KNOWLEDGE, PERCEPTION, PRACTICE AND BARRIERS OF VOLUNTARY BLOOD DONATION AMONG SECONDARY HEALTHCARE WORKERS IN IBADAN METROPOLIS

BY

AGOGO EHIAGHE WINIFRED
B.SC. HUMAN PHYSIOLOGY (A.A.U)
MATRIC NUMBER: 173404

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DEDICATION

This work is dedicated to the glory of God, who has been my inspiration and has always been by my side. I returned the glory to God.

Abstract

There has been reported shortage of blood in most hospitals' blood bank in Ibadan. Voluntary blood donation (VBD) is the foundation for safe and sufficient blood supply in healthcare facilities. Healthcare workers can be valuable resources in making blood available to patients since they know when, how, where to donate blood. However, adequate supply of safe blood can only be assured through regular donations by voluntary unpaid blood donors. The purpose of this study is therefore to investigate the knowledge, perception, practice and barriers to VBD among secondary healthcare workers in Ibadan metropolis.

The study is a descriptive cross-sectional design. A four stage sampling technique which involved random selection health facilities, proportionate selection of healthcare workers to be interview from each local government, proportionate selection of cadre of health care workers from each facility picked and random selection of consenting 422 healthcare workers from the facilities. A validated self-administered semi-structured questionnaire developed from relevant literatures was used to elicit information on respondents' social demographic characteristics, knowledge relating to VBD, perception towards VBD, practices and barriers to VBD. Knowledge was assessed on a 37- point scale and score ≤ 16 was categorized as poor while scores > 16 were categorized as good. Perception was assessed on a 17- point scale and score ≤ 8 was categorized as negative perception while > 9 was categorized as positive perception. Data analyses were done using descriptive statistics and chi-square at 0.05 level of significance.

Age of respondents was 36.5±8.5 years and 66.6% were married. Majority (67.1%) were females. Majority of the respondents (73.2%) had poor knowledge relating to voluntary blood donation. Most (95.0%) knew the correct definition of VBD and majority (92.2%) also knew the suitable age for blood donation (BD). Only 22.0% and 19.2% knew how many times a healthy male and female can donate blood in a year respectively. About half of the respondents (50.5%) reported that nobody had ever approached them to donate blood and (27.5%) reported that BD leads to shortage of blood. Most (94.3%) knew that one who is hypertensive cannot donate blood while 88.2% and 89.3% knew that menstruating women and breast feeding mothers cannot donate blood respectively. About 51.9% of the respondents had positive perception and the mean perception score was 10.3±1.9. Few (33.6%) reported that they have donated blood before. Only (18.2%) reported that they have donated blood in the hospital; while 3.8% donated blood in the

last 10 years ago. Very few (7.3%) reported that fear of pre-screening result prevented them from donating blood. There was a significant relationship between knowledge of VBD and age of respondents as well as between level of education and perception towards BD.

The knowledge of blood donation as well as voluntary blood donation among respondents was poor. Therefore there need for the government, non-governmental organizations and the collaborating agencies to intensify actions in creating more public awareness of VBD.

Keywords: Voluntary blood donation, Healthcare workers, Barriers to blood donation, Blood donation practices.

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CERTIFICATION

I certify that this project was carried out by AGOGO Ehiaghe Winifred in the Department of Health Promotion and Education, Faculty of Public, College of Medicine, University of Ibadan, Nigeria.

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Supervisor **Date**

Dr. Frederick O. Oshiname, MPH (Ibadan),

M.A (CWRU Clevaland) Ph.D (Ibadan)

Department of health promotion and education,

Faculty of public health, college of medicine,

University of Ibadan,

Ibadan.

