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St. Paul's Hospital Millennium Medical College

St. PAUL'S HOSPITAL MELLENNIUM MEDICAL COLLEGE

**KNOWLEDGE, ATTITUDE, PRACTICE AND ASSOCIATED FACTORS OF BLOOD
DONATION AMONG HEALTH CARE WORKERS IN SPHMMC,ADDIS
ABABA,ETHIOPIA**

BY: Dr. BIRUK TESFU (Intern)

**A RESEARCH REPORT TO BE SUBMITTED TO THE DEPARTMENT OF PUBLIC
HEALTH, SPHMMC, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF DOCTOR OF MEDICINE.**

OCTOBER, 2017

ADDIS ABABA, ETHIOPIA



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OCTOBER, 2017

ADDIS ABABA, ETHIOPIA

Abstract

Background- Blood transfusion saves lives and improves health, but many patients requiring transfusion do not have timely access to safe blood. Health professionals by virtue of their training and medical practices are expected to be highly informed on the processes of donor blood procurement and the challenges of supply as well as the potential hazards of transfusion. They also constitute a potential pool of eligible but yet under explored donors.

Objective – The objective of this study is to assess knowledge, attitude, and practice towards blood donation among health care workers in St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia.

Methods- Institution based analytical cross sectional study design was conducted among all health care workers in St. Paul's Hospital Millennium Medical College. The study period was between February 25 to March 30, 2017. The dependent variables were knowledge, attitude and practice whereas the independent variables were socio demographic characteristics. Stratified sampling method was used and individual was selected by simple random sampling method. Data was collected with structured questionnaires and analyzed by SPSS version 20.0 and p-value < 0.05 was used as cut-off point for a variable to become independent predictor. Association between outcome and predictor variables were calculated by odds ratio and 95% CI.

Results - Out of total participants (n=279), 45.2% were males and mean age range, 28.93 ± 5.166 years. Of them, 86.4% of participant had good knowledge regarding blood donation. Being a male increased the odds of having good knowledge on blood donation [AOR (95%CI) 4.58(1.52, 13.84)]. Of total, participants 79.9% had good/favorable attitude towards blood donation. Almost two third of the participants, 70.9% had ever donated blood. Being a female was less likely to practice blood donation than male, [AOR (95%CI): 0.37(0.17, 0.81)]. From qualification towards blood donation practice, having first degree was more likely to practice blood donation than diploma, [AOR (95%CI): 3.98(1.06, 14.88)].

Conclusion and recommendations - The level of knowledge and attitude towards blood donation is higher than other surveys held at comparable setup. Yet practice level shows minor discordance with knowledge and attitude. It is better to work on those who were not approached to voluntarily donate blood.

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

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List of Acronyms and Abbreviations

AAU: Addis Ababa University

AOR: Adjusted Odd Ratio

BLH: Black Lion Hospital

CI: Confidence Interval

CMV: Cytomegalovirus

COR: Crude Odd Ratio

ERCS: Ethiopia Red Cross Society

FMoH: Federal Ministry of Health

HBV: Hepatitis B Virus

HCV: Hepatitis C Virus

HIV: Human Immunodeficiency Virus

NBTS: National Blood Transfusion Services

Rh: Rhesus

SPHMMC: St.paul's Hospital Millennium Medical College

WHO: World Health Organization

1. Introduction

1.1. Background

Blood is a body fluid in humans and other animals that that delivers necessary substances such as nutrients and oxygen to the cells and transport metabolic waste products away from those cells [1]. Blood has many functions apart from the aforementioned, it plays a significant role in immune response of the body to foreign antigens, coagulation process, hormonal transport, PH regulation and regulation of core body temperature. Doing all these, but it only accounts 7% of the total body weight of an average individual [2]. Blood transfusion is generally the process of receiving blood products into one's circulation intravenously.

Beginning with William Harvey's experiments on the circulation of blood, research into blood transfusion began in the 17th century, with successful experiments in transfusion between animals. However, successive attempts by physicians to transfuse animal blood into humans gave variable, often fatal, results. Pope Innocent VIII is said to have been given the world's first blood transfusion by his Jewish physician Giacomo di San Genesio, who had him drink (by mouth) the blood of three 10-year-old boys. The boys subsequently died [3]. The first successful non-direct transfusion was performed on March 27, 1914 by the Belgian doctor Albert Hustin, though this was a diluted solution of blood [4].

It was not until 1901, when the Austrian Karl Landsteiner discovered three human blood groups (O, A, and B), that blood transfusion was put onto a scientific basis and became safer. Landsteiner discovered that adverse effects arise from mixing blood from two incompatible individuals, which can have fatal consequences during transfusion. Landsteiner's work made it possible to determine blood group and allowed a way for blood transfusions to be carried out much more safely [5].

The use of stored blood began during World War I (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 [6].

The National Blood Transfusion Services (NBTS) was established in 1969 by Ethiopian Red Cross society. The Federal Ministry of Health (FMoH) made a policy decision to revert the responsibility for the National Blood Transfusion Services (NBTS) from the Ethiopia Red Cross Society(ERCS) to a Government-led and managed service under the FMoH and the Regional health bureaus a process which started in 2010 and was completed in 2013. This was with the aim of improving efficiency, access and quality of a service that was mainly a fragmented, hospital based system that could only be accessed by hospitals in the regional capitals, heavily reliant on family replacement donors, with neither universal nor quality assured testing of blood and inappropriate use of blood at the hospitals. 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 [7].

1.2. Statement of the problem

Blood transfusion is generally the process of receiving blood products into one's circulation intravenously. Transfusions are used for various medical conditions to replace lost components of the blood. Early transfusions used whole blood, but modern medical practice commonly uses only components of the blood, such as red blood cells, white blood cells, plasma, clotting factors, and platelets.

The World Health Organization (WHO) recommends that all donated blood is tested for transfusion transmissible infections. These include HIV, Hepatitis B, Hepatitis C, Treponema pallidum (syphilis) and, where relevant, other infections that pose a risk to the safety of the blood supply, such as Trypanosoma cruzi (Chagas disease) and Plasmodium species (malaria) [8]. According to the WHO, 25 countries are not able to screen all donated blood for one or more of:

HIV; Hepatitis B; Hepatitis C; or syphilis. One of the main reasons for this is because testing kits are not always available. However the prevalence of transfusion transmitted infections is much higher in low income countries compared to middle and high income countries [9].

