KNOWLEDGE, ATTITUDE, PRACTICE AND ASSOCIATED FACTORS OF BLOOD DONATION AMONG HEALTH CARE WORKERS IN TIKUR ANBESSA SPECIALIZED HOSPITAL,ADDIS ABABA,ETHIOPIA

By: **Ambaye Dejen (BSC)**

Advisors:

Dr Sisay Teklu , MD, Associate Professor of Gyn/Obstetrics, Addis Ababa University

Ato Kibiatu Gebre , BSC, MSC ,Lecturer, Department of Emergency Medicine, Addis Ababa University.

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Pricipal investigator: Ambaye Dejen (BSC)

Tel: +251-913-97-67-68

Email: ambayedejen@gmail.com

Approved by the Examining Board

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Head, department of Emergency Medicine

Advisors:

Dr. Sisay Teklu, MD , ----------

Ato.Kibatu Gebrie (BSC, MSC) ----------

Examiner

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Table of Contents

List of acronyms

WHO – World Health Organization

AARHB – Addis Ababa Regional Health Bureau

AOR- Adjusted Odd Ratio

COR- Crude Odds Ratio

BP – Blood Pressure

ETB – Ethiopian birr

HIV/AIDS – Human Immune Virus

IRB – Institutional Research Board

KAP – knowledge, Attitude and Practice

MOH – ministry of health

NBTS - National Blood Transfusion Services

NRCS – National Red Cross Society

SPSS- Statistical Package for Social Science

TB – Tuberculosis

List of tables

ABSTRACT

Background- Blood is a specialized body fluid in humans that delivers necessary substances such as nutrients and oxygen to the cells and transports metabolic waste products away from them. Secure supply of safe blood components, based on voluntary, non-remunerated blood donation, is an important national goal to prevent blood shortages.

Now a day, in many low- and middle-income countries, blood supply is critically inadequate. Sub-Saharan Africa, which has the highest maternal mortality rate in the world of 510 deaths per 100 000 live births, also has the lowest blood donation rates.

The donated blood plays a big role during surgery, accident, delivery cases, bleeding cases such as peptic ulcer, liver diseases, lung diseases, cancer cases, blood diseases such as hemophilia, anemia and thalassemia, new born baby with blood diseases, burn cases etc

Objective – The objective of this study is to assess knowledge, attitude and practice of blood donation among health workers in Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia.

Methods- Institution based cross sectional study design was conducted among all health care workers of Tikur Anbessa specialized hospital. The dependent variable of the study were knowledge, Attitude and practice where as the independent variables include health care workers socio demographic characteristics. The data was collected by pre-tested and structured self administered questionnaire. Data quality was maintained by providing training to data collectors and by doing pre-test as well as by providing frequent supervision. Finally data was analyzed by using SPSS version 20 software.

Result - All 295 respondents were in the age range of 21-59 years with a mean age of 28.23 & SD of 6.432 year. From the total participants 176(59.7%) were male. One hundred sixty (54.2% %) and 135(45.8%) of respondents have good and poor level of knowledge regarding blood donation respectively. From the sociodemographic factors, sex was statistically and significantly associated with knowledge of blood donation. Being male was 1.75 times more knowledgeable than females [AOR (95%CI) 1.75(1.00, 3.07)]. The other statistically significant factor was marital status. Married health care workers were 3 times knowledgeable than single [AOR

(95%CI) 3.24(1.65, 6.37)].Department was also among the statistically significant factors. Being Laboratory were 63% less likely to have good knowledge than physician [AOR (95%CI) **0.37(0.12, 1.16).** One hundred ninety five (66.1%) of respondents have poor attitude towards blood donation. From the health care workers socio-demographic factors, age was statistically and significantly associated with attitude towards blood donation. Health workers aged between 31&40 were 1.5 times having good attitude towards blood donation than those who are above 40[AOR (95%CI) 1.50(0.38, 5.89)]. Similarly, those health workers who had 6 month to one year work experience 4 times having good attitude than those who had above 5 years experience[AOR (95%CI) 4.08 (1.31,12.73)]. The other statistically significant socio-demographic factor was department. Being a nurse were 51%less likely to have good attitude towards blood donation than others (AOR (95%) 0.49 (0.23, 1.08)].

Key words- Attitude, Blood donation, Donors, Health workers, Knowledge, practice

1. Introduction

1.1. Background

Blood is a specialized body fluid in humans that delivers necessary substances such as nutrients and oxygen to the cells and transports metabolic waste products away from those same cells. Human blood is an element of human life. The ancient Egyptians recognized the important properties of blood and it was used to resuscitate the sick, rejuvenate the old and infirm by bathing them with it and they also used it as a tonic for the treatment of various disorders. In 1740, Drs. Karl Landsteiner and Alexander Weiner experimented with the red blood cells of Rhesus monkeys. In 1901, Dr. Karl Landsteiner discovered the ABO blood group system, which was a very important factor in blood donation. The use of stored blood began during World War 1 (1914-1918), but the first large scale blood bank was not created until 1937, in Chicago. The Canadian surgeon (Major L.B Robertson) serving in Canadian Army Medical Corps in the first World War was responsible for introducing transfusion in the management of war casualties to the British Army. Blood transfusion was generally accepted as the treatment of choice for severe blood loss by the end of the war. Safe blood is a critical component in improving health care and in preventing the spread of infectious disease worldwide. Millions of lives are saved each year through blood transfusion, yet the quality and safety of blood transfusion are still the concern especially in the developing countries(1).

The National Blood Transfusion Services (NBTS) was established in 1969 by Ethiopian Red Cross society since 2004 it has been transferred to Federal Ministry of Health Ethiopia, and entrusted with the responsibility of managing the Blood donors, collection, testing and transfusion of blood and blood products in Ethiopia. Its main center is located in Addis Ababa and it has also the responsibility to oversee, support and monitor the activities of regional blood bank in the country which are administratively under their respective regional health bureaus. The NBTS also has the responsibility to give supportive supervision to existing regional blood banks. The supportive supervision is done regularly by NBTS staff; identified needs and gaps are addressed by working closely with the respective regional health bureaus. It also supports regions in building new blood banks according to the national strategy.(2)

Blood transfusion is an indispensable component of health care. It contributes to saving millions of lives each year in both routine and emergency situations, permits increasingly complex medical and surgical interventions and improves the quality of life of patients with a variety of acute and chronic conditions. Many patients still die or suffer unnecessarily because they do not have access to safe blood transfusion. The timely availability of safe blood and blood products is essential in all health facilities, but in many developing and transitional countries there is a widespread gap between blood requirements and blood supplies. National requirements for blood are determined by the capacity of the country's health care system and its coverage of the population. In developed countries with advanced health systems, the demand for blood continues to rise to support increasingly sophisticated medical and surgical procedures, trauma care and the management of blood disorders.(3)

The 2014 World Blood Donor day campaign is "safe blood needed to save mothers". The safest source of blood is from regular, voluntary unpaid donors whose blood is screened for infections. A World Health Assembly resolution adopted in 2010 highlights that a secure supply of safe blood components, based on voluntary, non-remunerated blood donation, is an important national goal to prevent blood shortages. Now a day, in many low- and middle-income countries, blood supply is critically inadequate. Sub-Saharan Africa, which has the highest maternal mortality rate in the world of 510 deaths per 100 000 live births, also has the lowest blood donation rates.

According to the latest WHO survey on blood safety and availability, 40 African countries including Ethiopia collect less than 10 blood donations per 1000 population per year; of these, 25 countries collect less than half the blood that they need to meet transfusion requirements. High-income countries collect around 35 donations per 1000 population per year**.** In many countries, family members are often pressured to donate blood or find a replacement donor in an emergency situation. This causes emotional and financial stress and significant delays in obtaining suitable blood, and also puts women at risk of blood borne infections as there is often no time or facilities to properly screen the donated blood (4).

The donated blood plays a big role during surgery, accident, delivery cases, bleeding cases such as peptic ulcer, liver diseases, lung diseases, cancer cases, blood diseases such as hemophilia, anemia and Thalassemia, new born baby with blood diseases, burn cases etc. The age range to donate blood is from completed 18yrs up to 65 yrs with 45 and above kg of weight. The amount of blood donated in a single donation is from 350ml to 450 ml. The other eligibilities to donate are hemoglobin more than 12 gm/dl for female and 13 gm/dl for male, similarly a blood pressure of 110-160/70-95mmHg. Time taken in donation is only for bleeding it takes5 to 7 minutes(5)**.**

1.2 Statement of the problem

A blood donation occurs when a person voluntarily has blood drawn and used for transfusions and/or made into biopharmaceutical medications by a process called fractionation (separation of whole-blood components). Donation may be of whole-blood, or of specific components directly (the latter called aphaeresis). Blood banks often participate in the collection process as well as the procedures that follow it.

