) of the respondents always mark hepatitis B and C status on the chart. In this study it is always found that only 110 (28.7%) deliver the same standard of care for hepatitis B and C patients as they did for others. (Table:4)

Table 4: Practice towards patients with hepatitis B and C viruses of nurses working in public hospitals in AA, Ethiopia, 2019 (n=383)

Variable	Category				
	Always	Usually	Sometimes	Seldom	Never
	NO (%)	NO (%)	NO (%)	NO (%)	NO (%)
Using gloves for hepatitis B and C patient contact	316 (82.5)	41 (10.7)	19 (5.0)	4 (1.0)	3 (0.8)
Changing gloves after contact with hepatitis B and C viruses infected patients	275 (71.8)	57 (14.9)	38 (9.9)	11 (2.9)	2 (0.5)
Disposing needle/ sharps used for hepatitis B and C patients properly	292 (76.2)	56 (14.6)	26 (6.8)	4 (1.0)	5 (1.3)
Using additional infection control measures while caring for hepatitis B and C patients that you don't use for other patients	188 (49.1)	96 (25.1)	77 (20.1)	12 (3.1)	10 (2.6)
Wearing double gloves for contact with hepatitis B and C patients	106 (27.7)	68 (17.8)	121 (31.6)	35 (9.1)	53 (13.8)
Marking hepatitis B and C status on the chart	199 (52.0)	80 (20.9)	69 (18.0)	9 (2.3)	26 (6.8)
Avoiding physical contact with hepatitis B and C patients	7 (1.8)	64 (16.7)	68 (17.8)	81 (21.1)	163 (42.6)
Delivering the same standard of care to patients with hepatitis B and C viruses as you do for other patients	110 (28.7)	111 (29.0)	97 (25.3)	26 (6.8)	39 (10.2)
Responding to hepatitis B and C patients' needs timely	149 (38.9)	118 (30.8)	89 (23.2)	15 (3.9)	12 (3.1)
Talking positively about patients living with hepatitis B and C	147 (38.4)	88 (23.0)	60 (15.7)	38 (9.9)	50 (13.1)

5.3.1 Nurses level of practice towards patients with hepatitis B and C viruses

As illustrated on the figure below nearly two third (64.2%) of nurses has reported poor practice towards patients with hepatitis B and C. Only 35.8% had good practice towards care of patients with hepatitis B and C viruses.

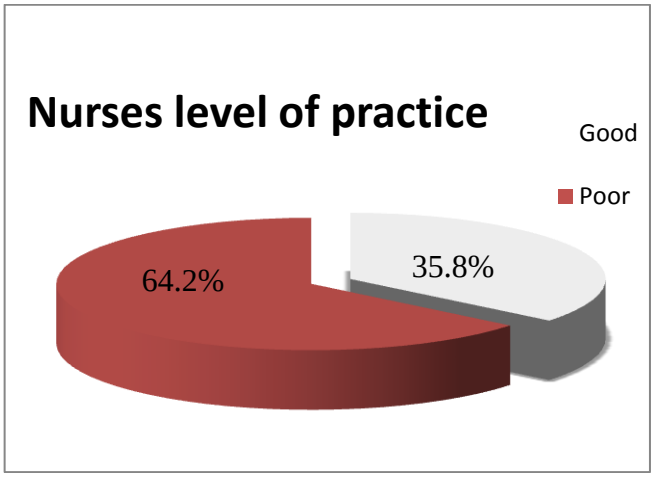

Figure 4: Level of practice of nurses working in public hospitals in AA, Ethiopia, 2019 (n=383)

5.3.2 Reasons to deliver unequal standard of care for patients with HBV and HCV

About 273 (71.3%) of nurses fail to deliver equal standard of care for patients with hepatitis B and C as they deliver for other patients. About two third 181 (66.3%) of the respondents put fear of acquiring infection from these viruses as a reason while, 117 (42.9%) report lack of personal protective as a barrier to deliver equal standard of care for patients with hepatitis B and C viruses. Moreover, 69 (25.3%) of the respondents who didn't deliver the same standard of care for hepatitis B and C infected patients dislike to treat these patients. Six respondents put other reasons for delivering unequal care for hepatitis B and C viruses infected patients.

5.4 Training on infection prevention and occupational exposure

About 161 (42.0%) of nurses took training on infection prevention. Regarding occupational exposure 43 (11.2%) of the respondents were exposed for blood and body fluid from patients with hepatitis B and C viruses in the last one year while, 19 (5.0%) ever sustained needle stick injury from these patients. Washing with soap and water is the major action taken after BBF exposure and needle stick injury done by 74.4% and 73.7% of nurses respectively.