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LIST OF ABBREVIATION

Abbreviations used in this project

WHO……..World Health Organization

VBD…… Voluntary Blood Donation

CPD……. Citrate Phosphate Dextrose

CPDA-2 ……Citrate phosphate Dextrose Adenine

NBTS……..National Blood Transfusion Service

LGA…….Local Government Area

SBFAF…….. Safe blood for Africa foundation

USAID……..United State Agency for International Development

PCV…….. Packed cell Volume

VNDs…….. Voluntary Non-remunerated blood Donors

CHAPTER ONE

INTRODUCTION

1.1 Background

Blood has been defined as the vital fluid found in humans and other animals. It helps to provide important nourishment to all the body organs and tissues and carries away waste products to the appropriate organs and systems of the body for elimination. Sometimes referred to as "the river of life," blood is pumped from the heart through a network of blood vessels collectively known as the circulatory system. An adult human has about 5 to 6 liters (1 to 2 gal) of blood, which is roughly 7 to 8 percent of the total body weight. Infants and children have comparably lower volumes of blood, roughly proportionate to their smaller size. The volume of blood in an individual fluctuates. During dehydration, for example, while running a marathon, blood volume decreases. Blood volume increases in circumstances such as pregnancy, when the mother's blood needs to carry extra oxygen and nutrients to the baby, (Smith, 2009).

Human blood is scarce, valuable and in high demand, but availability of low-risk blood donors in Nigeria and many developing countries is a serious challenge and of public health concern. While the need for blood is universal, there is a major imbalance between developing and developed countries in the level of usage and access to safe blood. The practice of voluntary blood donation (VBD) is high in developed countries than developing countries. The World Health Organization (WHO) has estimated that donation by 1% of a country's population is the minimum blood required to meet a nation's most basic needs for blood, (WHO, 2002).

The common sources of blood donations are, family/replacement donations, paid blood donations and voluntary unpaid donations. A study carried out by WHO (2007) indicated that donors who gave blood voluntarily had the lowest prevalence of blood borne infections compared to people who donated for family members or in lieu of payment. WHO, therefore, recommended that national blood transfusion services should be based on non-remunerated volunteer blood donors.

Donating blood is an act that can save the lives of thousands of people worldwide, because blood is an essential element of human life and there is no substitute for it. In spite of extensive efforts and a number of blood donation programmes being organized worldwide, there is still inadequate

amount of blood to meet the increased demand for it. WHO advocates that 3-5% of a country's population should donate blood every year, which would be the ideal rate for maintaining a country's stock of blood and blood products at acceptable level (Zago, Silveira and Dumith, 2010). The collection of blood should only be from voluntary donors (low risk population). That is one of the four components of WHO's integral strategy to promote global safety and minimize risks associated with transfusion, (WHO, 2001). Unfortunately, 83% of the global population who are living in developing countries, have access to only 40% of blood supplied and in this, 60% of the cases are collected from paid or replacement blood donors rather than from voluntary non-remunerated low risk donors, (Mitra, Mandal, Nandy, Roy, Joardar and Mishra, 2001).

In India, there is a need of about 8 million units of blood every year, out of which only about one third are obtained from voluntary donors, (Ghose and Basu, 1996). The first step towards blood safety is to encourage blood donations from voluntary/non-remunerated donors and to obtain from low risk and regular donors, who will be donating blood two to three times in a year and afterwards, continue to donate at least once in a year. An adequate supply of safe blood can only be assured through regular donations by voluntary/unpaid blood donors. These are the safest group of donors, as the prevalence of blood borne infection is lowest among the group. WHO's goal is that every country should obtain all her blood supplies from 100% voluntary/unpaid donors by 2020, (WHO, 2013).

1.2 Statement of the problem

Blood transfusion is often needed for trauma victims due to accidents and burns, heart surgery, organ transplant, patients receiving treatment for cancer and other diseases like sickle cell anaemia and Thalassaemia. However, with an ageing population and advances in medical treatment and procedures requiring blood transfusions, the demand for blood continues to increase, (Pal, Sengupta, Pal and Shenga, 2009). Anaemia, traumatic injuries and obstetrics complications are common issues of people in developing countries. Blood transfusion in these settings can be life-saving. About 80% of maternal deaths are due to obstetric complications of pregnancy, labour and puerperium. The most common cause of these maternal deaths is the obstetric haemorrhage (25%), accounting for a quarter of all deaths. Obstetric haemorrhage generally occurs during the postpartum period and can lead to death very rapidly in the absence of prompt life-saving care, one of which is blood transfusion. A lot of efforts are going on