In the developed world, most blood donors are voluntary non-remunerated repeat donors who donate blood for a community supply. In poorer countries established supplies are limited and donors usually give blood when family or friends need a transfusion. Many donors donate as an act of charity, but in countries that allow paid donation some donors are paid, and in some cases there are incentives other than money such as paid time off from work. Donors can also have blood drawn for their own future use (autologous donation). Donating is relatively safe, but some donors have bruising where the needle is inserted or may feel faint.(6) similarly, In countries with well structured health systems and blood transfusion services based on voluntary blood donations to meet the demand for blood and blood products. These countries have effective blood donor programs, more voluntary donors, higher donation rates and more available blood. In contrast, in developing and transitional countries, chronic blood shortages are common. Well organized health care provision may be available in major urban, but large amount of the population in rural areas have access only to more limited health services in which blood transfusion may be unsafe or not available at all.

WHO estimates that blood donation by 1% of the population is generally the minimum needed to meet the population basic requirements for blood; the requirements are higher in countries with more advanced health care systems. However, the average donation rate is 15 times lower in developing countries than in developed countries. Globally, more than 70 countries had a blood donation rate of less than1% or 10 donations per 1000 population in 2006.WHO African region, blood requirements were estimated at about 8 million units in 2006, but only 3.2 million units were collected. African region frequently experiences man made natural disasters that considerably increase the demand for blood transfusion. Unfortunately, many countries in the region do not collect enough blood for their populations. Blood donation rates in Africa are generally low, estimated at about 4.15 per 1000 population in 2006 compared with over 30 per 1000 population 20, 21 on average in developed countries.(7)

Of the 108 million blood donations collected globally, approximately half of these are collected in the high-income countries, home to 18% of the world's population. Blood donation rate in high-income countries is 36.8 donations per 1000 population; 11.7 donations in middle-income and 3.9 donations in low-income countries. An increase of 8.6 million blood donations from voluntary unpaid donors has been reported from 2004 to 2012. In total, 73 countries collect over 90% of their blood supply from voluntary unpaid blood donors; however, 72 countries collect more than 50% of their blood supply from family/replacement or paid donors**.** Data showed that 54 out of 193 countries have achieved 100% voluntary blood donation; the majority of these (68%) are developed countries, while transitional and developing countries account for 23% and 9% respectively. The average donation rate in the countries with 100% voluntary blood donation is 31 per 1000 population compared to countries with 50% or less voluntary blood donations, which have an average donation rate of 9 per 1000 population. When an individual donate blood it should be safe blood. Safe blood is blood that does not contain any viruses, parasites, drugs, alcohol, chemical substances or other extraneous factors that might cause harm, danger or disease to the recipient. People who donate blood should be in good health and should not suffer or have suffered from any serious illness. The recipient should not be harmed by receiving blood; the donor should not be put at risk by giving blood.

Voluntary blood donors are the first line of defense to prevent the transmission of blood born infections such as HIV, Hepatitis, Parasites etc.. .voluntary blood donors are also the safest donors because they are motivated by the desire to help others and a sense of moral duty of social responsibility. They only reward they get is personal satisfaction, self esteem and pride. In a well-organized blood donor programs, voluntary donors are well-informed about donor selection criteria and are more likely to self-defer if they are no longer eligible to donate. This also leads to less wastage of donated blood, with all its associated costs, because fewer blood units test positive for infection and need to be discarded. In family replacement and paid donors leads to increased risk of the transmission of infection and higher volume of donated blood that has to be destroyed because of evidence of infectious disease because of seeking to help their families and to get income respectively(3, 8) .

Blood transfusion saves lives and improves health, but many patients requiring transfusion do not have timely access to safe blood. Providing safe and adequate blood should be an integral part of every country's national health care policy and infrastructure. Safe blood is a vital component in improving healthcare globally and millions of lives are saved each year through blood donation. But most hospitals in the developing countries face challenges of constant supply of blood to carry out different life saving procedures that require blood, due to paucity of blood donors.(8)

Blood donation is harmless and safe in the body. Rather, it is a social responsibility. The donor is donating for it as it will be used in saving lives of his fellow beings. He himself may use the same during his own need. So, today's donor may be tomorrow's recipient. Without their humane gifts of noble donors, that also from the heart, many lives might have lost for want of blood. Therefore, blood donation is the most generous and biggest ever contribution to mankind and the young generation should be motivated to carry, out this generous activity. Fear of needles, pain, sight of blood, future weakness, and possible ill effects, objection from elders, ignorance and illiteracy etc are all reasons for many people who are hesitant in donating blood. All these myths and misconceptions are to be removed in order that adequate amount of blood is made available at blood banks for saving the patients.(9)

In Ethiopia, commonly used blood products are whole blood, packed red cells, platelet concentrate, white cell concentrate, fresh frozen plasma, cryoprecipitate, and other plasma derived components**.(10)**

To ensure safe, adequate and sustainable blood supplies all over the country, the health workers have a significance role in different ways. Even if the health workers have knowledge about blood donation, in practice and initiating the community to donate blood is very low. As we know health workers are too low in number, but they are vital to mobilize the community towards voluntary blood donation. So they have to be in front to practice and show as well as overcome awareness and attitude about the importance of blood donation.

1.3 Significance of the study

Blood donation is a self directed volunteer service. However, there is no sufficient data throughout Ethiopia including the study area to have adequate blood supply for acute case management and this study will find the present situation of Knowledge, Attitude Practice related to donation in health workers. As a result, knowledge, attitude and practice of health workers is very important to improve blood donation all over the country. Therefore, the purpose of this study is to assess knowledge, attitude and practice of health workers in Tikur Anbessa Specialized Hospital in capital city if Ethiopia. The outcome of research may help in program formulation for concerned people and organizations to create awarness and incorporate health workers in regular donation activity and educate the public about the importance of blood donation and the risks associated with donation.

2. Literature review

"Review of literature" refers to a critical and in depth evaluation of previous research and extensive, thorough and systematic examination of publication relevant to the research project for many reasons.(11)

The review of literature in this study is divided into three parts. First, published articles regarding the knowledge of blood donation are reviewed followed by attitude and practice of blood donation. It is useful to examine each elements of the study during analysis.

2.1. Knowledge

A cross sectional study was conducted on 384(206 male and 178 female) students of Addis Ababa University, college of health sciences and medicine in Ethiopia. The age range was from 19 to 28 years with the mean age of 22 and SD of ±1.8years. The study showed that among the respondents 121(83.7%) and 63(16.4%) of respondents have high and low level of knowledge respectively. Among the respondents 14.3% and 9.6% didn't know the age and weight limit required for blood donation respectively. Similarly, more than half (59.1%) and 8.6% of respondents didn't know the minimum time interval between two blood donations and the maximum amount of blood to be donated respectively.(12)

A cross-sectional study conducted on 400 students in Nigeria showed that less than two-thirds (64.8%) of the respondents had good knowledge about blood donation. About one quarter (25.8%) had poor knowledge on what blood donation entails. One hundred and ninety (47.5%) respondents had poor knowledge about the health conditions that would require blood transfusion, only 43.0% could state correctly some of the health conditions: anemia, trauma, road traffic accidents, sickle cell anemia and surgery were the health conditions mentioned by the respondents(13). Other similar study conducted on 188 86 male and102 females) medical students in South India revealed that the overall knowledge on blood donation was observed as good in students (14)

A descriptive study conducted on 104 (49 male and 55 female) undergraduate medical students in India showed that all the participants had a very incomplete knowledge regarding the various aspects of voluntary blood donation. None of the participants was able to respond to the

knowledge part of the questionnaire with 100% accuracy (questions like, who is a healthy donor, any age limitations for voluntary blood donation, etc). There was no significant difference between the males and females with regards to their knowledge on voluntary blood donation(15). Other similar study conducted on 140 University of Benin Teaching Hospital (UBTH) physicians (102 male and 33 female and 5 non-respondents) in Nigeria revealed that the respondents expressed a good knowledge of the common blood group types and of their own blood group. Most respondent (95.7%) are aware of the risk of transmission of infection by transfusion. Thirty five percent stated that the minimum donation frequency was 6 months, 35.7% tri-monthly, 11.4% every month while 9.3% had no knowledge. On knowledge of volume of blood collected in each process 60.7% stated less than 500 mls, 34.3% while 21.4% express no knowledge of it(16).