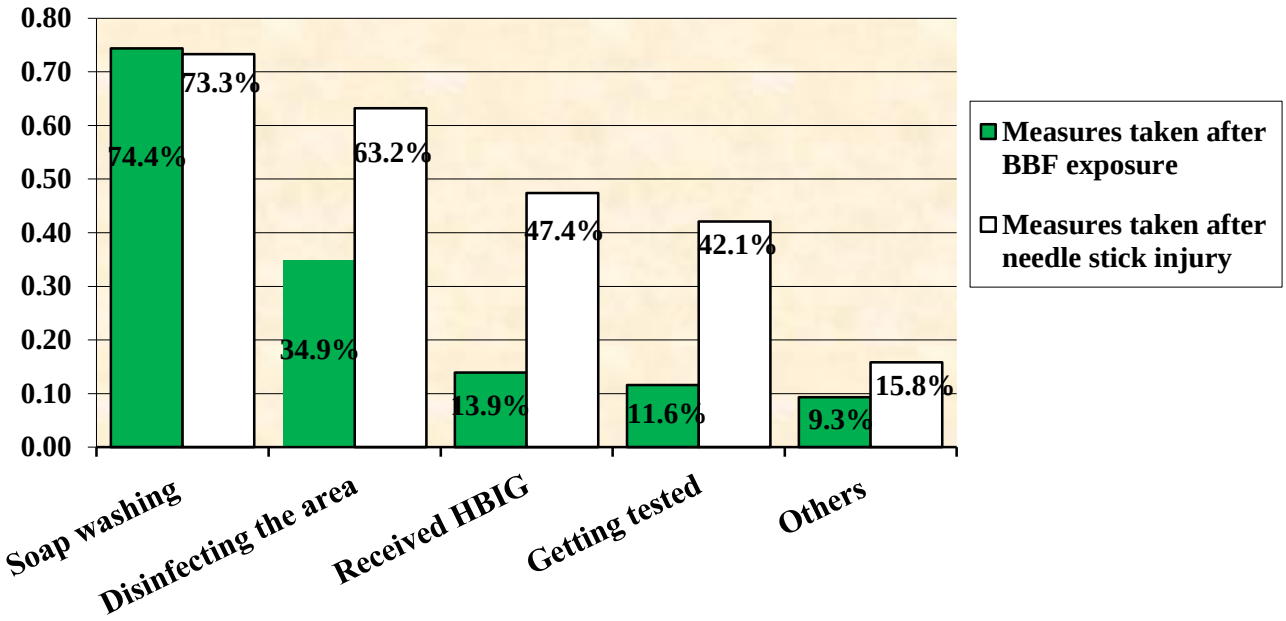

Figure 5: Measures taken after exposure to BBF and needle stick injury from hepatitis B and C patients among nurses working in public hospitals in AA, Ethiopia, 2019

5.5 Hepatitis B vaccination status of nurses

About three fourth (73.9%) of the respondents were fully vaccinated for hepatitis B while 317 (82.8%) took two doses and 333 (86.9%) took at least one dose of hepatitis B vaccine. Thirteen percent of them didn't take hepatitis B vaccine at all.

5.6 Factors associated with the level of nurses attitude and practice towards patients with hepatitis B and C viruses

Binary and multiple logistic regressions were used to identify variables significantly associated with nurse's attitude and practice towards hepatitis B and C patients. All variables with P-value of <0.2 in the binary logistic regression were taken in to multiple logistic regression. Variables with P-value of less than 0.05 in the multiple logistic regressions were considered significant.

Multiple regression analysis for nurses level of attitude with independent variables showed that nurses working in Menelik II hospital were 2.4 times more likely to have desirable attitude than those who were working in Alert hospital [AOR: 2.4; 95% CI(1.13-4.95)]. Nurses who attended training on infection prevention were also 2.1times more likely to be positive for hepatitis B and C patients than who didn't get training on infection prevention [AOR: 2.1; 95 CI (1.325-3.418)]. Getting hepatitis B vaccination also found to increase the likely to have desirable attitude by 6.6 [AOR: 6.6; 95%CI (2.780-17.277)]. (**See table: 5)**

Regarding with factors affecting practice towards patients with hepatitis B and C viruses nurses served for more than 10 years were 3.8 times more likely to have good practice than those who worked for 6 -10 years [AOR: 3.8; 95%CI (1.31-10.98)]. Nurses sustained needle stick injury from hepatitis B and C patients had 5.2 times poor practice than those who didn't sustained it [AOR: 5.2; 95% CI (1.236-21.862)]. As shown in table 6 vaccination against hepatitis B [AOR: 4.5; 95% CI (1.56-13.02)], reluctance to care for hepatitis B and C patients [AOR: 3.3; 95% CI (1.06-10.24)], confidence in protecting self [AOR: 4.6; 95% CI (1.01-20.85)] and having desirable attitude [AOR: 3.9; 95% CI (1.93-7.72)] were found to have significant association with nurses practice towards patients with hepatitis B and C viruses.

Table 5: Factors associated with attitude towards patients with hepatitis B and C among nurses working in public hospitals in Addis Ababa, Ethiopia, 2019 (n=383)