There are 3 types of blood donors: voluntary unpaid, family/replacement and paid. An adequate and reliable supply of safe blood can be assured by a stable base of regular, voluntary, unpaid blood donors. These donors are also the safest group of donors as the prevalence of blood borne infections is lowest among this group. World Health Assembly resolution urges all Member States to develop national blood systems based on voluntary unpaid donations and to work towards the goal of self-sufficiency. Data reported to WHO shows significant increases of voluntary unpaid blood donations in low- and middle-income countries: An increase of 10.7 million blood donations from voluntary unpaid donors from 2008 to 2013 has been reported by 159 countries. The highest increase of voluntary unpaid blood donations is in the African (85%) and South-East Asian (74%) Regions. Data about the gender profile of blood donors show that globally 28% of blood donations are given by women, although this ranges widely. In 16 of the 119 reporting countries, less than 10% of donations are given by female donors [9].

The 2016 WHO theme for blood donor day campaign was “blood connect us all” on June 14, strongly encourages more people to donate blood voluntarily and regularly. Regarding global blood supply, WHO states that about 112.5 million blood donations are collected worldwide. More than half of these are collected in high-income countries, home to 19% of the world’s population. About 13,000 blood centers in 176 countries report collecting a total of 110 million donations. Collections at blood centers vary according to income group. The median annual donations per blood center is 5,400 in the low- and middle-income countries, as compared to 16, 000 in the high-income countries. There is a marked difference in the level of access to blood between low- and high income countries. The whole blood donation rate is an indicator for the general availability of blood in a country. The median blood donation rate in high-income countries is 33.1 donations per 1000 people. This compares with 11.7 donations per 1000 people in middle-income countries, and 4.6 donations per 1000 people in low income countries. 70 countries including Ethiopia report collecting fewer than 10 donations per 1000 people. Of these, 38 countries are in WHO’s African Region. All are low- or middle-income countries [9].

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 [10].

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.

2. Literature review

2.1. Blood Donation and Some Socio- Demographic Characteristics

Studies revealed that demographic characteristics have changed. Historically documented record of United States indicated that majority of all blood donors have been men and almost all women were non-donors [14]. In 2016, globally 28% of blood donations are given by women, although this ranges widely. In few of reporting countries, less than 10% of donations are given by female donors. Recently, however, proportions of female donors have increased dramatically [9].

In other study held on European Union member countries in 2009 depicted that males were significantly more likely than females to have donated blood before (44% compared to 31%). While willingness to donate organs skews to the 25-54 age group, blood donation has a broader age skew, 25 and over, with a significant skew to 40-54 year olds (46%). Trends in occupations showed that people who are in managerial jobs (49%) were more likely to have donated blood compared to those who look after the home (25%), the unemployed (33%) or the retired (39%) [15].

A 2007 analysis of registered blood donors showed that females accounted for majority of donor samples [31], where as a study in Ethiopia revealed that, proportion of males (54%) who had donated blood was significantly higher than females (46%) [16].

2.2. Knowledge about Blood Donation

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 [17].

A cross sectional qualitative study conducted at the University of Benin Teaching Hospital in Nigeria on 140 (102 males, 33 females and 5 no response) physicians, the respondents expressed a good knowledge of the common blood group types and of their own blood group. 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 respondent (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 99.3%, 97.9%, 73.6% and 42.9% while 19.3% and 2.9% affirmed those of malaria and CMV respectively. Thirty five percent stated that the minimum donation frequency was 6 months, 35.7% tri-monthly, and 11.4% monthly while 9.3% had no knowledge of this [18].

2.3. Attitudes and practice towards blood donation

A cross sectional study conducted on 384 (206 males and 178 females) students of AAU, college of health sciences and medicine in Ethiopia revealed that 68% of the participants had favorable attitude and 32% had unfavorable attitude towards blood donation. All of the participants had willing to donate in the future. More than one third of students 76.6%, 34.6% and 59.1% of respondents believed that blood donation makes weak, cause anemia and reduce immunity respectively [16].

In another study conducted on 295 (179 males and 116 females) health care workers at Tikur Anbessa Specialized Hospital revealed that about 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 [19].

A cross sectional study conducted on 177 (73 males and 104 female) medical students regarding to knowledge, attitude and practice of blood donation in Nepal. The study showed that among participants 32 had donated before (18.1%), of donors 22 were donated only once. Majority of donors 10 had donated at the age of 20 years. The reason for donation was 23 for moral satisfaction and humanity, 7 need of blood for a close relative. 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 [20].