A descriptive cross sectional study conducted on 600 (181 male and 419 female) undergraduate medical students in Karachi, Pakistan showed that the knowledge of respondents were appropriate regarding various aspect of blood donation (92.2%)(17). other similar study conducted on a total of 177 (73 male and 104 female) in different bachelor level students(98 business,42 fashion designer and 37 arts) in Nepal revealed that the knowledge of the student were as follows. The majority of students (69.5%) knew their ABO and Rh blood groups. Regarding knowledge about blood and blood donation, the students' average score of correct answers was 32.01%, i.e., about 8 correct answers for total 26 questions. Most students (n 98, i.e., 55.4%) could not state any function of blood in the body while 32 students (18.1%) gave one correct function and 9 students (5.1%) gave two correct functions. Regarding indications of blood transfusion, 141 students (79.7%) could not answer while 23 gave one correct reason, 11 students provided 2 correct reasons, and two students gave 3 reasons. Frequently mentioned reasons were hemorrhage in traffic accidents, pregnancy, and surgery. About two thirds (n 122, i.e., 68.93%) of the students said that diseases can be transmitted by blood transfusion. Most students (n 78) could list only one disease while one student mentioned 3 transmissible diseases. HIV-AIDS and hepatitis were the most frequently mentioned diseases. Knowledge about criteria for eligible donor was about 56.12%. Knowledge about conditions when an

otherwise eligible donor should not donate was 37.1%. Knowledge about long-term risks for the blood donor was 23.82%, indicating an overall misconception about risks to the donor(18).

A Hospital based cross sectional study conducted on 196 (116 female and 80 male) adults people (25-50) in Ado-Ekiti, Nigeria showed that the knowledge of the respondents is 96.9%(19). Other similar study conducted on 326 male University students in Kingdom of Saudi Arebia . Out of 326 individuals, 264 (80.98%) were non donors and 62 (19.02%) were donors, 13% donated once, 5% donated twice and 1% donating regularly. Regarding the knowledge part of the questionnaire many of the respondents did not have the basic knowledge and the two common sources of information for blood donation were friends (53%), and TV (24%). The major motivations for donors were to help family or friend (30%), saving others lives (28%), religious reasons (20%) and altruism (12%)(20).

A cross sectional descriptive study conducted on 163 health workers at the University of Benin Teaching Hospital, Nigeria showed that a total of 151 (92.6%) respondents expressed good knowledge of the common blood group types, and 153 (93.9%) knew their own blood groups. The blood groups of respondent were A Rhesus (Rh) positive (25) (15.3%), AB Rh positive (3) (1.8%), B Rh positive (16) (9.8%), O Rh negative (6) (3.7%), and O Rh positive (74) (45.4%). Thirty-five persons (21.5%) did not respond, and 4 (2.5%) responses were invalid. Most respondents (157) (95.7%) were aware of the risk of transmission of infection by transfusion. The risk of transmission of HIV, HBV, HCV, and Syphilis was affirmed by 91.4% (149), 69.9% (114), 42.9% (70), and 27.0% (44), respectively. Forty-four (27%) stated that the minimum interval between donations is 6months, 35 (21.5%) said 3months, and 13 (8.0%) said a month, while 33 (20.2%) said they have no knowledge of this. The majority of the respondents had a good knowledge on who should and who should not donate. However, 6 (3.7%) of the respondents said vulnerable group (sex workers, intravenous drug users) should donate. Twelve (7.4%) and 10 (6.1%) respondents said people should not donate for religious and cultural reasons, respectively. Only 66 (40.5%) knew the correct volume of blood collected in the process. Similarly, 59 (36.2%) knew that the donation process lasts less than 20 minute(21).

A prospective both qualitative and quantitative study conducted on 485 medical personnel in three tertiary care centers in India showed that the knowledge of blood donation among different group of participants who answered correctly in the MBBS students group were 60.81% in comparison to 77.52% and 79.21% of residents and faculty respectively. Knowledge regarding Hb gm% required for blood donation were significantly low for all groups. It was 34.32% and 42.4% for MBBS students and residents respectively. It was 56.17% for faculty which does not show any significant difference. Knowledge regarding time required for body to restore blood was also approximately same in all groups, 40.59%, 45.6% and 56.17%. Correct response rate for knowledge about minimum duration between two blood donations was highest among residents 69.6% while it was 53.14% and 56.17% for MBBS students and faculty respectively. Knowledge about any question asked prior to blood donation were high in groups of residents and faculty, 100% and 94.38% respectively(22).

A descriptive cross sectional study conducted on 132 staff nurses in India showed that the knowledge for criterion of minimum blood donation interval of three months was incorrectly identified by 29.54% (39/132) of nursing staff. A 6-month interval between donations was their commonest perception. The norm of minimum weight required for blood donation could not be determined by 38.63% (51/132) of nurses. All the nurses knew that pregnancy and lactation were major contraindications for blood donation(23).

2.2 Attitude

A cross sectional study was conducted on 384(206 male and 178 female) students of Addis Ababa University, college of health sciences and medicine in Ethiopia. The age range was from 19 to 28 years with the mean age of 22 and SD of ±1.8years. This study revealed that of the participants 68% of them have favorable attitude towards blood donation and 32% have unfavorable attitude towards blood donation. All of the participants have willing to donate in the future. More than one third of students76.6%, 34.6% and 59.1% of respondents believe that blood donation makes weak, cause anemia and reduce immunity.(12)

A descriptive cross sectional study was conducted on 104(49 male and 52 female) medical undergraduate students about knowledge, attitude and practice with regarding to voluntary

blood donation in India. The age of the students were ranged from 19 to 22 yrs with mean age of 20.4yrs. The study showed that all the participants had good attitude regarding voluntary blood donation.(15)

A cross sectional qualitative study conducted on 140(102 male and 33 female 5 non respondent) physicians about knowledge, attitude and practice of voluntary blood donation in Nigeria. The age of physicians ranged from 25 to 52 yrs and the mean age was 32yrs. The study showed that among the participants 125 (89.3%) said blood donation is good and regarding to the source of blood donation 80.7% , 7.1% ,0.7%,and 2.1% respondents were accepted as voluntary, replacement, remunerated and self donation respectively. Among participants 117(83.6%) said something can happen to a donor and the reason for them was 11.1% stated that a donor might contact infection,92.3% stated become temporary weakness and 7.6% stated that they might suffer lose of health. One hundred seventeen (90.7%) participants said the patient relatives should be asked for donation and 5(3.6%) said should not be asked and 1(0.7% said I don't know.(16)

A cross sectional study was conducted on 600(182 male and 418 female) students in two public and one private medical college that is 400 from public and 200 from private sector in Karachi, Pakistan. The mean age of the respondents was 20±1.33 years. The study showed that the majority of respondents were females (69.8%), having age of 21-25 years (58.6%), belonging to public sector medical college (66.6%) and resident of Karachi (89.9%). Among the participants 252 (42.00%) had positive attitude towards blood donation and 348 (58%) had negative attitude towards blood donation. It revealed that the difference between male female gender were significant on attitude of blood donation. (24)

A cross sectional study conducted on 177 (73 male and 104 female) medical students regarding to knowledge, attitude and practice of blood donation in Kathmandu, Nepal. The mean age of the students were 20.62±1.43 years for males and 20.36±1.51 years for females. The study showed that 146(82.5%) said blood donation is noble act and 26(14.7%) had no idea. Among the participants 95(53.7%) said the collected blood are sold by the blood bank to those needing blood transfusion and 42(23.7%) have no idea about it. Of respondents 115(65%) perceive as

only physically strong can donate and 20(11.3%) perceive as regular donors get money and 21(11.9%), 68(38.4%) had no idea for only physically strong can donate and regularly donors get money respectively. Sixty three(35.6%) respondents would like to donate regularly and 74 (41.8%) respondents said blood should be collected from voluntary donors only.(18)

A cross sectional descriptive study was conducted on 163 (69 male and 90 female and 4 non respondents) health workers regarding the knowledge, attitude and practice of voluntary blood donation in Benin Teaching Hospital, Nigeria. The age range was 18-56 years with the mean age of 32 year. Different staffs were involved including nursing 30, laboratory 37, pharmacy 19 and 22 administrative workers. The study showed that among participants 133 (81.6%) said blood donation was good. Voluntary donation was accepted as the best blood donors by 116(71.2%), replacement donors by11 (6.7%), remunerated by 3 (1.8%) and self donation by 3 (1.8%). One hundred and twenty five (71.2%) respondents said blood donation may have adverse consequence and among them 20 (12.3%) perceived as a donor can contract infection,99 (60.7%) said that a donor may have temporary weakness and 9 (5.5%)said the donor may fall sick. One hundred and forty six (89%) feels the patients relative should be asked to donate and 149 respondents had asked relatives in the past to donate.(21)

A study conducted was in India on the total of 216 university science students. The study was conducted on 132 females and 68 males students with the majorities of age were between 18 and 20yrs. The study showed that 77% of the respondents had strong dis-agreement for only male should donate blood and that blood can cause HIV/AIDS dis-agree to strongly dis-agree of 81%. The attitude of respondents towards the barrier to donate blood was 37% fear of needles, 35% fearful of donating blood and 7.5% fear of knowing their HIV/AIDS status. The other barriers to blood donation were waiting time(51%), inflexible opening hours(19%), and attitude of blood staffers(30%). Among the participants 41% were encouraged by family ,28% friends,15.5% lecturers and 15.5% health care works.(25)