Variables	Category	Level of attitude		Odd ratio at 95% CI)			
		Desirable	Undesirable	Crude odds ratio	p-value	Adjusted odds ratio	p-value
Sex	Male	66 (52.4)	60 (47.6)	1.52 (0.99-2.3)	0.056	1.18 (0.71-1.95)	0.521
	Female	108 (42.0)	149 (58.0)	1		1	
Age	22-29	84 (41.8)	117 (58.2)	1		1	
	30-39	60 (45.5)	72 (54.5)	1.16(0.75-1.81)	0.509	1.15 (0.34-3.93)	0.82
	≥40	30 (60.0)	20 (40.0)	2.09(1.11-3.93)	0.022	1.35 (0.50-3.67)	0.559
Marital status	Single	84 (42.4	114 (57.6)	1		1	
	Married	81 (47.1)	91 (52.9)	1.21 (0.08-1.82)	0.368	1.31 (0.76-2.27)	0.330
	Divorced	6 (75.0)	2 (25.0)	4.07 (0.08-20.68)	0.090	1.15 (0.18-7.31)	0.884
	Widowed	3 (60.0)	2 (40.0)	2.04 (0.33-12.45)	0.442	1.50 (0.17-12.96)	0.713
Monthly income	<3500ETB	19 (36.5)	33 (63.5)	1		1	
	3500-5000ETB	68 (39.3)	105 (60.7)	1.13(0.59-2.14)	0.719	1.00 (0.47-2.16)	0.996
	>5000ETB	87 (55.1)	71 (44.9)	2.13 (1.12-4.04)	0.022	1.67 (0.88-3.18)	0.114
Educational level	Diploma	11 (33.3)	22 (66.6)	1		1	
	BSC	151 (45.2)	183 (54.8)	1.65 (0.77-3.51)	0.194	2.25 (0.88-5.72)	0.09
	MSC	12 (75.0)	4 (25.0)	6.00 (1.57-22.99)	0.009	3.75 (0.73-19.32)	0.115
Position	Staff	147 (42.4)	199 (57.5)	1		1	
	Head	27 (73.0)	10 (27.0)	3.66 (1.72-7.79)	0.001	2.65 (0.96-7.33)	0.061
Working hospital	TikurAnbesa	62 (41.1)	89 (58.9)	1.84 (0.92-3.69)	0.085	1.37 (0.71-2.62)	0.350
	Yekatit 12	36 (51.4)	34 (48.6)	1.21(0.66-2.22)	0.535	1.44 (0.69-2.99)	0.327
	Alert	23 (36.5)	40 (63.5)	1		1	
	Menelik II	31 (60.8)	20 (39.2)	2.67 (1.26-5.77)	0.011	**2.37 (1.13-4.95**	**0.022**
	Zewditu	22 (45.8)	26 (54.2)	1.47 (0.67-3.16)	0.32	1.32 (0.62-2.80)	0.472

Working unit	Emergency	21 (38.9)	33 (61.1)	1.70 (0.40-7.13)	0.470	1.97 (0.42-9.33)	0.395
	OPD	47 (57.3)	35 (42.7)	3.58 (0.89-14.48)	0.074	3.49 (0.76-16.09)	0.109
	Pediatrics ward	12 (46.2)	14 (53.8)	2.29 (0.49-10.61)	0.291	2.62 (0.48-14.27)	0.267
	Medical ward	21(31.8)	45 (68.2)	1.24 (0.30-5.17)	0.763	1.35 (0.28-6.38)	0.709
	surgical ward	25 (46.3)	29 (53.7)	2.30 (0.55-9.61)	0.254	2.86 (0.60-13.57)	0.186
	Orthopedic ward	3 (27.3)	8 (72.7)	1		1	
	ICUs	15 (48.4)	16 (51.6)	2.50(0.56-11.23)	0.232	3.64 (0.52-25.26)	0.192
	OR	24 (50.0)	24 (50.0)	2.67 (0.63-11.28)	0.183	3.25 (0.63-16.84)	0.161
	Others	6 (54.5)	5 (45.5)	3.200 (0.54-18.98)	0.200	2.74 (0.58-12.95)	0.203
Work experience	1-5	82 (43.4)	107 (56.6)	1.20 (0.74-1.95)	0.450	1.85 (0.88-3.87)	0.103
	6-10	42 (38.9)	66 (61.1)	1		1	
	>10	50 (58.1)	36 (41.9)	2.18 (1.23-3.89)	0.008	1.65 (0.65-4.18)	0.288
Training on IP	Yes	93 (57.8)	68 (42.2)	2.38 (1.57-3.60)	0.000	**2.13(1.33-3.42)**	**0.002**
	No	81 (36.5)	141 (63.5)	1			
Exposure to BBF	Yes	19 (44.2)	24 (55.8)	1			
	No	155 (45.6)	185 (54.4)	1.06 (0.56-2.00)	0.862		
History of needle stick	Yes	11 (57.9)	8 (42.1)	1.70 (0.67-4.31)	0.268		
injury	No	163 (44.8)	201 (55.2)	1			
Vaccination against	Yes	167 (50.2)	166 (49.8)	6.18 (2.70-14.14)	0.000	**6.63 (2.78-17.26)**	**0.000**
HBV	No	7 (14.0)	43 (86.0)	1			

Table 6: Factors associated with practice towards patients with hepatitis B and C among nurses working in public hospitals in Addis Ababa, Ethiopia, 2019 (n=383)