2.4. Significance of the study

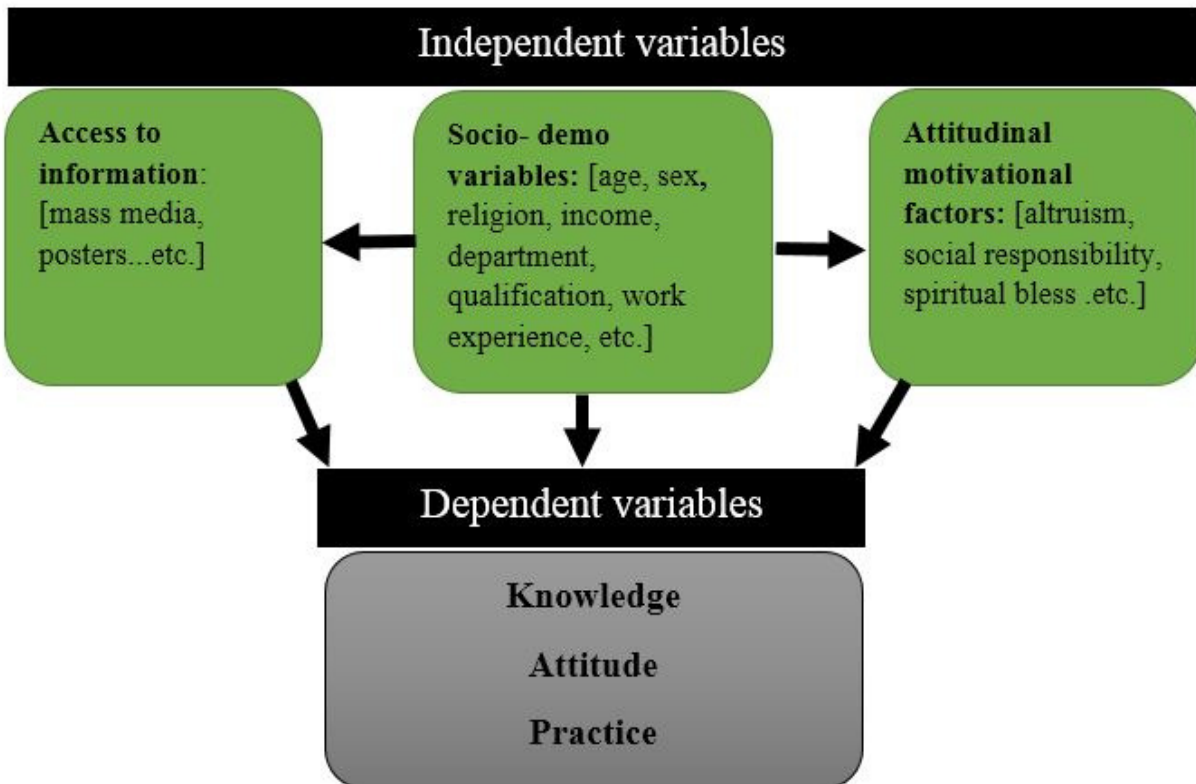
Blood is a scarce; its demand far outweighs its supply. There is shortage of active blood donors to meet the increased demands of blood is an issue of utmost concern especially in the developing countries. Voluntary non- remunerated donor has been adjudged the safest source of blood. Hence the World Health Organization (WHO) has adopted a policy aimed at 100% voluntary non remunerated donor blood procurement by the year 2020 [11,12].

Health professionals by virtue of their training and medical practices are expected to be highly informed on the processes of donor blood procurement and the challenges of supply as well as the potential hazards of transfusion. They also constitute a potential pool of eligible but yet under explored donors. There is no sufficient data throughout Ethiopia about the adequacy of blood supply. 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 St.paul's Hospital Millennium Medical College in capital city if Ethiopia. The results of this research could help in program formulation for concerned people and organizations to create awareness and incorporate health workers in

regular donation activity and educate the public about the importance of blood donation and the risks associated with donation.

2.5. Conceptual frame work

Figure -1: Proposed Conceptual Framework prepared based on literature reviews [21].



3. Objectives of the study

3.1. General objectives

The main objective of this study is to assess knowledge, attitude, practice, and associated factors of blood donation among health professionals in St. Paul's Millennium Medical College, Addis Ababa, Ethiopia, March 2017.

3.2. Specific objectives

The specific objectives of the study include the following

- a) To assess the knowledge of health professionals about blood donation at SPHMMC
- b) To assess the attitude of health professionals about blood donation at SPHMMC
- c) To assess the practice of health professionals about blood donation at SPHMMC
- d) To identify factors associated with Knowledge, Attitude and practice of blood donation.

4. Methods

4.1. Study Setting

St Paul's Millennium Medical College, as it is known today, is located in Addis Ababa, Ethiopia which is known for being the second largest hospital in Ethiopia. It was established through a decree of the Council of Ministers in 2010, although the medical school opened in 2007 and the hospital was established in 1968 by the late Emperor Haile Selassie in collaboration with the German Evangelical Church, as a source of medical care for underserved populations. Currently, it has a catchment population of more than 5 million and approximately 75% of its patients receive medical services free of charge. It is governed by a board under the Federal Ministry of Health. The College initiated Ethiopia's first integrated modular and hybrid problem-based curriculum for its undergraduate medical education, and is currently expanding to postgraduate programs and diversifying its undergraduate program offerings.

The college has more than 2800 clinical, academic and administrative and support staffs that provide medical specialty services to patients who are referred from all over the country, teaching medicine and nursing students and doing basic and applied researches. While the inpatient capacity is more than 700 beds, The College sees an average of 1,200 emergency and outpatient clients daily. St. Paul's Hospital Millennium Medical College provides healthcare and training to its students through its different biomedical and clinical departments, including Anatomy, Physiology, Biochemistry, Pharmacology, Public health, Pathology, General Surgery, Internal Medicine, Obstetrics and Gynecology, Pediatrics and child health, Emergency Medicine, Urology, Neurology, Orthopedics, Psychiatry, Ophthalmology, ENT, Dentistry and Maxillofacial Surgery, Radiology, Anesthesiology, Nursing, ICU (Intensive Care Unit), ART (HIV care), Endoscopy, Physiotherapy, Laboratory and Pharmacy [22]. The Hospital has around 1,025 health care workers in different departments such as physician, nurse, laboratory, pharmacy, anesthesia, radiology and Physiotherapy.

4.2. Study Design

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

4.3. Study period

This study was conducted in St. Paul's Hospital Millennium Medical College starting from February 25 to March 30, 2017.

4.4. Population

4.4.1. Source Population

All health professionals working in St. Paul Hospital Millennium Medical College.

4.4.2. Study population

All health care workers providing health services in St. Paul's Hospital Millennium Medical College fulfilling the inclusion criteria.

4.4.2.1. Inclusion criteria

All health care workers working in St. Paul Hospital Millennium Medical College that were formally employed after their six months probationary period, which means having work experience greater than six months.

4.4.2.2. 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. Sample Size and Sampling Procedure

The study used stratified sampling method to select the study subjects for administration of questionnaires. The stratification was departmental based and within each stratum or department and sample for the strata was allocated according to the proportion out of the total proportion, a simple random sampling was used to select subjects in each department. Using knowledge, attitude and practice prevalence from previous literatures, single population proportion formula is used to determine the sample size using the knowledge level of 54.2% and the sample was 382, attitude part of 34% and the sample was 345 and the practice of 38.5% the sample size was 364 [19]. To increase the power of the study the maximum sample size (382) was considered for this study. Therefore, the minimum sample size was calculated using single proportion estimate.