2.3. Practice

A cross sectional study was conducted on 384(206 male and 178 female) students of Addis Ababa University, college of health sciences and medicine in Ethiopia. The age range was from

19 to 28 years with the mean age of 22 and SD of ±1.8years. The study showed that among the participants only 90(23.4%) have ever donated blood. Out of t he participants who were donated blood 38(42.2%) of them were a regular donors. Regarding what motivates them for blood donation74% were motivated by moral duty,23.3%were motivated for maintaining once health and the remaining 6.6% were motivated while accompanying others. Among those who didn't ever donated blood lack of information by 68.4%. being not asked by 66.7%, fear by 56% were mentioned as reasons for not donating a blood. (12)

A cross sectional study was conducted on 188 (86 male and 102 female) medical students regarding knowledge, attitude and practice of blood donation in South India. The age of students were ranged from 18 (40.96%) to 19(44.15%) years. The study showed that the majority of 164(87.23%) of students never donated blood. The reason for not donated blood were due to never thought about donating blood accounts 48(29.27%), fear of sickness or complication accounts 42(25.61%), safety reason accounts 36 (21.95%), medically unfit to donate accounts 21(12,80%) and myths and misconception accounts 17(10.3%). Among students 24 (12.77%) were donated blood only for once and had donated for their relatives or friends. Of those donated blood 08 (33.33%) said that it was their moral duty,06(25.00%) said that it is a charity work to help the sick people, 4(16.67%), 4 (16.67%), and 2 (0.8.33%) said that It was to help the acquaintances, Maintenances of once own health, and It gives pleasure respectively.(14)

A descriptive cross sectional study was conducted on 104(49 male and 52 female) medical undergraduate students about knowledge, attitude and practice with regarding to voluntary blood donation in India. The age of the students were ranged from 19 to 22 yrs with mean age of 20.4yrs.The study showed that only one among 104 participants had donated blood for a surgery of his relative. Among the participants 85% (88) were willing to donate and 15% (13 female and 3 male) were unwilling to donate. The reason for unwilling to donate was parental disapproval. Of 13 female who were unwilling to donate 10 had fear of pain and other side effects. Among 85% who were willing to donate blood the reason for not having donated blood 19.53% male and 19.04% female participant due to lack of family support, 50% male and

54.76% female were due to lack of opportunity, 21.73% male and 7.14% female were due to indifference and 8.6% male and 19.4% female were due to fear.(15)

A cross sectional qualitative study conducted on 140(102 male and 33 female 5 non respondent) physicians about knowledge, attitude and practice of voluntary blood donation in Nigeria. The age of physicians ranged from 25 to 52 yrs and the mean age was 32yrs. The study showed that among participants 58 (41.4%) have donated blood .Of donated blood 33(56.9%) donating less than once a year,18(31%) donating between 1-3 times a year, and 5(8.6%) were donating more than three a year. Among donors, the reason for donation were 31(53.4%) voluntarily, 23(39.7%) for a friend or relatives,2(3.4%) for remuneration and 3 (5.2%) to know their screening status. About 80(57.1%) accepted to be reminded or called upon to donate but 32(40%) of them left their contacts and 35(25%) were not accepted. Among the total participants 82(58.6%) had never donated. The reason for non donation includes 26(31.7%) not approached to donate,18(22%) need to donate their relatives or friends in the future,14(17.1%) not fit to donate ,10(12.2%) fear of needles,4(2.9%) blood may be sold by the blood bank and 2(2.4%) fear of knowing their screening status. At last 126(90%) were actually encouraged them their relatives to donate.(16)

A cross sectional study was conducted on 600(182 male and 418 female) students in two public and one private medical college that is 400 from public and 200 from private sector in Karachi, Pakistan. The mean age of the respondents was 20±1.33 years. The study showed that the majority of respondents were females (69.8%), having age of 21-25 years (58.6%),belonging to public sector medical college(66.6%) and resident of Karachi (89.9%). Among the respondents 301(50.1%) (78(34%) male and 223(74%) female) had willingness to donate and 299(49.9%) (103(34%) male and 196(65.6%) female) had not willingness to donate towards practice of blood donation.(24)

A cross sectional study conducted on 177 (73 male and 104 female) medical students regarding to knowledge, attitude and practice of blood donation in Kathmandu, Nepal. The mean age of the students were 20.62±1.43 years for males and 20.36±1.51 years for females. The study showed that among participants 32 had donated before (18.1%) while 38(21.5%) had taken part

organizing a blood donation camps and of donors 22 were donated only once, only one was donated three times before. Majority of donors 10 had donated at the age 0f 20 years. The reason for donation was 23 for moral satisfaction and humanity,7 need of blood for a close relatives. On the other hand, the reason for not donating includes medically unfit to donate, no request or approach to donate, no time for donation, no information, parents do not allow, fear of weakness from blood donation, fear of pain, fear of needle, fear of contracting disease, fear of other adverse effects and don not like the idea of donating are listed according to their frequency from more to less frequent.(18)

A cross sectional descriptive study was conducted on 163 (69 male and 90 female and 4 non respondents) health workers regarding the knowledge, attitude and practice of voluntary blood donation in Benin Teaching Hospital, Nigeria. The age range was 18-56 years with the mean age of 32 year. Different staffs were involved including nursing 30, laboratory 37, pharmacy 19 and 22 administrative workers. The study showed that Thirty-six (22.1%) have donated in the past. Only 5 (13.9%) were regular donors.Only15 (41.7%) are voluntary, and 19 (52.8%) donated to a friend or relative in need of blood. Of the respondents 127 (77.9%) were non donors. The reasons for non donation by those who have not donated include nobody approached them for donation (32) (25.2%), unfit to donate (21) (16.5%), need to donate for a friend or relative in future (25) (19.7%), fear of needle (8) (6.3%), fear of knowing their viral status (4) (3.1%), the donated blood may be sold (5) (3.9%), non remuneration (1) (0.8%), and their religion prohibits blood donation (1) (0.8%). Sixty-seven (41.1%) respondents accepted to be invited to donate blood, but only 32 (19.6%) gave their contacts so that they can be reached.(21)

A study was conducted on the total of 216 (132 females and 68 males) university science students in India. The majorities of age were between 18 and 20yrs. The study showed that only 23% have donated blood in the past and 172(86%) of them have donated for family and friends felled by elective surgery and accident 57.5% and57% respectively. Among those who have donated blood 70% were male and 19.6% were females and had donated in less than 6 months. Of blood donors, 78% of males had donated blood at 6 months ago compared to 86.o%of females. Regarding to the frequency of donation, 10% had donated for once,8.5% two times, 1% three times, 1.5% four times, and 2.5% at least five times. Two percentages of donors

had unsatisfactory experiences while donating blood and 21.5% indicated that they would do it again.(25)

2.4. Factors

A cross sectional study was conducted on 384(206 male and 178 female) students of Addis Ababa University, college of health sciences and medicine in Ethiopia. The age range was from 19 to 28 years with the mean age of 22 and SD of ±1.8years. The study revealed that there is significant association of level of blood donation with year of study and department of respondents. After controlling for effects of potentially confounding variables using multivariate logistic regression year of study and department were found to be statistically significant predictors of level of knowledge. Increased year of study and being students in the department of medicine and nursing increased the odds of level of knowledge of respondents on blood donation. In the bivairate analysis being age ≥25 years showed no association with level of knowledge. This was reversed in the multivariate analysis being age≥25 years increased odds of knowledge [AOR (95% CI) =5.092(1.1, 24.2)].(12)

Bivariate association showed a statistically significant association with sex and age ≥25years. However, only sex maintains the significant association of during analysis. Being male increased odds of favorable attitude [AOR (95% CI)=2.2 (1.4, 3.6)].(12)

Both bivariate and multivariate analysis showed a statistically significant association with only sex and age ≥25 years. Being male increased odds of practice [AOR (95% CI)=3.9(1.4, 10.8)] and being age ≥25 years increased odds of practice [AOR (95% CI)=6.5(1.6, 26.9)].(12)

A cross sectional study was conducted on 1600 (892 men and 702 women) participants about factors that motivate and hinder blood donation in Greece. The respondents were 1136(71.0%) donors, of which 579 (51.0%) were VDs and 557(49.0%) were RDs and 464(29.0%) were NDs. Among respondent (66.7 men and 33.3% women) were VDs, RDs (70.5 men and 29.5%women) and NDs (25.8 men and 74.2% women). These distributions were statistically significant between RDs and NDs ($P < 0.0001$), but not VDs. Overall, more men than women surveyed were donors (VDs or RDs). Of the hospital visitors, 256 (35.5%) were donors and 464 (64.5%) were NDs, and again more men than women were donors (71.5 and 28.5%, respectively). Large

differences were observed in the distribution of respondents according to age. Almost half (49.3%) of NDs were 18–30 years old (P < 0.0001). This proportion was only 33.5% among VDs (P= 0.1768) and 25.2% among RDs (P < 0.001). Overall, VDs reported giving blood more often than RDs (P < 0.0001). Indeed, 41.1%of VDs gave blood more than 10 times and 29% of them one to three times, whereas the corresponding percentages for RDs were 23.7 and 42.2% .(26)