Variables	Category	Level of practice		Odd ratio (95% CI)			
		Good	Poor	Crude odds ratio	p-value	Adjusted odds ratio	p-value
Sex	Male	51(40.5)	75 (59.5)	1.35 (0.87-2.10)	0.179	1.11 (0.61-2.03)	0.725
	Female	86 (33.5)	171 (66.5)	1		1	
Age	22-29	60 (29.9)	141(70.1)	1		1	0.910
	30-39	45 (34.1))	87 (65.9)	1.22(0.71-1.95)	0.416	1.05 (0.43-2.58)	
	≥40	32 (64.0)	18 (36.0)	4.18 (2.18-8.02)	0.000	1.51 (0.51-4.50)	0.458
Marital status	Single	65 (32.8)	133 (67.2)	1		1	
	Married	65 (37.8)	107 (62.2)	1.24 (0.81-1.91)	0.319	5.38 (0.33-27.40)	0.237
	Divorced	5 (62.5)	3 (37.5)	3.41 (0.79-14.71)	0.100	2.88 (0.19-12.86)	0.447
	Widowed	2 (40.0)	3 (60.0)	1.364 (0.22-8.37)	0.737	1.99 (0.08-14.37)	0.673
Monthly income	<3500ETB	12 (23.1)	40 (76.9)	1		1	
	3500-5000ETB	50 (28.9)	123 (71.1)	1.36(0.66-2.80)	0.411	1.84 (0.72-4.72)	0.204
	>5000ETB	75 (47.5)	83 (52.5)	3.01(1.47-6.17)	0.003	2.57 (0.86-7.64)	0.090
Educational level	Diploma	8 (24.2)	25 (75.8)	1		1	
	BSC	121(36.2)	213 (63.8)	1.78(0.78-4.06)	0.174	1.03 (0.16-6.62)	0.973
	MSC	8 (50.0)	8(50.0)	5.13 (0.88-11.05)	0.007	1.40 (0.31-6.43)	0.664
Position	Staff	115 (33.2)	231 (66.8)	1		1	
	Head	22 (59.5)	15 (40.5)	2.95 (1.47-5.89)	0.002	1.49 (0.51-4.42)	0.469
Working hospital	Tikur Anbesa	60 (39.7)	91 (60.3)	2.11(1.09-4.10)	0.028	2.43 (0.99-5.97)	0.053
	Yekatit 12	27 (38.6)	43 (61.4)	2.01 (0.95-4.29)	0.070	1.40 (0.51-3.81)	0.516
	Alert	15 (23.8)	48 (76.2)	1		1	
	Menelik II	20 (39.2)	31(60.8)	2.07 (0.92-4.63)	0.079	1.58 (0.52-4.84)	0.423
	Zewditu	15 (31.3)	33 (68.8)	1.455 (0.627-3.375)	0.383	1.68 (0.59-4.80)	0.335
Working unit	Emergency	17 (31.5)	37 (68.5)	3.24 (1.58-6.66)	0.001	2.32 (0.90-5.99)	0.083
	OPD	40 (48.8)	42 (51.2)	2.91 (1.11-7.63)	0.029	2.41 (0.70-8.28)	0.161
	Pediatrics ward	12 (46.2)	14 (53.8)	1.56 (0.69-3.52)	0.282	1.04 (0.39-2.80)	0.936
	Medical ward	15 (22.7)	51 (77.3)	1		1.75 (0.63-4.87)	0.281
	surgical ward	15 (27.8)	39 (72.2)	1.31 (0.51-2.99)	0.526	1	
	Orthopedics ward	4 (36.4)	7(63.6)	1.94 (0.50-7.55)	0.337	4.01 (0.80-20.24)	0.092
	ICUs	14 (45.2)	17 (54.8)	2.80 (1.13-6.97)	0.027	2.86 (0.88-9.23)	0.080

	OR	17 (35.4)	31(64.6)	1.87 (0.82-4.26)	0.139	1.18 (0.41-3.40)	0.760
	Others	3 (27.3)	8(72.7)	1.28 (0.30-5.42)	0.742	1.87 (0.32-10.85)	0.484
Work experience	1-5	59 (31.2)	130 (68.8)	1.36 (0.80-2.32)	0.257	1.69 (0.68-4.17)	0.256
	6-10	27 (25.0)	81 (75.0)	1		1	
	>10	52 (60.4)	34 (39.6)	4.37 (2.37-8.06)	0.000	**3.79 (1.31-10.97)**	**0.014**
Training on IP	Yes	75 (46.6)	86 (53.4)	2.25 (1.47-3.48)	0.000	1.63 (0.92-2.87)	0.093
	No	62 (27.9)	160 (72.1)	1			
Exposure to BBF	Yes	16 (37.2)	27 (62.8)	1.07 (0.56-2.07)	0.835		
	No	121 (35.6)	219 (64.4)	1			
History of needle stick	Yes	4 (21.1)	15 (78.9)	1		1	
injury	No	133(36.5)	231 (63.5)	2.16 (0.70 -6.64)	0.179	**5.20 (1.24-21.86)**	**0.025**
Vaccination against HBV	Yes	131 (39.3)	202 (60.7)	4.76 (1.97-11.48)	0.001	**4.50(1.56-13.02)**	**0.006**
	No	6 (12.0)	44 (88.0)	1		1	
Reluctance to care	Strongly agree	8 (13.8)	50 (86.2)	1		1	
	Agree	26 (22.8)	88 (77.2)	1.85 (0.78-4.39)	0.165	2.60 (0.83-8.10)	0.100
	Neutral	8 (22.9)	27 (77.1)	1.85(0.63-5.49)	0.266	1.84 (0.46-7.41)	0.394
	Disagree	52 (50.5)	51 (49.5)	6.37 (2.75 -14.77)	0.000	2.87 (1.61-8.35)	0.058
	Strongly disagree	43 (58.9)	30 (41.1)	8.96 (3.72-21.60)	0.000	**3.30 (1.06-10.24)**	**0.039**
Confidence in protecting	Strongly disagree	4 (16.7)	20(83.3)	1		1	
self	Disagree	21 (30.9)	47 (69.1)	2.23 (0.68-7.35)	0.186	2.92 (0.63-13.57)	0.172
	Neutral	13 (25.0)	39 (75.0)	1.67(0.48-5.78)	0.421	2.95 (0.60-14.60)	0.186
	Agree	57 (35.0)	106 (65.0)	2.69(0.88-8.25)	0.084	3.54 (0.80-15.73)	0.096
	Strongly agree	42 (55.3)	34 (44.7)	6.18(1.93-19.80)	0.002	**4.58 (1.01-20.85)**	**0.049**
Nurses Attitude	Desirable	100(57.5)	74(42.5)	6.28 (3.95-10.00)	0.000	**3.86(1.93-7.72)**	**0.000**
	Undesirable	37(17.7)	172 (82.3)	1		1	

6. DISCUSSION

Hepatitis viruses B and C are common infectious viruses affecting millions. Infectiousness nature of these viruses imposes fear on HCWs including nurses affecting their behavior towards hepatitis B and C infected patients which in turn affects the quality of life of these patients (3, 10). The current study aims to assess nurse's attitude, practice and associated factors towards patients with hepatitis B and C viruses among nurses working in public hospitals in AA.