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

Where

n: minimum required sample size

α : Confidence level (95%)

p: Best estimate of population proportion (54.2 %)[19]

w: maximum acceptable difference

Z : value under standard normal table for the given value of confidence level (1.96)

$$n = \frac{(1.96)^2 0.542(1-0.542)}{(0.05)^2} = 381.449 \approx \underline{\underline{382}}$$

Since the study population is less than 10,000 (1,025), by using finite population correction

method: $nf = \frac{n}{1+\frac{n}{N}} = \frac{382}{1+\frac{382}{1025}} = 278.83 \approx \underline{\underline{279}}$

So, the total sample size was 279.

Table 1: Proportion of sample taken among health care workers in SPHMMC.

	Departments	Total no of professionals	Proportion	Sample taken
1.	Physician	320	32%	89
2	Nursing	534	52%	145
3	Pharmacy	37	4%	11
4	Laboratory	47	4%	11
5	Anesthesia	47	4%	11
6	Radiology	30	3%	9
7	Physiotherapy	10	1%	3
	Total	1,025	100%	279

4.6. Measurements

4.6.1. Study Variables

This study mainly focused on the association of the following dependent and independent variables.

Dependent variables

- ✓ Knowledge, attitude and practice of blood donation.

Independent variables

- ✓ Socio-demographic factors (Age ,sex, religion, marital status, department ,qualification monthly income and work experience)

4.6.2. Data Collection instruments

Data were collected by using self-administered questionnaires, prepared in English. Questionnaires were distributed personally by the researcher. The questionnaires was designed to collect most information about the socio-demographic factors, knowledge, attitude and practice.

4.7. Data collection process

Data was collected using standard self-administer questionnaire. After data on the total number of employees who fulfilled the eligibility were got from the human resource department of the college, they were categorized with their respective seven departments. Individuals in each departments were randomly selected and given the questionnaires by the researcher. Before initiation of data collection, the purpose of the study was explained to the participants and also consent was obtained.

4.8. Data Quality Control

The data quality were 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. Thereafter, data were checked for consistency and completeness after collection and before entry to computer software for analysis.

4.9. Data Processing and Analysis

The data were entered and analyzed by using SPSS version 20.00 mainly to produce descriptive statistics (percentage, ratio, mean, media and frequency) and analytic statistics. Binary logistic regression model was also used to identify the relation between the independent and dependent variables. Meanwhile $p\text{-value} < 0.05$ was used as cut-off point for a variable to become independent predictor. Association between outcome and predictor variables were calculated by odds ratio and 95% CI.

4.10. Ethical Consideration

Ethical clearance were obtained from the college's review board having gone through the necessary due diligence. On the top of that, a verbal consent were sought from each respondent during administration of questionnaires. All questionnaires are kept confidential and not shared to any other party during or after completion of the research.

4.11. Operational Definition

The following operational definitions are adopted from other literatures [19].

Level of knowledge: This is the understanding level of health care workers on the benefits, risks, eligibility criteria 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: practice denotes whether a particular participant has experienced blood donation or not.

4.12. Plan for Dissemination of Findings

Since this is an academic research, the result will be presented to an evaluator or group of evaluators as well as shared to the Ethiopian National Blood Bank for documentation and future referencing purpose. There is a plan to publish it in a national peer reviewed journal, present it in medical conferences and annual research days of SPHMMC or other academic institutions. It could also serve as an input data for the Club 20/20, which works on promotion of blood donation practice in the college environment.

5. Results

5.1. Socio-demographics characteristics

Out of 279 health care workers participated in the survey, questionnaires from all respondents were considered for analysis making the response rate 100%.

All 279 respondents were in the age range of 22-49 years with a mean age of 28.93 & SD of 5.166 years. From the total participants 126(45.2%) were male.

Of the respondents the majorities 149 (53.4.2%) were single in their marital status and 158 (56.6%) were first degree holder. From the total participants more than half were orthodox Christian 198 (71%) followed by protestant 53 (19.0%). Majorities of the respondents have work experience 1- 2 years in the facility 105(37.5 %). Most of the respondents were nurses 145 (52 %) followed by physicians 89 (31.9 %).

Table 2.Socio-demographic characteristics of health care workers in SPHMMC, 2017 (n=279) [19].

Characters	Response variables	Percentage (%)
Age (year)	21-25	73 (26.2%)
	26-30	134 (48.1%)
	31-35	39 (14.1%)
	36-40	22 (8%)
	>=41	11 (4%)
Sex	Male	126 (45.2%)
	Female	153 (54.8%)
Marital status	Married	112 (40.1%)
	Single	149 (53.4)
	Divorced	18 (6.5%)
Qualification	Diploma	39 (14.0%)
	1 st degree	158 (56.6%)
	2 nd degree	14 (5%)
	Specialist	68 (24.4)
Religion	Orthodox	198 (71%)
	Muslim	22 (7.9%)
	Catholic	3 (1.8%)
	Protestant	53 (19%)

Duration of practice (year)	Others	1 (0.3%)
	6/12-1 yr	47 (16.8%)
	1-2 yrs	105 (37.6%)
	2-3 yrs	62 (22.2%)
	3-4 yrs	20 (7.2%)
	4-5 yrs	4 (1.4%)
	>= 5 yrs	29 (10.4%)
Departments/professions	Physician	89 (31.9%)
	Nursing	145 (52.0%)
	Laboratory	11 (3.9%)
	Pharmacy	11 (3.9%)
	Physiotherapy	3 (1.1%)
	Anesthesia	11 (3.9%)
	Radiology	9 (3.2%)
Monthly income (ETB)	1000-3000	40 (14.3%)
	3000-6000	112 (40.1%)
	6000-9000	18 (6.5%)
	> 9000	102 (36.6%)

5.2. Level of Knowledge on Blood Donation

A total of 269 (96.4%) respondents had knowledge of the common blood group types, and 263 (95.3%) knew their own blood groups. The blood groups of respondents were A Rh positive 40 (14.3%), A Rh negative 31 (11.1%), B Rh positive 41 (14.7%), B Rh negative 2 (0.7%), AB Rh positive 13(4.7%), AB Rh negative 14 (5%), O Rh positive 111 (39.8%) and O Rh negative 14 (5 %).