Almost half (46.3%) of the donors, most of them RDs (55.4% RDs compared with 37.6%VDs, P < 0.0001) who reported having donated blood at least once in the past, stated that they had not donated in the past12 months. When asked for the reasons, 39.1% of them (54.6% RDs and 16.5% VDs) reported that they had not been asked to (P < 0.0001) and 21.3% of them (15.2% RDs and 30.3% VDs) reported that they had health problems (P < 0.0001) (the questionnaire did not specify what type of problems). Secondary reasons were the lack of time (11.6% RDs and 18.1% VDs) and having been rejected as donors (9.8% RDs and 11.2% VDs). When asked why they had never donated blood, NDs reported health problems (37.7%), not having been asked to (21.6%) and that no one in their immediate environment had needed it (20.2%) as the main reasons.(26)

Most VDs (85.5%) gave blood for the first time voluntarily. Only 7.5% of them initially donated blood for a friend or relative in need, i.e. were RDs before choosing to become VDs. In contrast, the overwhelming majority (77.3%) of RDs began giving blood as RDs and only 20.2%started out as VDs (P < 0.0001). It is worth noting that 7.0% of VDs and 2.5% of RDs admitted to donating blood for the first time in order to earn paid leave from work.(26)

Although the majority of respondents from all three groups stated that they believe there are no indiscreet questions in the pre-donation screening questionnaire (92.0%) and that all questions are important for the safety of the patient and themselves (97.0%), 5.3% of all donors admit to having concealed part of the truth when responding to background questions (Table 6).Of this percentage, 3.4% were VDs and 7.1% were RDs and this difference was statistically significant (P < 0.02). As a reason for having concealed the truth, 69.2% of VDs and 20.0% of RDs confessed to not thinking the particular question was of importance (P < 0.0001), 30.8% of VDs and 10% of RDs to earn paid leave from work and 7.7% of VDs and 3.3% of RDs to benefit

from the free blood tests (such tests are for cholesterol, triglycerides, etc. and do not include testing for infectious diseases). Of interest is the fact that 80% of the RDs who reported having concealed the truth when describing their medical history confessed to having done so to be accepted in order to ensure their relatives need were covered. (26)

Donor satisfaction with services at donation locations of the donors (97.0%) reported being satisfied with the services and attitude of the staff. They were, however, displeased by the waiting time (48.7%) and the unpleasantness of the physical environment (32.3%).(26)

The majority of all three respondent groups (>99.0%) stated that they believe that blood donation is an important contribution to their fellow human beings. In answering a question about whether there should be incentives in place for volunteer donation, a large majority [76.5, 77.4 and 73.8% (P = 0.4865) of VDs, RDs and NDs, respectively] agreed that such incentives should exist and stated that their preferred incentives are future blood availability for themselves and their families when needed (85.1% of VDs, 86.5% of RDs and 78.6% of NDs; P = 0.0191), paid leave from work (40% of VDs, 37.2% of RDs and 43.5% of NDs; P ¼=0.2655) and free blood testing for cholesterol, triglycerides, etc. (39.9% of VDs, 35.8% of RDs and 38.3% of NDs; P = 0.5113). Responses did not vary significantly among NDs and donors concerning the fear of becoming anemic, although NDs rated the fear of fainting, feeling weak or dizziness higher than donors did (38.5 vs. 23.0%, respectively) (P < 0.0001). The three groups did not differ in their ratings of risk of becoming infected with transmissible diseases such as human immunodeficiency virus (HIV)/hepatitis, or their fear of the results of blood tests. Risks were rated as none and slight. Eighty per cent of all respondents believe that there is only a small risk of being transfused with blood from the wrong blood group. On the contrary, whereas more than half of all respondents believe that the risk of becoming infected with HIV or hepatitis B virus (HBV) is small (69.0 and 57.0% of respondents, respectively), 14.0% of them believe that the same risk for either of the two viruses is medium. About 9.0% of all respondents believe that the risk of becoming infected is large. There were no statistically significant differences among the three respondent groups.(26)

3.Objectives

3.1 General objectives:

To assess knowledge, attitude, practice and associated factors of blood donation among health workers in Tikur Anbessa Specialized Hospital, Addis Ababa, 2015

3.2 Specific objectives

1. To determine the knowledge of blood donation

2. To determine the attitude of blood donation

3. To determine the practice of blood donation

4. To identify factors associated with Knowledge, Attitude and practice of blood donation.

4. Methods and materials

4.1 Study design

Institution based cross sectional study design was used to conduct this research.

4.2 Study area and period

The study was conducted in Addis Ababa which is the capital city of Ethiopia. Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia (CSA), Addis Ababa has a total population of 2,739,551, of whom 1,305,387 are men and 1,434,164 women; all of the populations are urban inhabitants (27).

The city has 49 hospitals. Thirteen are public hospitals**.** Of these public (governmental) hospitals six of them are under Addis Ababa city administration namely, Yekatit 12 hospital , Minilik the second, Ras Desta, Zewuditu memorial hospital, Gandhi Memorial hospital and Tirunesh general hospital. Other five hospitals are administered under the federal ministry of health of Ethiopia including Tikur Anbessa General Specialized hospital, St. Paul General Specialized hospital, Amanuel psychiatric hospital, Alert, and St. Peter are under these group. The rest two hospitals are under defense ministry of Ethiopia i.e. army and defense hospitals Thirty six of the city's hospitals are private. Furthermore the city has 51 health centers and 700 different level private clinics (data obtained from medical service directorate of the federal ministry of health, AARHB, and Addis Ababa city administration**)**

Tikur Anbesa Hospital, located in the nation's capital, Addis Ababa, It is Ethiopia's largest referral and tertiary level hospital in the country. In 1998 Black Lion Hospital, which is also the largest referral hospital in the country was given to Addis Ababa University (AAU) by the Ministry of Health (MOH) for the faculty as a main teaching hospital. The faculty is the oldest and the largest among the health training institutions in the country, staffed with the most senior specialists. The hospital totally holds 123000m.sqarea of land, and its building has settled on 45000m.sqarea; there are 1262various rooms from the basement to the eight floors. The hospital provides a tertiary level referral treatment and is open 24 hours for emergency services (28), (11)). The Hospital has around 132 health care workers in different departments such as physician, nurse, laboratory, pharmacy, anesthesia, radiology, Physiotherapy.

This study was conducted in Tikur Anbessa General Specialized hospital from January 20 to February 14, 2015.

4.3 Source population

The source population was all health care workers in Tikur Anbessa Specialized Hospital

4.4. Study population-

All health care workers providing health services in Tikur Anbessa Specialized Hospital whose work experiences is greater than six months who was available during the data collection period.

4.4.1. Inclusion criteria

All health care workers those working in Tikur Anbessa Specialized Hospital.

4.4.2. Exclusion criteria –

Those health professionals who are absent in the time of data collection and Health workers who are employed in the hospital whose service is less than six months was excluded.

4.5. Study variables

4.5.1. Dependent variables

Knowledge of blood donation

Attitude of blood donation

Practice of blood donation

4.5.2. Independent variables

Age

Sex

Religion

Marital status

Department

Qualification

Monthly income

Work experience

4.6. Sample size calculation, sampling methods & procedures

The study subjects were selected using stratified sampling method. The sample was stratified based on their department and from each strata sample was draw by using simple random sampling technique. Single population proportion formula is used to determine the sample size using the knowledge level is 83.7% and the sample was 210, attitude part is 68% and the sample was 335 and the practice part is 23.4% the sample size was 276. To increase the power of the study the maximum sample size (335) was considered for this study. Therefore, the minimum sample size was calculated using single proportion estimate.

$$n = \frac{z2_{\alpha}/2p(1-p)}{w^2}$$

Where:- α= confidence interval=95%

p=best estimate of population proportion (68%)

w=maximum acceptable difference=5%

n=minimum required sample size

Zα/2 =value under standard normal table for the given value of confidence level=1.96

$$n = \frac{(1.96)2.0.68(1-0.68)}{(0.05)^2} = 334.37288 \approx \underline{335}$$

Since the study population is less than 10,000 (1327), by using correction factor and considering 10%non response rate. $n_f = \frac{n}{1+\frac{n}{N}} = \frac{335}{1+\frac{335}{1327}}$ = 267.47594 and 10% non respondent rate

=26.747594+267.47594=294.22353 ≈≈ **295**

The total sample size was 295

Table1. Showed that the proportion of sample to be taken in each department.