The result revealed that 46.0 %of the respondents disagree or strongly disagreed and 45.2% agreed or strongly agreed with being reluctant to care for hepatitis B and C patients. This is higher when compared with studies done in Kutahya Western Turkey where 35.2% were willing and in South East Brazil only 20.6% of the participants were willing to care for hepatitis B and C viruses infected patients(24,26). This difference may be due to the study participants being all health care workers in these studies. However, the finding in this study is much lower than the study from Vietnam that reported 73.3% of the respondents to be willing to care for hepatitis B/C patients. Besides, in a study from Japan only 18% of nurses agreed or somewhat agreed as they were unwilling to care for these patients(14,23).The possible reason for this difference may be lack of preventive and therapeutic facilities in hospitals that imposes fear of acquiring these infections. According to the study done on medicine and health science students in North West Ethiopia 82% of students were comfortable to treat hepatitis B patient; which is also much higher than the present study(27).This dissimilarity may be due to the differences in characteristics between students and nurses.

It is revealed from this study that 72.0% of the respondents concerned with getting infection from hepatitis B and C viruses. This study is in line with the study from North West Ethiopia that 77.2% disagreed with being non concerned with getting hepatitis B infection (27). Relatively lower proportion (54%) of participants in a study from Japan had anxiety related the risk of acquiring hepatitis B and C infections. Moreover, quarter (25.9%) of nurses in the present study afraid going near patients infected with HBV and HCV. Additionally 65.8% in the Vietnam and 79% of participants in the Japan studies don't care of acquiring these infections from infected collogues. Again in the Japan study 88% of the participants disagree and strongly disagreed to avoid infected colleagues(14,23,28). This discrepancy may be due to

lack of personal protective equipment and nurse's attitude towards colleagues may be different from attitude towards other patients.

Some respondents in this study showed discriminatory behaviors that include feeling hepatitis B and C patients to be treated in a separate room (45.7%), not to be appointed for follow up care(18.8%) and infected health care professionals to be discouraged from having patient contact (32.4%). Additionally 42% of the respondents need hepatitis B and C patients' status to be disclosed to their families even without patient's permission. Comparable to this study a report from South East Brazil revealed 21.1% of HCWs participated in the study need hepatitis B and C patients to be given the last appointment for the day. In that study also 53.8% of the participants need all patients to be screened and infected individuals to be identified for safety. These behaviors of nurses may come from the higher perception of risk and fear of hepatitis B and C infections.

Regarding confidence in protecting self against hepatitis B and C 62.2% feel confident to treat these patients safely. This is relatively consistent with the study from Japan that found as 59% of nurses agree or somewhat agree that they were confident to protect them against these infections. However, relatively higher proportion (70%) reported in the Vietnam study(14,23). This discrepancy may be resulted from the difference in socio-demographic characteristics of respondents

Infection control measures are vital to prevent infectious diseases. In the present study majority (85.4%) of nurses believe on infection control guidelines which is consistent with studies done in Brazil, North West Ethiopia and Adama with percentages 86.8%, 83.3% and 85.2% respectively (26,27,30).

Over all less than half (45.6%) of the respondents in the present study had desirable attitude. whereas, 54.6% had undesirable attitude towards hepatitis B and C patients. In line with this 60% of nurses participated in study from Kutahya Western Turkey showed negative attitude to treat hepatitis C patients(24). In contrary to this a study on medicine and health science students in North West Ethiopia found 83.3% of the participants to had positive attitude towards preventing hepatitis B (30). This might be because the current study is broader that include nurse attitude towards hepatitis B and C patients while preventing self from these infections.

Regarding nurses practice of infection control measures, majority (82.5%) of the respondents reported as they always use gloves while caring for hepatitis B and C patients. Relatively lower (73.3%) of the participants in a study in Bangladesh and 76.7% in Nigeria reported proper use of gloves (19,35). Compared to this finding much lower proportion of respondents in studies in Hayatabad medical complex in Pakistan and Egypt use gloves with percentages 45% and 54.5% respectively (20,34). This dissimilarity may be due to differences in working setup, the one done in Pakistan included other HCWs and that of the Bangladesh and Nigeria studies asked respondents habit of glove use while caring for any patient. The number of respondents involved in the Pakistan and Nigeria study were also low that might contribute to this discrepancy (34, 35).

The present study also showed that about 71.8% always change gloves after contact with hepatitis B and C patients. Three fourth (76.2%) of them also always dispose needle and sharps used for hepatitis B and C patients properly. In a study done in Agrtala city, India on nursing students 83.1% discard needles in puncture proof container (33). In the Egypt study lower percentage (56.1%) of HCWs change gloves after each patient contact and almost half (49.2%) use safety boxes properly (20). The possible reason for this may be including other HCWs and students and assessing practice towards preventing hepatitis B considering all patients as potentially infectious.