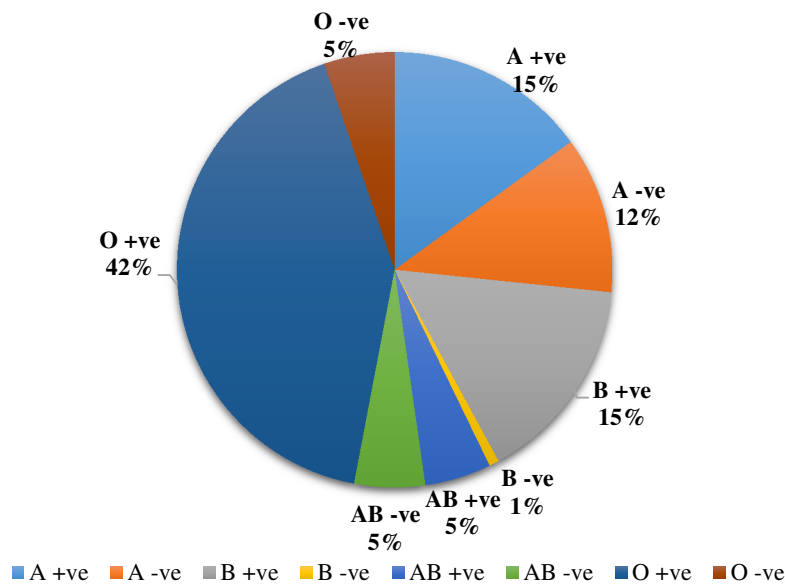
Most of the respondents 235 (84.2%) are aware of the risk of transmission of infection by transfusion. The risk of transmission of HIV was affirmed by 234(83.9%), HBV 227 (81.4%), HCV 197 (70.6%), Syphilis 133 (47.7%), Malaria 161 (57.7%) and CMV 171 (61.3 %). Of the respondents majority, 198 (71 %) stated that the minimum donation frequency was every three months, 3 (1.1 %) monthly, 47 (16.8%) every six monthly, 10 (3.6 %) annually and the remaining 19 (6.8 %) had no knowledge of this. On knowledge of volume of blood collected in each process 209 (74.9%) stated less than 500 ml, 43(19 %) ticked 500-1000 ml, while 15 (5.4 %) express no knowledge of it. Most of the respondents had the knowledge of eligible donor accounting men 18-60yrs 252 (90.3 %), women 18-60yrs 211(75.6 %) and healthy individual 227 (81.4%).

Table 3: Knowledge towards blood donation among health care workers in SPHMMC 2017 (n=279).

Questions	Response variables	Frequency (%)
Do you know common blood groups?	Yes	269 (96.4%)
	No	10 (3.6%)
Do you know your blood group?	Yes	266 (95.3%)
	No	13 (4.7%)
What is your blood group?	A ⁺	40 (14.3%)
	A ⁻	31 (11.1%)
	B ⁺	41 (14.1%)
	B ⁻	2 (0.7%)
	AB ⁺	13 (4.7%)
	AB ⁻	14 (5%)
	O ⁺	111 (39.8%)
	O ⁻	14 (5%)
Can a person be infected by receiving blood transfusion?	Yes	235 (84.4%)
	No	44 (15.6%)
What disease are transmissible by blood transfusion?	HIV	234 (83.9%)
	HBV	227 (81.4%)
	HCV	197 (70.6%)
	Syphilis	133 (47.7%)
	Malaria	161 (57.7%)
	CMV	171 (61.3%)
How often individual donate?	Weekly	2 (0.7%)
	Monthly	3 (1.1%)
	Three monthly	198 (71.0%)
	Six monthly	47 (16.8%)
	Annually	10 (3.6%)
	Don't know	19 (6.8%)
Who should donate blood?	Men (18-60 yrs)	252 (90.3%)
	Women (18-60 yrs)	211 (75.6%)
	Young ages <18yrs	32 (32.5%)
	Old ages >60yrs	27 (9.7%)
	Vulnerable groups	32 (11.5%)

	Healthy	227 (84.4%)
	Diseased	10 (3.6%)
Who should not donate blood?	Men (18-60 yrs)	4 (1.4%)
	Women (18-60 yrs)	1 (0.4%)
	Young ages <18yrs	199 (71.3%)
	Old ages >60yrs	205 (73.5%)
	Vulnerable group	176 (63.1%)
	Healthy	18 (6.5%)
	Diseased	247 (88.5%)
What volume of blood is collected during each donation?	500 mls	209 (74.9%)
	500-1000 mls	53 (19%)
	Don't know	15 (5.4%)
What is the duration of a donation process?	20 min	154 (51.4%)
	20-60 min	76 (26.5%)
	Don't know	49 (17.6%)

Figure 2: Blood Group Of The Respondants ,2017(n=297)



5.3. Factor associated with knowledge

From the socio-demographic factors, sex was statistically and significantly associated with Knowledge of blood donation. Being male was 4.58 times more knowledgeable than being female [AOR (95%CI) 4.58(1.52, 13.84)]. The other statistically significant factor was marital status, being single was 63% less likely to have good knowledge than married [AOR (95%CI) 0.37(0.14, 0.97)].

Table 4: Factors associated with knowledge level of health care workers at SPHMMC towards blood donation, 2017 (n=279)

Characters	Good knowledge (%)	Poor knowledge (%)	COR(95% CI)	AOR(95% CI)
Age				
<25 yrs	30(78.9%)	8(21.1%)	1	
>=25 yrs	211(92.1%)	18(7.9%)	3.13(1.25,7.82)	
Sex				
Male	118(49.0%)	4(15.4%)	0.19(0.06,0.57)	4.58(1.52,13.84)
Female	123(51.0%)	22(84.6%)	1	
Marital status				
Married	104(43.2%)	6(23.1%)	1	
Single	123(51.0%)	19(73.1%)	0.37(0.14,0.97)	0.37(0.14,0.97)
Divorced	14(5.8%)	1(3.8%)	0.81(0.09,7.21)	
Qualifications				
Diploma	27(11.2%)	9(34.6%)	1	
1 st degree	140(58.1%)	13(50.0%)	3.59(1.39,9.23)	
2 nd degree	8(3.3%)	4(15.4%)	0.67(0.16,2.75)	
Specialist	66(27.4%)	-		
Religion				
Orthodox	173(71.8%)	17(65.4%)	1	
Muslim	19(7.9%)	3(11.5%)		
catholic	-	2(7.7%)		
protestant	49(20.3%)	4(15.4%)		
Duration of practice				
6/12-1 yr	34(14.1%)	9(34.6%)	1	
1-2 yrs	92(38.2%)	9(34.6%)	2.56(0.47,13.91)	
2-3 yrs	58(24.1%)	3(11.5%)	4.83(0.69,33.49)	
3-4 yrs	17(7.1%)	3(11.5%)	1.42(0.19,10.23)	