Ser. No	Department	No of professionals	Proportion	Sample to be taken
1	Physician	566	42%	123
2	Nurse	567	43%	126
3	Pharmacy	63	5%	15
4	Laboratory	63	5%	15
5	Anesthesia	34	3%	8
6	Radiology	23	2%	5
7	Physiotherapy	11	1%	3
Total				295

4.7. Data collection techniques and tools

Data was collected by using self administered questionnaire which was prepared in English and collected for about one month by trained data collectors.

The questionnaire was includes sociodemographic factors, knowledge, attitude and practice.

4.8. Data quality control measures

The data quality was maintained by using several methods. First, those questionnaires whose internal consistencies have been checked by previous researchers were used after carefully adopting them in to the current context and without changing the original meaning. Second, the adopted questionnaires were pre-tested at Zewditu Memorial General Hospital Health care workers. Questionnaire was checked thoroughly for its completeness, objective and variable based before it distributed to respondents. Finally, data was also checked for consistency and completeness before entry to computer software for analysis.

4.9. Data processing and analysis

The collected data were checked for its completeness, consistency and accuracy before analysis. The data was presented by using descriptive (percentage, ratio, mean, media and frequency) and analytic statistics. The data was entered and analyzed by using SPSS version 20.00 soft ware. Bivariate and Multivariate logistic regression model is used to identify the

associated factors. Variables having p-value less than 0.05 is considered as significant variables. AOR is considered to see the strength of association between dependant and independent variables.

4.10. Operational definitions

Level of knowledge: This is the understanding level of health care workers on the benefits, risks, eligibility criteria's of blood donation. Knowledge was assessed by 19 questions. Respondents with all correct response have got a maximum of 19 points, higher points indicate good knowledge. Based on total score, knowledge level on blood donation was categorized into poor (less than mean) and good (above mean).

Attitude: Attitude is intention of participants towards blood donation practice. The attitude for blood donation was assessed through seven questions. Those who scored less than mean were categorized as having poor attitude toward blood donation and those above mean were labeled as having good attitude towards blood donation.

Practice: This denotes whether a particular participant has experienced blood donation or not.

5. Ethical considerations

Ethical clearance was obtained from the Institutional Review Board (IRB) of Addis Ababa University College of health science, school of medicine, department of emergency medicine. In addition to that, verbal consent was obtained from all study subjects which was assure that participation was on voluntarily basis. On top of that, to keep the anonymity of study participants, code numbers rather than personal identifiers are used and all questionnaires was sealed with post following data collection at each department. Finally, all questionnaires were kept locked after data entry completion and will be destroyed at the end of the study.

6. Dissemination of results

The study result will be presented to Addis Ababa University, Faculty of Medicine, Department of Emergency Medicine and documents will be disseminated to all responsible bodies in the study area, Ethiopian national blood bank, for hospital where the study is conducted, MOH and Addis Ababa university school of Emergency Medicine.

7. RESULT

7.1. socio-demographic characteristics

Out of 295 health care workers participated in the survey, questionnaires from all respondents were considered for analysis making the response rate 100%.

All 295 respondents were in the age range of 21-59 years with a mean age of 28.23 & SD of 6.432 year. From the total participants 176(59.7%) were male. `

Of the respondents the majorities 228 (77.2%) were single in their marital status and 215 (72.9%) were first degree holder. From the total participants more than half were orthodox Christian 195 (66.1%) followed by protestant 62 (21.0%). Majorities of the respondents have less than 12 month work experience in the facility 123(41.7%). Most of the respondents were Nurse126 (41.7%) and physician 123(42.7%).Table2. Shows the sociodemographic characteristics of health care workers in TASH, 2014

Table2. Socio-demographic characteristics of health care workers in TASH, 2015

Characters	Frequency(N=295)	Percentage (%)
Age		
21-25	117	39.7
26-30	129	43.7
31-35	18	6.1
36-40	12	4.1
≥41	19	6.4
Sex Male	176	59.7
Female	119	40.3
Marital status		
Married	66	22.4
Single	228	77.3
Divorced	1	0.3

Qualification		
Diploma	19	6.4
1st degree	215	72.9
2nd degree	24	8.1
specialist	37	12.5
Religion		
Orthodox	195	66.1
Muslim	32	10.8
Catholic	2	0.7
Protestant	62	21.0
others	4	1.4
Work experience(year)		
6/12-1	123	41.7
1-2	69	23.4
2- 3	18	6.1
3-4	22	7.5
4-5	20	6.8
>5	43	14.6
Profession		
Physician	123	41.7
Nurse	126	42.7
Laboratory	15	5.1
Pharmacy	15	5.1
Anesthesia	8	2.7
Radiology	5	1.7
Physiotherapy	3	1.0
Monthly income (ETB)		
1000-3000	77	26.1
3000-6000	167	56.6
6000-9000	47	15.9
>9000	4	1.4

7.2. Level of Knowledge on Blood Donation

A total of 288(97.6%) respondents expressed good knowledge of the common blood group type, and 248(84.1%) knew their own blood groups. The blood groups of respondents were A Rhesus (Rh) positive 46 (15.6), A Rh negative 4 (1.4%), B Rh positive 52 (17.6%) B Rh negative 3 (1.0%), AB Rh positive 36(12.2%), O Rh positive 101 (34.2%) and O Rh negative 6 (2.0%).

Most of the respondents 261(88.5%) are aware of the risk of transmission of infection by transfusion. The risk of transmission of HIV was affirmed by 275(93.2%), HBV 265(89.8%), HCV 226(76.6%), Syphilis 157(53.2%), Malaria 164(55.6%) and CMV 144(48.8%). Of the respondents 200(67.8%) stated that the minimum donation frequency was every three months, 17(5.8%) monthly, 40(13.6%) every six monthly,5(1.7%) annually and the remaining 33(11.2%) had no knowledge of this. On knowledge of volume of blood collected in each process 218(73.9%) stated less than 500 mls, 47(15.9%) ticked 500-1000 mls while 30(10.2%) express no knowledge of it. Most of the respondents had the knowledge of eligible donor accounting men18-60yrs 219(74.2%) women 18-60yrs 214(72.5%) and healthy individual 239(81.0%). Table 2 shows the details of knowledge of blood donation expressed by respondents. See table 3 below.

Table 3 Level of knowledge on blood donation among health care workers in TASH, 2015

characters	Frequency	Percentage (%)
Do you know the common blood group		
Yes	288	97.6
No	7	2.4
Do you know your blood group		
Yes	248	84.1
No	47	15.9
Blood groups of respondents		
A +	46	15.6
A -	4	1.4
B +	52	17.6
B -	3	1.0

AB +	36	12.2
O +	101	34.2
O -	6	2.0
Can a person be infected by receiving blood transfusion		
Yes	261	88.5
No	34	11.5
What diseases are transmissible by blood transfusion		
HIV	275	93.2
HBV	265	89.8
HCV	226	76.6
SYPHILIS	157	53.2
MALARIA	164	55.6
CMV	144	48.8
How often an individual can donate blood		
Monthly	17	5.8
Every three month	200	67.8
Every six month	40	13.6
Annually	5	1.7
Don't know	33	11.2
Who should donate blood		
Men (18-60)yrs	219	74.2
Women (18-60) yrs	214	72.5
Young <18 yrs	20	6.8
Old > 60 yrs	7	2.4
Vulnerable groups	37	12.5
Anyone who is healthy	239	81.0
Diseased	.o	.0

Who should not donate blood		
Men (18-60)yrs	3	1.0
Women (18-60) yrs	8	2.7
Young <18 yrs	194	65.8
Old > 60 yrs	205	69.5
Vulnerable groups	178	60.3
Anyone who is healthy	9	3.1
Diseased	269	91.2
What volume of blood is collected during each donation		
<500mls	218	73.9
500-1000mls	47	15.9
Don't know	30	10.2
What is the duration of a donation process		
<20 min	92	31.2
20-60 min	112	38.0
Don't know	91	30.8

7.3. Factors Associated with Knowledge

From the sociodemographic factors, sex was statistically and significantly associated with knowledge of blood donation. Being male was 1.75 times more knowledgeable than females [AOR (95%CI) 1.75(1.00, 3.07)]. The other statistically significant factor was marital status. Married health care workers were 3 times knowledgeable than single [AOR (95%CI) 3.24(1.65, 6.37)].Department was also among the statistically significant factors. Being Laboratory were 63% less likely to have good knowledge than physician [AOR (95%CI) **0.37(0.12, 1.16).**