Significant proportion of nurses took special measures to protect self from these infectious diseases. In the present study 49.1% always and 25.1% usually use additional infection prevention mechanisms; including using double glove for hepatitis B and C patients' care which was always practiced by 27.7% of them. Marking the status on the chart is one of the non-recommended practices done by many HCWs to give special precaution for that patient. In the present study about half (52%) always and 20.9% usually practice it. In the study from Kutahya, majority (84.3%) of the HCWs use additional infection prevention precautions and 69.3% of the preferred wearing double gloves for treating hepatitis C patient having bleeding(24). In the study form Pakistan 7% of the respondents need to treat hepatitis B patients in isolated room and 65% replied as they use separate dressing set for these patients(34). In the Ghanaian study also 10.4% always do carefully with hepatitis B patients(37). Fear of acquiring infection and discriminating patients with hepatitis B and C

viruses is most probably created from easy transmission of these viruses and lack of appropriate treatment.

Only 28.7% of nurses participated in this study always deliver the same standard of care for patients infected with hepatitis B and C. Moreover 38.9% and 38.4% of the participants always respond to these patients needs and talk positively about them respectively. Conversely 10.2% of them never deliver the same standard of care for these patients as they do for others; 16.7% usually avoids physical contact with hepatitis B and C patients; 13.1% never talk positively about these patients and 31.% never respond hepatitis B and patients' needs timely. The study from Pakistan also revealed that 68.9% of nurses need to deliver equal standard of care for hepatitis C patient (25). This percentage may be exaggerated because it was their perception towards hypothetical patient not what they were performing.

Significantly low proportion of the respondents (35.8%) in this study had good practice towards patients with hepatitis B and C viruses. Higher percentage of respondents from studies in Dhaka medical college (87.4%), Bangladesh (49.3%), and Jimma (40.9%) were found to have good preventive practice (19, 22, 32). These figures were higher because they assess nurses and other HCWs practice of standard precautions to prevent hepatitis B and C infections while the current study assessed nurse's practices beyond this.

This study also examined factors associated with nurse's attitude and practice towards hepatitis B and C patients. It is found that nurses working in Menelik II hospital were 2.4 times more likely to have desirable attitude than those who were working in Alert hospital [OR: 2.4; 95% CI(1.13-4.95)]. This may be due higher proportion of nurses vaccinated against hepatitis B and trained on infection prevention were working in Menelik II hospital than those working in Alert. Nurses who attended training on infection prevention were also 2.1times more likely to be positive for hepatitis B and C patients than who didn't get training on infection prevention [OR: 2.1; 95 CI (1.325-3.418)]. This may be because getting training on infection prevention increases nurses knowledge on how to treat a patient with hepatitis safely and confidently which in turn affects attitude and practice (19). Getting hepatitis B vaccination also found to increase the likely to have desirable attitude by 6.6 [OR: 6.6; 95%CI (2.78-17.28)]. The possible reason for this may be vaccination decreases the fear of acquiring infection and increases confidence in protecting self that many nurses lack.

Socio-demographic characteristics age, sex, marital status, income and years of work experience didn't show significant association with nurse's attitude towards patients with hepatitis B and C viruses which is similar with the study from Pakistan (25). However in other studies being female in one study and male in another, aged above 40, worked for more than 10 years, showed favorable attitude (24, 28, 29). This may be the effect of working setup, difference in sample size and socio-demographic characteristics of populations with the current study.

The factors affecting nurse's practice that revealed in this study were working for more than 10 years, previous exposure to needle stick injury from hepatitis B and C patients, getting vaccinated against hepatitis B, being reluctant to care for hepatitis B and C patients, having confidence in protecting self and desirable attitude towards hepatitis B and C patients. Nurses worked for more than 10 years were 3.8 times more likely to have good practice than those who worked for 6 -10 years [OR: 3.8; 95%CI (1.31-10.98)]. A study done in Hayatabad medical complex in Pakistan found that those who worked for more than 4 years better use gloves. Nurses sustained needle stick injury from hepatitis B and C patients had 5.2 times poor practice than who respondents didn't sustained it [OR: 5.2; 95%CI (1.236-21.862)](34). In reverse to this a study done to assess nurse's willingness to accept work collogues infected by hepatitis B/C found that previous needle stick injury from HBV/HCV infected patients was positively associated with willingness to accept these infected colleagues (OR:2.00; 95% CI:1.42-2.61) (28). Vaccination against hepatitis B, reluctance to care for hepatitis B and C patients, confidence in protecting self and having desirable attitude were found to have significant association with nurse's practice towards hepatitis B and C patients with P-values 0.006, 0.039, 0.049 and 0.000 respectively. The study from Nigeria also disclosed as positive attitude had significant association with good practice (37). This is because being aware of the cause and outcome helps to take a safe and effective action.

In other studies variables like monthly income, BBF exposure from hepatitis B/C patients, taking infection prevention training significantly associated with practice that didn't show association in the present study (19,20,29).

Significant proportion of HCWs become exposed for BBF and needle stick injury while performing their day to day activities. In this study 11.2% of the respondents were exposed for BBF in the last one year while, 5.0% ever sustained needle stick injury from hepatitis B and C patients. About 58.1% in the Pakistan and 15.8% in Vietnam and 43% from Jimma reported history of needle stick injury(22,23,25).About 47.3% of HCWs who were working in Adama hospital and medical college were occupationally exposed for BBF and needle stick injury and 49.2% HCWs participated in the Gondar study exposed for risky conditions(30,31). The difference in these percentages possibly comes from the study individuals participated, the exposures being from all patients not specifically from hepatitis B and C patients.

Washing with soap and water is the major action taken after BBF and needle stick injury done by 74.4% and 73.7% of nurses respectively. It was also the most common action taken practiced by 71.3% and 48.6% of exposed respondents from the Adama and Gondar studies respectively (30,31).