4-5 yrs	3(1.2%)	-	0.94(0.17,5.25)
> 5 yrs	29(12.0%)	-	
Department			
Physician	87(36.1%)	-	1
Nursing	113(46.9%)	24(92.3%)	
Laboratory	11(4.6%)	00.0%	
Pharmacy	9(3.7%)	2(7.7%)	
Physiotherapy	2(0.8%)	-	
Anesthesia	11(4.6%)	-	
Radiology	8(3.3%)	-	
Monthly income			
1000-3000	27(11.2%)	7(26.9%)	1
3000-6000	98(40.7%)	12(46.2%)	1.63(0.18,15.18)
6000-9000	12(5.0%)	6(23.1%)	0.40(0.04,4.24)
> 9000	99(41.1%)	-	0.77(0.08,7.71)
Total	241(86.4%)	26(13.6%)	

5.4. Attitude towards Blood Donation

Among the respondents 267 (95.7%) said blood donation is good. Voluntary donation was accepted as the best source of donor by 251 (90 %), remunerated (paid) by 2 (0.7%), self-donor by 18 (6.5%) and the remaining had no knowledge of it with none of them accepted replacement donor as the best source. One hundred ninety eight (71%) said something happen to a donor, 19 (6.8%), 231 (82.8%) & 14 (5%) stated that a donor might contract infection, become temporary weak and fall sick respectively. From the total respondents 186 (66.7%) said that the patient relatives should be asked to donate blood. Two hundred thirty eight (85.3%) stated that as they encourage their families and relatives to donate and 214 (76.7%) were volunteer to be reminded or called up on to donate.

Table 5: Attitude towards blood donation among health care workers in SPHMMC 2017 (n=279)

Questions	Response variables	Frequency (%)
What do you think about blood donation?	Good	267 (95.7%)
	Bad	6 (2.2%)
	No idea	2 (0.7%)
What do you think is the best source of blood donation?	Voluntary donor	251 (90%)
	Replacement donor	-
	Remunerated	2 (0.7%)
	donor(paid) Self donor	18 (6.5%)
	Don't know	8 (2.8%)
Can something harmful happen to a blood donor during or after donation	Yes	198 (71%)
	No	59 (21.1%)
	Don't know	20 (7.2%)
What can happen to a blood donor during or after donation	Contract infection	19 (6.8%)
	Temporary weakness	231 (82.8%)
	Fall sick	14 (5%)
Should patient relatives be asked to donate	Yes	186 (66.7%)
	No	49 (17.6%)
	Don't know	26 (9.3%)
Do you encourage your friends and relatives to donate	Yes	238 (85.3%)
	No	31 (11.1%)
Will you donate If called upon or reminded to do so	Yes	214 (76.7%)
	No	48 (17.2%)

5.5. Factors Associated with Attitude towards Blood Donation

From the health care workers socio-demographics, none of the factors were statistically and significantly associated with attitude towards blood donation.

Table 6: Factors associated with attitude level of health care workers at SPHMMC towards blood donation, 2017 (n=279)

Characters	Good attitude (%)	Bad attitude (%)	COR(95% CI)	AOR(95% CI)
Age				
<25 yrs	30(93.8%)	2(6.2%)	1	
>=25 yrs	193(96.5%)	7(3.5%)	0.56(0.11,2.83)	
Sex				
Male	104(46.6%)	7(77.8%)	1	
Female	119(53.4%)	2(22.2%)	4.01(0.81,19.70)	
Marital status				
Married	92(41.3%)	-	1	
Single	122(54.7%)	7(77.8%)		
Divorced	9(4.0%)	2(22.2%)		
Qualifications				
Diploma	28(12.6%)	2(22.2%)	1	
1 st degree	126(56.5%)	7(77.8%)	1.29(0.25,6.52)	
2 nd degree	12(5.4%)	-		
Specialist	57(25.6%)	-		
Religion				
Orthodox	164(73.5%)	7(77.8%)	1	
Muslim	14(6.3%)	2(22.2%)		
catholic	2(0.9%)	-		
protestant	43(19.3%)	-		
Duration of practice				
6/12-1 yr	32(14.3%)	-	1	
1-2 yrs	80(35.9%)	7(77.8%)		
2-3 yrs	52(23.3%)	2(22.2%)		
3-4 yrs	20(9.0%)	-		
4-5 yrs	4(1.8%)	-		
> 5 yrs	24(10.8%)	-		
Department				
Physician	73(32.7%)	-	1	
Nursing	110(49.3%)	7(77.8%)		
Laboratory	11(4.9%)	-		
Pharmacy	10(4.5%)	1(11.1%)		
Physiotherapy	2(0.9%)	-		
Anesthesia	9(4.0%)	1(11.1%)		
Radiology	8(3.6%)	-		

Monthly income	24(10.8%)	4(44.4%)	1
1000-3000	92(41.3%)	5(55.6%)	
3000-6000	18(8.1%)	-	
6000-9000	83(37.2%)	-	
> 9000			
Total	223(79.9%)	56(20.1%)	

5.6. Practice of blood donation

Among the total respondents only 198 (70.9%) had ever donated blood in their lifetime. Seventy (36.6%) have donated one times, 89 (46.6%) two times, 20 (10.5%) three times and the remaining 11(5.8%) donated four times. Most of the donors 186 (66.7%) donated voluntarily and 10 (3.6%) for a friend or relatives. Reasons for non-donation were for a cause of not approached to donate in 11 (3.9%), unfit to donate in 22 (7.9%), need to donate for relatives or friends in the future in 9 (3.2%), fear of needle in 19 (6.8%), fear of knowing my screen status in 11 (3.9%) and donated blood may be sold in 2 (0.7%).