Table-4.Factors associated with knowledge level of health care workers in TASH towards blood donation, 2015

characters		Knowledge		COR WITH 95%CI	AOR with 95%CI
		poor	good		
Age	21-25	68	49	1	
	26-30	51	78	2.12(1.27,3.53)	
	31-40	10	20	2.77(1.19,6.45)	
	>40	6	13	3.00(1.06,8.46)	
Sex	male	64	112	2.58(1.60,4.17)	**1.75(1.00,3.07)**
	female	71	48	1	1
Marital status					
	married	24	42	1.64(0.93,2.89)	**3.24(1.65,6.37)**
	single	111	118	1	1
Qualification					
Diploma& 1st degree		121	113	3.59(1.87,6.88)	
2nd degree & specialist		14	47	1	
Religion					
Orthodox		94	101	1	
Protestant		27	35	1.20(0.67,2.14)	
Others		14	24	1.59(0.77,3.26)	
Durationof practice(year)					
6/12-1		63	60	1	
1-2		33	36	1.14(0.63,2.06)	
2-3		6	12	2.10(0.74,5.95)	
3-4		7	15	2.25(0.85,5.90)	
4-5		10	10	1.05(0.40,2.70)	
>5		16	27	1.77(0.86,3.61)	
Department					
Physician		25	98	1	1

Nurse	86	40	3.92(1.33,11.47)	0.10(0,05,0.20)
Laboratory	7	8	0.46(0.16,1.32)	**0.37(0.12,1.16)**
Pharmacy	9	6	1.14(0.27,4.68)	0.15(0.05,0.49)
Others(radio,Anst,physi)	8	8	0.66(0.16,2.76)	0.20(0.06,0.64)
Monthly income(ETB)				
1000-3000	44	33	1	
3000-6000	82	85	1.38(0.38,2.38)	
>6000	9	42	6.22(2.66,14.55)	

7.4. Attitude towards Blood Donation

Two hundred and ninety (98.3%) respondents said blood donation is good. Voluntary donation was accepted as the best source of donor by 222(75.3%), replacement donors by 26(8.8%), remunerated (paid) by 3(1.0%), self donor by 38(12.9%) and the remaining had no knowledge of it. One hundred fifty five (52.5%) said something happen to a donor, 45(15.3%), 217(73.6%) & 33 (11.2%) stated that a donor might contract infection, become temporary weak and fall sick respectively. From the total respondents 225(76.3%) said that the patient relatives should be asked to donate blood. Two hundred seventy one (91.9%) stated that as they encourage their families and relatives to donate and 266(90.2%) were volunteer to be reminded or called up on to donate. Table 5 shows the detail attitude level of the respondents regarding to blood donation

Table 5 Attitude towards blood donation among health care workers in TASH, 2015

Characters	Frequency	Percentage (%)
What do you think about blood donation		
Good	290	98.3
Bad	1	0.3
No idea	4	1.4
What do you think is the best source of blood donation		

Voluntary donor	222	75.3
Replacement donor	26	8.8
Remunerated donor(paid)	3	1.0
Self donor	38	12.9
Don't know	6	2.0
Can something harmful happen to a blood donor during or after donation		
Yes	155	52.5
No	125	42.4
Don't know	15	5.1
What can happen to a blood donor during or after donation		
Contract infection	45	15.3
Temporary weakness	217	73.6
Fall sick	33	11.2
Should patient relatives be asked to donate		
Yes	225	76.3
No	51	17.3
Don't know	19	6.4
Do you encourage your friends and relatives to donate		
Yes	271	91.9
No	24	8.1
Will you donate If called upon or reminded to do so		
Yes	266	90.2
No	29	9.8

7.5. Factors Associated with Attitude towards Blood Donation

From the health care workers socio-demographic factors, age was statistically and significantly associated with attitude towards blood donation. Health workers aged between 31&40 were

1.5 times having good attitude towards blood donation than those who are above 40[AOR (95%CI) 1.50(0.38, 5.89)]. Similarly, those health workers who had 6 month to one year work experience 4 times having good attitude than those who had above 5 years experience[AOR (95%CI) 4.08 (1.31,12.73)]. The other statistically significant socio-demographic factor was department. Being a nurse were 51%less likely to have good attitude towards blood donation than others (AOR (95%) 0.49 (0.23, 1.08)].

Table-6. Factors associated with attitude of health care workers in TASH towards blood donation,2015

Variables	Attitude		COR WITH 95%CI	AOR with 95%CI
	poor	good		
Age				
21-25	68	49	2.01(0.68,5.97)	0.70(0.17,2.85)
26-30	94	35	1.04(0.35,3.10)	0.45(0.11,1.75)
31-40	19	11	1.62(0.45,5.73)	**1.50(0.38,5.89)**
>40	14	5	1	1
Sex				
Male	114	62	1	
Female	81	38	1.15(0.70.1.90)	
Marital status				
Married	45	21	1	
single	150	79	1.12(0.62,2.02)	
Qualification				
Diploma & 1st degree	154	80	1.06(0.58,1.93)	
2nd degree& specialist	41	20	1	
Religion				
Orthodox	130	65	1	
Protestant	42	20	0.95(0.51,1.75)	
Others	23	15	1.30(0.63,2.66)	

Duration of practice(year)				
6/12 -1	66	57	3.26(1.44,7.37)	**4.08(1.31.12.73)**
1-2	50	19	1.43(0.58,3,54)	1.98(0.63,6.24)
2-3	13	5	1.45(0.41,5.15)	1.97(0.45,8.52)
3-4	17	5	1.11(0.32,3.83)	1.23(0.31,4.88)
4-5	15	5	1,25(0.36,4.39)	1.93(0.47,7.84)
>5	34	9	1	1
Department				
Physician	68	55	2.05(0.98,4.27)	0.41(0.23,0.74)
Nurse	94	32	0.86(0.40,1.84)	**0.49(0.23,1.08)**
Others				
(lab,pharma,radio,anesth,physio,)	33	13	1	1
Monthly income				
1000-3000	46	31	1.04(0.50,2.15)	
3000-6000	118	49	0.64(0.33,1.23)	
>6000	31	20	1	

7.6. Practice of Blood Donation

One hundred thirteen (38.3%) have donated with 55 (18.6%) one times, 39 (13.2%) two times and 11(3.7%), 3(1.0%), 1(0.3%), 2(0.7%), 1(0.3%), 1(0.3%) were donated three, four, five, six, nine and ten times respectively. Most 102(34.6%) donated voluntarily, 13 (4.4%) for a friend or relatives, 1(0.3%) for remuneration (paid) and 1(0.3%) to know their screening status. One hundred eighty two (61.7%) had never donated blood in their life time. Reason for non donation included 97 (32.9%) not approached to donate, 49 (16.6%) unfit to donate, 31 (10.5%) need to donate for relatives or friends in the future, 22 (7.5%) fear of needle, 5 (1.7%) fear of knowing my screen status. 3 (1.0%) religion forbid it, 3 (1.0) donated blood may be sold and 2 (0.7%) no remuneration(payment). Table 7 show details of blood donation practice among health care workers.

Table-7.Practice on blood donation among health care workers in TASH,2015

Characters	Frequency	Percentage (%)
Have you ever donate d blood		
Yes	113	38.3
No	182	61.7
How many times you donate		
1x	55	18.6
2x	39	13.2
3x	11	3.7
4x	3	1.0
5x	1	0.3
6x	2	0.7
9x	1	0.3
10x	1	0.3
Why did you donate		
A friend or relative needed blood	13	4.4
Voluntary	102	34.6
Remunerated (paid)	1	0.3
To know my screen status	1	0.3
Why you did not donate		
Not approached to donate	97	32.9
Unfit to donate	49	16.6
Need to donate to friends or relative in the future	31	10.5
Fear of needle	22	7.5
Fear of knowing my screen status	5	1.7
Religion forbid it	3	1.0
Donated blood may be sold	3	1.0
No remuneration (payment)	2	0.7

7.7.Factors Associated with Practice of Blood Donation

Table-8. Factors associated with practice of blood donation among health care workers in TASH,2015

characters	Practice		COR with 95%CI	AOR with 95%CI
	Not practice	practice		
Age				
21-25	77	40	1	
26-30	78	51	1.25(0.74,2.11)	
31-40	16	14	1.68(0.74,3.79)	
>40	11	8	1.4(0.52,3.75)	
Sex				
Male	108	68	1.03(0.64,1.67)	
Female	74	45	1	
Marital status				
Married	36	30	1.46(0.84,2.55)	
single	146	83	1	
Qualification				
Diploma & 1st degree	143	91	1.12(0.62,2.02)	
2nd degree& specialist	39	22	1	
Religion				
Orthodox	124	71	0.63(0.31,1.28)	
Protestant	38	24	0.70(0.31,1.58)	
Others	20	18	1	
Duration of practice(year)				
6/12-1	79	44	1	
1-2	43	26	1.08(.58,2.00)	

2-3	9	9	1.79(0.66,4.88)
3-4	14	8	1.02(0.399,2.63)
4-5	14	6	0.76(0.27,2.14)
>5	23	20	1.56(0.77,3.15)
Department			
Physician	70	53	1.55(0.76,3.19)
Nurse	81	45	1.14(0.56,2.35)
Others	31	15	1
(lab,pharma,radio,anesth,physio,)			
Monthly income			
1000-3000	51	26	1
3000-6000	99	68	1.34(0.76,2.36)
>6000	32	19	1.16(0.55,2.43)

8. DISCUSSION

The theme of world blood donor day campaign 2015

"THANK YOU FOR SAVING MY LIFE"

The Slogan for 2015 campaign is

"Give freely. Give often, blood donation matters"

In this study, an attempt has been made to assess the level and factors associated with knowledge, attitude and practice of blood donation.