worldwide to establish and maintain sufficient number of regular volunteer blood donors, to ensure adequate and safe blood supply. The constant concern to meet the demands for blood is because of the fact that only a small percentage of the eligible population actually chooses to donate blood on a regular basis, (Pal et al., 2009). Healthcare workers are role models relating to the adoption of health related innovations, such as the practice of blood donation. However, there is dearth of information in relation to their knowledge, perception and practices concerning blood donation. This, therefore, constitutes the focus of this study.

1.3 Justification

There has always been shortage of blood in most hospitals' blood banks. Many of them do not have reserved blood to handle crisis situations neither do they make provisions for relatively rare blood groups. This is as a result of their failure to organize voluntary blood donation drive to attract voluntary donors on a regular basis. For this reason, they tend to depend mainly on replacement donors, while putting unnecessary pressure on patients to procure blood when it is needed. This is what has encouraged the use of commercial/paid donors, who donate blood in exchange for money. Sometimes, depending on the prevailing circumstances, replacement and commercial/paid donors may be compelled to donate blood in spite of having health conditions that would have prevented them from making such donations. This is unethical, illegal and only thrives due to scarcity or lack of voluntary donors (Aggarwal and Sharma, 2012). Healthcare workers can be valuable resources in making blood available for patients since they know when, how and where to donate blood, as well as the implication it may pose to the health and survival of patients. They can also act as role models to other people.

So, this research will add value to the existing knowledge by investigating what could cause healthcare workers not to donate blood. It will also provide suggestions on how to overcome the problem of inadequate or complete lack of blood in our hospitals' blood banks. Meanwhile, policy makers in the country can use the data emanating from this research to modify the existing policies on blood donation in Nigeria.

1.4 **Research questions**

The research questions formulated to guide this study were as follow:

1. What is the level of knowledge of healthcare workers on voluntary blood donation?
2. What are the perceptions of healthcare workers as it relates to voluntary blood donation?
3. To what extent do healthcare workers practice voluntary blood donation?
4. What are the barriers to voluntary blood donation among healthcare workers?

1.5 **Broad objective**

The broad objective of this research was to investigate the knowledge, perception, practice and barriers to voluntary blood donation among secondary healthcare workers in Ibadan Metropolis.

1.6 Specific objectives

The specific objectives were to:

1. Assess the knowledge of healthcare workers on voluntary blood donation.
2. Determine the perception of healthcare workers towards voluntary blood donation
3. Determine the extent to which healthcare workers practice voluntary blood donation.
4. Identify the barriers to voluntary blood donation among healthcare workers.

CHAPTER TWO

LITERATURE REVIEW

2.0 Blood and associated Myths and Beliefs

Blood is important to life and it is associated with a large number of beliefs. One of the basic beliefs is seeing blood as a symbol for family relationships. To be related by blood is to be related by ancestry rather than by marriage. This speaks about bloodlines and why people say; 'blood is thicker than water', 'bad blood' or 'blood brother'. Blood is highly emphasized in the Jewish and Christian religions. For example, Leviticus 17:11 states: "The life of a creature is in the blood." This phrase is part of the Levitical Law that forbids the drinking of blood. Meanwhile, mythic references of blood can sometimes be connected to the live-giving nature of blood, seen in childbirth, as contrasted with the blood from injury or death, (Kaadan and Angrini, 2009).

Among the Germanic tribes of Anglo-Saxons and the Norsemen, blood was used for sacrifices to the Blots. They considered blood to have the potent power and efficacy of its originator. So, when the being that has the blood is butchered, its blood was sprinkled on the walls, statues of the gods and on the participants at the spiritual exercise. The act of sprinkling blood was called 'bleodsian' in old English, but the terminology was borrowed by the Roman Catholic Church to become blessing or to bless. Meanwhile, the Hittite word for blood, Ishar, was a cognate to words for oath and bond, even as the Ancient Greeks believed that the blood of the god, Ichor, was a mineral that was poisonous to mortals. In the Chinese culture, it is often said that if a man's nose produces a little flow of blood, it signifies that he is experiencing sexual urge. One can often hear this when Chinese speak, or can witness such in some Hong Kong films, as well as in Japanese culture, parodied in anime. Characters, mostly males, will often be shown with a nosebleed if they see someone in the nude or little clothing. They can as well exhibit such act when they have erotic thoughts and experience fantasies (Kaadan and Angrini, 2009).