Table 7: Practice of blood donation among health care workers at SPHMMC, 2017 (n=279)

Questions	Response variables	Frequency (%)
Have you ever donate d blood	Yes	198(71%)
	No	81(29%)
How many times you donate	1x	70(36.6%)
	2x	89(46.6%)
	3x	20(10.5%)
	4x	11(5.8%)
Why did you donate	A friend or relative needed	10(3.6%)
	Voluntary	186(66.7%)
Why you did not donate	Not approached to donate	11(3.9%)
	Unfit to donate	22(7.9%)
	Need to donate in the future	9(3.2%)
	Fear of needle	19(6.8%)
	Fear of knowing my status	11(3.9%)
	Donated blood may be sold	2(0.2%)

5.7. Factors associated with practice to wards blood donation

Binary logistic regression model of the component variables of socio-demographic factors show significance association of sex and qualification towards practice of blood donation.

Accordingly, being a female was less likely to practice blood donation than male, [AOR (95%CI): 0.37(0.17, 0.81)]. From qualification towards blood donation practice, having first degree was more likely to practice blood donation, [AOR (95%CI): 3.98(1.06, 14.88)].

Table 8: Factors associated with practice level among health care workers at SPHMMC towards blood donation, 2017 (n=279)

Characters	Practice (%)	No practice (%)	COR(95% CI)	AOR(95% CI)
Age				
<25 yrs	32(71.1%)	10(22.2%)	1	
>=25 yrs	166(70.9%)	68(29.1%)	1.33(0.55,3.19)	
Sex				
Male	89(44.9%)	37(47.4%)	1	
Female	109(55.1%)	41(52.6%)	0.91(0.53,1.53)	0.37(0.17,0.81)
Marital status				
Married	87(43.9%)	25(32.1%)	1	
Single	100(50.5%)	46(59.0%)	0.62(0.35,1.10)	
Divorced	11(5.6%)	7(9.0%)	0.45(0.16,1.29)	
Qualifications				
Diploma	20(10.1%)	17(21.8%)	1	
1 st degree	115(58.1%)	42(53.8%)	2.33(1.11,4.86)	3.98(1.06,14.88)
2 nd degree	6(3.0%)	8(10.3%)	0.64(0.184,2.20)	
Specialist	57(28.8%)	11(14.1%)	4.40(1.77,10.98)	
Religion				
Orthodox	146(73.7%)	49(62.8%)	1	
Muslim	11(5.6%)	15(19.2%)		
catholic	-	2(2.6%)		
protestant	41(20.7%)	2(15.4%)		
Duration of practice				
6/12-1 yr	27(13.6%)	18(23.1%)	1	
1-2 yrs	83(41.9%)	21(26.9%)		
2-3 yrs	48(24.2%)	14(17.9%)		
3-4 yrs	11(5.6%)	9(11.5%)		
4-5 yrs	1(0.5%)	3(3.8%)		
> 5 yrs	16(8.1%)	13(16.7%)		

Department			
Physician	73(36.9%)	15(19.2%)	1
Nursing	90(45.5%)	53(67.9%)	0.35(0.18,0.67)
Laboratory	10(5.1%)	1(1.3%)	2.05(0.24,17.28)
Pharmacy	8(4.0%)	3(3.8%)	0.55(0.13,2.30)
Physiotherapy	2(1.0%)	1(1.3%)	0.41(0.03,4.83)
Anesthesia	7(3.5%)	4(5.1%)	0.36(0.09,1.38)
Radiology	8(4.0%)	1(1.3%)	1.64(0.19,14.14)
Monthly income			
1000-3000	21(10.6%)	17(21.8%)	1
3000-6000	75(37.9%)	37(47.4%)	0.49(0.08,2.87)
6000-9000	12(6.1%)	6(7.7%)	0.81(0.15,4.38)
> 9000	85(42.9%)	16(20.5%)	0.80(0.12,5.40)
Total	198(70.9%)	81(29.1%)	

6. Discussion

Globally, there is a shortage of blood supply due to high blood demand and increase in medical treatment procedures requiring blood transfusion therapy particularly in developing countries. Maintaining an adequate and safe blood supply is an issue of concern to health planners especially with the increase in demand. Therefore, understanding the level of knowledge, attitude, practice, and associated factor towards voluntary blood donation is essential. In this study, an effort was made to find out the level of Knowledge, Attitude and Practice (KAP) and their respective associated factors towards blood donation among health care workers in st'paul hospital millennium medical college.

Level of knowledge

Among the total respondents those who had good knowledge was around 86.4%. This is significantly higher than the study conducted among health care workers at Black Lion Hospital, health science students in Samara University Health Science College and among health professional students in Chennai, South India, which was 54.2%, 54% and 35.65% respectively [19, 23, 24]. But it is comparable to the study which was conducted among health science students of Addis Ababa University which is 83 % [16]. The possible explanation for this finding might be the positive influence of clubs which works on promotion of blood donation among the college society. The prevalence of adequate knowledge towards blood donation is estimated to be 60% in developing countries, which is lower than the current study result [25].

About 84.4% of the health care workers said that diseases can be transmitted by blood transfusion which is comparable with study conducted among health care workers at Black Lion Hospital (88.5%) and physicians of University of Benin Teaching Hospital in Nigeria (95.7%) and higher than study conducted on bachelor students in Nepal (68.9%)[19, 18, 20]. HIV-AIDS and hepatitis were the most frequently mentioned infections associated with transfusion, which was similar to the study on Nepal students [20]. In terms of Blood group of the participants O was the commonest, 44.8% while AB was the least, 9.7% which is similar to the study conducted at University of Benin Teaching Hospital , Nigeria (57.6%) and (5.4%) respectively [18].

Knowledge regarding optimal volume of blood donated on each time was 74.9% and knowledge about minimum duration between two blood donations 71% in which the former

were higher and the latter being comparable with the study done in Samara University Health Science College students (54.6%) and (66.1%) respectively [23].