Regarding vaccination against hepatitis B majority (86.9%) of the respondents took at least one dose of hepatitis B vaccine and 73.9% fully vaccinated. It is high percentage when compared to studies from Bangladesh that reported 59%, in Nigeria 58% and in Adama which was 44.5%(19,30,35). This may be due to the recommendation from federal ministry of health of Ethiopia for all health care professionals to be vaccinated and the vaccine being given for free.

7. STRENGTH AND LIMITATIONS OF THE STUDY

7.1 Strengths of the Study

This study incorporated large sample size which increases representativeness and provide more accurate mean values. Besides, the response rate was high which again increases representativeness of the data. The hospitals were selected randomly that generalization can made to all public hospitals. The tool used to collect data was pretested for clarity and reliability.

7.2 Limitations of the study

One limitation of this study was the self-reported method of assessment of nurse's practices towards patients with hepatitis B and C viruses; the level practice may have been better assessed by observation although that couldn't be done because of shorter duration to get sufficient hepatitis B and C patients being cared by nurses. Some of the information requested in the data collecting tool may be under-reported due to recall bias. Furthermore, Cross sectional study design is also ill in identifying which variable causes a change to the other in the exposure outcome relationship.

8. CONCLUSION AND RECOMMENDATION

8.1 Conclusion

It could be inferred from this study that the overall level of nurse's attitude and practice towards patients with hepatitis B and C viruses is low. Compared to attitude of nurses towards patients with hepatitis B and C viruses their practice is very low. Even though nurses better comply with some of the standard precautions, they use additional infection control measures which are not recommended and may be of discriminatory.

Nurses working in Menelik II hospital trained on infection prevention and vaccinated against hepatitis B were more likely to have desirable attitude towards patients with hepatitis B and C viruses. Nurses who had desirable attitude towards hepatitis B and C patients deliver better acceptable care than those who had undesirable attitude. Respondents worked for more than 10 years, vaccinated against hepatitis B and those who are confident to protect self against these viruses found to have good level of practice. Whereas, previous needle stick injury from hepatitis B and C patients and being reluctant to deliver care for these patients influenced the respondents practice to be poor.

8.2 Recommendation

Based on the findings of the study, the following recommendations are made to improve the attitude and practice of nurses towards patients with hepatitis B and C.

To FMOH

Even though the FMOH recommendation to all HCWs to be vaccinated against HBV increased the proportion of vaccinated nurses' efforts should be strengthened to increase nurse's level of attitude and practice towards patients with hepatitis B and C viruses. It can be achieved by providing training and retraining for nurses that help improve their attitude and practice on care of hepatitis B and C patients. FMOH should also ensure proper supply of personal protective equipment and other preventive mechanisms in collaboration with hospitals and NGOs. Besides it should improve the quality of care given for hepatitis B and C patients by increasing diagnostic and therapeutic facilities.

To hospital managers

Hospital managers should ensure continuous supply and proper distribution of personal protective equipment. They should also provide training and re-training nurses to improve their confidence in using infection prevention and control guidelines and how to treat hepatitis B and C patients safely, effectively and equally.

To nurses

Nurses should provide equal care for all patients considering all patients as potentially infectious. They should also consider that mistreating these patients further increases the distribution of the diseases in the hospital as well as out of the hospital. Nurses can also decrease transmission and improve hepatitis B and C patients care by providing health education for patients and attendants in a regular basis.

To researchers

Conducting further observational study which is more accurate than using questionnaires is recommended to find out the other factors associated with nurse's attitude and practice towards hepatitis B and C patients. Furthermore the effects of undesirable attitude and poor practice on the patients are better to be assessed qualitatively.

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APPENDIX

Annex A: Information sheet

Introduction: my name is_____ I am working as a data collector for a research conducted by Tekalign Amera to assess nurse's attitude and practice towards patients with hepatitis B and C patients for the partial fulfillment of his Master's degree in Adult Health nursing in Addis Ababa University. You are selected to participate in this study and all necessary information about the study is described as follows.

Objective: to assess attitude, practice and associated factors towards patients with hepatitis B and C viruses among nurses working in public hospitals in Addis Ababa, Ethiopia, 2019.

Confidentiality: all the information you will provide will be kept secret and any third party couldn't have the access to it. Furthermore you are not expected to write your name so that no one can identify you.

Benefits: there is no direct benefit for you from this study. However, the indirect benefit of the research for the participant and other clients is clear. Because assessing nursing attitude and practice towards hepatitis B and C patients and identifying the factor affecting their attitude and practice helps for the improvement in nursing care provided for hepatitis B and C patients.

Risks: the information is collected using structured questionnaire therefor participating in the study will not inflict any harm on you.

Right to refuse: you have the right not to participate in the study as well as to drop it at any time if you feel discomfort with any question.

Person to contact: If you want to know more information about the research and its undertakings, you can contact to:

Tekalign Amera

Phone: +251932205866

Email: tekalign1991@gmail.com

Annex B: consent form

I have read and understand all the information about the study. I am giving my consent to participate in the study entitled "Assessment of Attitude, practice and associated factors towards patients with hepatitis B and C viruses among Nurses Working in public Hospital in Addis Ababa, Ethiopia, 2019". I have been informed about the purpose of the study. I have also understood that the information I will provide is entirely voluntarily.

Are you willing to participate in this study?