Among the total respondents those who had good knowledge was around 54.2%. This is lower than a study conducted among health science students of Addis Ababa University which is 83%(12). This is also lower than a study conducted among students of Ilorin University in Nigeria (64.8%) (13).The possible explanation for this finding might be students are more involved in blood donation club than heath workers. Most respondents (88.5%) were aware of the risk of transmission of infection by transfusion which is comparable with study conducted on physician of University of Benin Teaching Hospital in Nigeria (95.7%) (16) and higher than study conducted on bachelor students in Nepal (68.9%)(18). The fact that it is higher might be most health workers have trained on infection prevention. Similarly, sixty eight percent said that the minimum frequency of donation was every three months which is higher than Nigerian (35.7%) (16).

In this study, thirty four percent respondents have good attitude towards blood donation which is half of a study conducted among health science students of Addis Ababa University which is 68%(12), it is lower than a study conducted on medical undergraduate students in India all had good attitude towards blood donation (15) but near to equal with a study conducted on public and private medical students in Pakistan which is 42%(24). Ninety eight percent respondents said blood donation is good which is slightly higher than Nigerian study on physician (89%) (16)and 81.6% of health workers in Benin Teaching Hospital, Nigeria (21).

Seventy five percent of respondents accepted that voluntary donor is the best source of blood donation. It is lower than physician in Nigerian (80.7%) (16).But, it is higher than health workers in Benin Teaching Hospital (71.2%) (21).The possible explanation for this finding might be all participants in Nigeria were physician. In this study, 76.3% of respondents said that patient relatives should be asked to donate which is lower than the study conducted on physician in Nigeria(90.7%) and health workers in Benin Teaching Hospital in Nigeria (89%).((16),(21))

Less than half, 113 (38.5%) of health workers in this study have ever donated blood. This is higher than study conducted among health science students of Addis Ababa University which is 23.4%(12) ,but lower than a study conducted on physician of University of Benin Teaching Hospital in Nigeria (41.4%)(16). This is due to the fact that students have less exposure than health workers. The major reason for those who had ever donated blood was voluntarily (34.6%). This is lower than a study conducted among physician of University of Benin Teaching Hospital in Nigeria 53.4% (16) and health workers of Benin Teaching Hospital in Nigeria 41.7%(21) but ,it was also the major reason for them.

The major reason given by those who had never donated was that no one approached them to donate. This highlights, even though they are health care workers the need for serious sensitization and education to all and sundry through the mass media to encourage the populace to approach the blood bank for a blood donation exercise.

In this study, 61.7% of respondents have not donated blood either because of misconception or not approached to donate. Among those who didn't ever donated blood, not approached to donate by 32.9%, being unfit to donate by16.6%, need to donate for relatives or friends in the future by 10.5%, fear of needle by 7.5% fear of knowing my screen status by 1.7%, religion forbid it by 1.0%, donated blood may be sold 1.0% and no remuneration (payment) by 0.7% were the reasons for not donating a blood. From the above reasons not approached to donate were more stated (32.9%) which is higher than a study conducted on health workers of Benin Teaching Hospital in Nigeria 25.2%(21). This is might be because lack of interest and information during the blood donation day.

From the sociodemographic factors, sex was statistically and significantly associated with knowledge of blood donation. Being male was 1.75 times more knowledgeable than females [AOR (95%CI) 1.75(1.00, 3.07)]. The other statistically significant factor was marital status. Married health care workers were 3 times knowledgeable than single [AOR (95%CI) 3.24(1.65, 6.37)].Department was also among the statistically significant factors. Being Laboratory were 63%less likely to have good knowledge than physician [AOR (95%CI) 0.37(0.12, 1.16). This finding is in line with a study conducted among health science students of Addis Ababa University, being medicine student and nurse was more knowledgeable than other departments (12). The possible explanation for this finding might be the sample taken for these studies were low compared to physician and nurses.

From the health care workers socio-demographic factors, age was statistically and significantly associated with attitude towards blood donation. Health workers aged between 31&40 were 1.5 times having good attitude towards blood donation than those who are above 40[AOR (95%CI) 1.50(0.38, 5.89)]. Similarly, those health workers who had 6 month to one year work experience 4 times having good attitude than those who had above 5 years experience[AOR (95%CI) 4.08 (1.31,12.73)]. The other statistically significant socio-demographic factor was departments. Being a nurse were 51%less likely to have good attitude towards blood donation than others (AOR (95%) 0.49 (0.23, 1.08)].

9.Conclusion

The level of knowledge on blood donation is relatively high. Beside this, significant number of health workers in this study have poor attitude towards blood donation. Department, sex and marital status were associated with the level of knowledge. Younger age, department and work experience were associated with the level of attitude. The major reasons to donate and not to donate were voluntarily and not approached to donate respectively.

10. Strength and Limitation

Strength

The study covered all departments in Tikur Anbessa Specialized Hospital so that, it is possible to generalized. In addition to this, appropriate sampling technique and completeness of questionnaire were among the important strength of this study.

Limitations

One of the limitations of this study comes from the fact that cross-sectional nature of study limits the study to show causal association.

Lack of literature in our country was one of the limitations to compare findings.

11. Recommendations

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

1. The Hospital should establish blood donation clubs.

2. Tikur Anbessa Specialized Hospital should work in collaboration with Ethiopian Red Cross Society to improve the low level of blood donors.

3. Intervention activities to bring about behavioral changes among the health care workers on the wider benefit of blood donation for donors and community are recommended.

4. The Hospital should organize different events to build health care workers attitude positively and to increase the number of blood donors.

5. Further study needs to be conducted to explore factors associated with blood donors.

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13.Annexes

Annex-13.1. Questionnaire

This questionnaire is prepared to assess the knowledge, attitude, practice and associated factors of blood donation among health workers in Tikur Anbessa Specilazed Hospital. I hope that the result of this study will show the status of blood donation in the institution. Based on such a result and comments from the researchers the problems will be solved accordingly. I would like to request you to answer questions carefully and honestly. The confidentiality will be kept.

NB:- There is no need of writing your name on the questionnaire.

-**There might be a need to choice more than one answer for some questions.**

-please read each questions carefully and show your answer by circling the number and writing for blank spaces.

Part I: Sociodemographic questions		
1	Age	……year
2	Sex	Male Female
3	Marital status	Married Single Divorced widowed
4	Qualification	Diploma First degree Second degree Specialist
5	Religion	Orthodox Muslim Catholic Protestant Others……
6	Duration of practice in the facility	……mm/yy
7	Department	Physician Nursing Laboratory Pharmacy Physiotherapy Anesthesia

		Radiology
8	Monthly income	……..birr

Part II: knowledge on blood donation		
1	Do you know common blood groups?	Yes No
2	Do you know your blood group?	Yes No
3	What is your blood group?	A+ A- B + B - AB+ AB- O+ O-
4	Can a person be infected by receiving blood transfusion?	Yes No
5	What disease are transmissible by blood transfuse?	HIV HBV HCV Syphilis Malaria CMV
6	How often individual donate?	Weekly Monthly Three monthly Six monthly Annually Don't know
7	Who should donate blood?	Men Women Young<18yrs Old>60yrs Vulnerable group Healthy Diseased
8	Who should not donate blood?	Men Women Young<18yrs Old>60yrs

		Vulnerable groups Healthy Diseased
9	What volume of blood is collected during each donation?	<500mls 500-1000mls Don't know
10	What is the duration of a donation process?	20 min 20-60min don't know

PART III: attitude on blood donation		
1	What do you think about blood donation?	Good Bad No idea
2	What do you think is the best source of blood donation?	Voluntary donor replacement donor remunerated donor self donor don't know
3	Can something harmful happen to a blood donor during or after blood donation?	Yes No I don't know
4	What can happen to a blood donor during or after donation?	Contract infection temporary weakness fall sick
5	Should patient relative be asked to donate?	Yes No I don't know
6	Do you encourage relatives to donate?	Yes No
7	Will you donate if called upon or reminded to do so?	Yes No

PART IV: Practice of blood donation			
1	Have you ever donated blood?	yes No	If you say no go to No 4
2	How often do you donate in a year?	……times in a year	
3	Why did you donate?	A friend or relative needed blood Voluntary Remunerated(paid)	

		To know my screen status
4	Reasons for non donation by non donors?	Not approached to donate Unfit to donate Need to donate to friends or relative in the future Fear of needle Fear of knowing my status Religion forbid it Donated blood may be sold No remunerations(payment)

Thank you for your participation!