Level attitude

In this survey 79.9% of respondents had good/favorable attitude towards blood donation which is slightly higher than the study conducted on health science students in AAU where (68%) of respondents turned out to have a positive attitude towards voluntary blood donation. But it more than twice when compared to the study on health care worker in Black Lion Hospital which is (34%) [19]. This might be explained by the possibility of creating positive attitude on the members of the health care workers while high figures of the college society constantly engaging in blood donation activities and watching poster of them showing so. Almost all, 95.7% of respondents said blood donation is good which is fairly comparable with Nigerian study on physician (89.3%) and the Black Lion Hospital study on health care workers (98%) [18, 19].

In this study 90% of respondents accepted that voluntary donor is the best source of blood donation. Which is higher than the black lion hospital (75%) and the Nigerian study (80.7%) but comparable with the study on Samara University Health Science College students (92.3%) [19, 18, 23]. On Previous two studies in BLH and University of Benin Teaching Hospital, Nigeria , (15.3%, 73.6% and 11.2%) and (11.1%, 92.3% and 7.6%) believed that they can contract infection, feel temporary weakness and fall sick after blood donation respectively, whereas in this study 6.8%, 82.8%, and 5% respectively [19,18]. Of all, 76.7% of the respondents are willing to donate if reminded or called to do so in the future which higher than the Nigerian study (57.1%) [18].

Level of practice

In this study it was found out that 71% of individuals have ever donated blood in their life time. This is higher than the studies in BLH, Samara University Health Science College students, AAU health science students and University of Benin Teaching Hospital physicians which were 38.5%, 24.5%, 23.4% and 41.1% respectively [19,23,16,18]. It could be because of the frequently hosted blood donation campaigns at the hospital that majority of health care workers are likely to practice blood donation at least once and label as having good practice.

In this study, being unfit to donate and fear of that donated blood may be sold were the commonest and the least reasons for not donating blood among non-donors, 27.5% and 2.4% respectively whereas not approached to donate (31.7%) and fear of knowing their status (2.4%) were the commonest and the least reason in the Nigerian physician study [18].

Associated factors for blood donation

From the socio-demographic factors, sex was statistically and significantly associated with knowledge of blood donation. Being single was associated with less likelihood of having good knowledge than married. This findings are in line with the studies conducted among health care workers in BLH and health science students of Addis Ababa University [19, 16].

7. Strengths and limitations of the study

7.1. Strengths

This study was able to explore the knowledge, attitudes, practice and associated factors towards blood donation practice among health care workers in St.paul's Hospital Millennium Medical College.

It tried to address important issues and use appropriate sampling technique, and used binary regression model to see the association between the dependent and predictor variables.

The study included almost all departments in SPHMMC so that, findings are possible to be generalized. In addition, the use of standard questionnaires and their completeness are among the strengths of this study.

7.2. Limitations

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

Lack of adequate amount of literatures in our country make it inconvenient to compare between findings.

Recommendation ideas of the participant on how to improve the knowledge, attitude and practice to wards blood donation was not directly included in survey.

8. Conclusion and recommendations

8.1. Conclusion

The level of knowledge towards blood donation was 86.4%, which is significant in number as compared to other survey held at nearly similar setups. Age, sex and marital status are socio-demographic factors that were found to be significantly associated with knowledge. Still comparable number of health workers had good/favorable attitude towards blood donation, 79.9%. There was no any identified factor found to be significantly associated with attitude level.

Yet lower figure was found on assessing the practice level of health care workers to wards blood donation, 70.9%. Sex and qualification of the participants were the only significant factors associated with blood donation practice.

8.2. Recommendations

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

- **Health care workers**

Members of the health care workers across the country are home for potential safe blood donors. This is true because they the first party to know the true magnitude of the scarcity and immediate need for the safe blood in the health institution setups. Even though the figures about knowledge are larger still there is a discordance with the practice level of blood donation.

Those health care workers who practice blood donation once in their lifetime should start to donate regularly.

- **St'paul Hospital Millennium Medical College and Club 20/20**

Ongoing efforts should continue to strengthen blood donation practice in the college society.

Still small number of health care workers point out the reason of not being approached to for blood donation, so efforts should made to address these individuals.

Intervention activities must be made to bring about behavioral changes among those workers who had unfavorable attitude and for those who never had donated blood.

- **National blood bank**

The number of Active mobile blood collection teams should increase (31 in 2014) to achieve collection of adequate amount of safe blood to entertain the currently growing demand [25].

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10. Annexes

Data collection tools



St Paul's Hospital Millennium Medical College

May, 2017

Dear Participant:

My name is Biruk Tesfu and I am a graduate student at St. Paul's Hospital Millennium Medical College. For my final research project, I am examining the knowledge, attitude and practice of blood donation among the healthcare professionals in SPHMMC. Because you are one of the member the healthcare professionals in SPHMMC [i.e. the study group], I am inviting you to participate in this research study by completing the attached questionnaires.

The following questionnaire will require approximately not more than 10 minutes to complete. There is no compensation for responding nor is there any known risk. In order to ensure that all information will remain confidential, your name will not be included. Participation is strictly voluntary and you may refuse to participate at any time.

Completion and return of the questionnaire will indicate your willingness to participate in this study. If you require additional information or have questions, please contact me at the number listed below.

N.B

- Show your answer by ticking the box in front of the respective choices. (€)
- There might be a need to choose more than one answer for some questions.

Sincerely,

BIRUK TESFU

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Instructors

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Part I: Socio demographic section

- 1 Age:.....yrs
- 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: ETB

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 If "yes", 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 transfusion? ☐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 ages <18yrs ☐Old ages >60yrs
☐Vulnerable group ☐Healthy ☐Diseased
- 8 Who should not donate blood? ☐Men ☐Women ☐Young ages <18yrs ☐Old ages >60yrs
☐Vulnerable group ☐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 (paid) 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? **/only for non-donors /**
 €Not approached to donate €Unfit to donate €Fear of needle

 €Need to donate to friends or relative in the future €Fear of knowing my status

 €Religion forbid it €Donated blood may be sold €No remunerations (payment)

Thank you for your participation!