1. No (Thank you)

2. Yes participant's signature …… date……..

Data collector

Name_____Signature_____Date____/_____/____

Result:

1. Questionnaire completed _____

2. Questionnaire not completed _____

3. Participant refused _____

4. Others (please Specify) _____

Checked by Supervisor:

Name_____Signature_____Date____/____/__

Annex C: Data collection form

This is the questionnaire designed to assess nurse's level of attitude and practice towards patients with hepatitis B and C viruses. It has three parts: part one is about socio-demographic information, part two to assess nurse's level of attitude while the last part asks about practice of nurses towards hepatitis B and C patients. Please read carefully and give your honest response to each.

Questionnaire ID----------

Part one: Socio-demographic characteristics

Instruction: Encircle from the given alternatives and write your idea in the space provided for open ended questions. Please **don't select** more than one alternative.

Codes	Variables	Categories
101	What is your sex?	1. Male 2. Female
102	How old are you?	_____(age in year)
103	What is your marital status?	1. Single 3. Divorced 2. Married 4. Widowed
104	How much is your income per month?	_____(in ETB)
105	What is your educational level?	1. Diploma **2.** BSc **3.** MSc
106	What is your position?	1. Staff nurse 2.Head nurse
107	In which hospital are you Working?	_____
108	In which unit or ward are you working?	1.Emergency unit2. OPD 3. Pediatric ward 4. Medical ward 5. Surgical ward 6. Orthopedics ward 7. ICUs 8. OR 9. Others specify……
109	How many years have you worked in healthcare?	----------

Part II. Statements related to attitude towards patients with hepatitis B and C viruses

Please read the statements and circle the number that best represents your opinion. Please **don't select** more than one alternative.

S.NO	Statement	Response
201	I am reluctant to take care of patients with hepatitis B and C viruses	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
202	I avoid going near patients infected with hepatitis B and C viruses	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
203	I have no concern of being infected with hepatitis B and C viruses	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
204	I am confident that I have the skills needed to effectively and safely treat patients with hepatitis B and C viruses	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
205	Following infection control guidelines protects me from being infected with hepatitis B and C viruses	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
206	People with hepatitis B and C should be treated in a separate room in a hospital	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
207	Health professionals who are hepatitis B or C virus positive should be discouraged from having contact with patients	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree

208	Relatives of patients with hepatitis B and C should be notified of the patient's status even without patients consent	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
209	Patients with hepatitis B and C viruses should not be appointed for follow up care	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree

Part III: Questions related to nurses practice towards patients infected by hepatitis B and C viruses

How often do you use the following measures when providing care for patients with hepatitis B and C? Please **don't select** more than one alternative.

S.No	Practice item	Response
301	Using gloves for hepatitis B and C patient contact	0. Never 1. Seldom 2. Sometimes 3. Usually 4. Always
302	Changing gloves after contact with hepatitis B and C viruses infected patients	0. Never 1. Seldom 2. Sometimes 3. Usually 4. Always
303	Disposing needle/ sharps used for hepatitis B and C patients properly	0. Never 1. Seldom 2. Sometimes 3. Usually 4. Always
304	Using additional infection control measures while caring for hepatitis B and C patients that you don't use for other patients	0. Never 1. Seldom 2. Sometimes 3. Usually 4. Always

305	Wearing double gloves for contact with hepatitis B and C patients	0. Never 1. Seldom 2. Sometimes 3. Usually 4. Always
306	Delivering the same standard of care to patients with hepatitis B and C viruses as you do for other patients	0. Never 1. Seldom 2. Sometimes 3. Usually 4. Always
307	Responding to hepatitis B and C patients' needs timely	0. Never 1. Seldom 2. Sometimes 3. Usually 4. Always
308	Talking positively about patients living with hepatitis B and C	0. Never 1. Seldom 2. Sometimes 3. Usually 4. Always
309	Avoiding physical contact with hepatitis B and C patients	0. Never 1. Seldom 2. Sometimes 3. Usually 4. Always
310	Marking hepatitis B and C status on the chart	0. Never 1. Seldom 2. Sometimes 3. Usually 4. Always

311.If your response for "306" is **not' always'** What affects you in delivering the same standard of care for patients with hepatitis viruses B and C as you give for other patients?

1. Fear of contracting infection from these viruses
2. Lack of personal protective equipment
3. Lack of confidence in protecting self
4. Disliking to treat patients with hepatitis B and C
5. Others specify……

Part IV: Questions related to nurses occupational exposure and vaccination status

Please select from the alternatives given and write your additional response on the space provided

401.Did you ever receive training on infection prevention?

1. Yes 2. No

402.Have you been exposed for blood and body fluid from hepatitis B and C virus infected patient in the last 12 months?

1. Yes 2. No

403. If 'yes' for Q no 402 what was your immediate action after exposure?

1. Washed with soap and water
2. Disinfect the area
3. Get tested for hepatitis viruses B and C
4. Received hepatitis B immunoglobulin
5. Other specify…….

404. Have you ever sustained needle stick or sharp injury from hepatitis B and C virus infected patient?

1. Yes 2. No

405. If 'yes' for Q no '404' what was your immediate action after the injury?

1. Washed with soap and water
2. Disinfect the area
3. Get tested for hepatitis viruses B and C
4. Received hepatitis B immunoglobulin
5. Other specify…….

406. Have you received a vaccine against hepatitis B virus?

1. Yes 2. No

407. If your response is 'yes' for question number '406' how many doses did you take?

1. One 2. Two 3. Three

Thank you very much for your time. The answers you have given will provide information to help improve health services to pleople living with hepatitis B and C