2.1 Blood- The religious perspectives.

In Judaism, blood cannot be consumed even in the smallest quantity (Leviticus 3:17). This is reflected in the Jewish dietary laws (kashrus). Blood is purged from meat by salting and soaking

the meat in water. Other rituals involving blood are the covering of the blood of fowl and game after slaughtering (Leviticus 17:13). The reason given by the Torah for this act is: *"Because the life of every animal is in his blood"* (ibid 17:14).

Christians also believe that the life of a living being is in his blood. "The life of the flesh is in the blood," (Leviticus 17:11). Some Christian churches like the Roman Catholicism, Eastern Orthodoxy and Anglicanism teach that when consecrated, the Eucharistic wine becomes the blood of Jesus Christ, with Christ being both spiritually and physically present in the wine. The teaching is rooted in the Last Super recorded in each of the four gospels in the Holy Bible, in which Jesus Christ told his disciples that the bread which they ate was his body, and the wine they drank was his blood. "*This cup is the new testament in my blood which is shed for you,"* (Luke 22:20). Various forms of Protestantism, especially those of the Wesleyan or Presbyterian lineage, teach that the wine is more than a symbol of the blood of Christ, who is spiritually but not physically present after the consecration of the wine. The Lutheran theology teaches that the body and blood are present together *in, with, and under* the bread and wine of the Eucharistic feast.

Christ's blood is also seen as the means of atonement for sins for Christians. "*Take, drink …this is my blood, which is shed for you, for the remission of sins*…." (Matthew 26:28). Due to Bible-based beliefs, members of Jehovah's Witness do not eat blood or accept transfusions of whole blood with its four major components, namely; red blood cells, white blood cells, platelets and whole plasma. Members are instructed to personally decide whether or not to accept fractions and medical procedures that involve their own blood. Consumption of food containing blood is forbidden by Islamic dietary laws. This is derived from the statement in the Qur'an, sura Al-Maida (5:3) *Forbidden to you (for food) are: dead meat, blood, the flesh of swine, and that on which hath been invoked the name of other than Allah*.

2.2 First thoughts of blood transfusion

One of the most frequently quoted personalities for this noteworthy honour is Pope Innocent VIII (1432-1492), Giovanni Cibo**,** who was reputedly transfused of blood sometime between 1490 and 1492. Pasquale Villari (1827-1917), an Italian historian later recounted the incident, claiming that the Pope had some sort of illness (which in the light of the present day knowledge,

was probably chronic renal disease) that rendered him semi-comatose. It was so profound that sometimes the Pope was mistakenly thought to be dead. On one occasion, after all the means to revive the Pope had failed, it was reported that a physician (or mystic) of dubious reputation, named Abraham Meyre, appeared in the court and promised to save the Pope's life by transfusing him with the blood of young donors. Apparently, three young 10-years-old shepherd boys were selected as donors and Villari stated that the blood of the dying Pope was passed into the veins of one of the boys, who gave him his own in exchange. The process was apparently repeated with the other two boys. All the three boys apparently died shortly after the procedure, possibly as a result of air embolism, but there was no change to the Pope's condition, (Sturgis, 1942).

2.3 Blood transfusion from Animal to Man

On the 22nd of November 1666, Richard Lower, assisted by Dr. Edmund King, transfused a 32-year old man named Arthur Coga of the blood of an animal. The event took place in England and was later detailed in the transaction of the Royal Society. The initial part of the account described the quills and silver pipes used to carry the blood between the carotid artery of the donor sheep and a vein of the recipient's arm. The account, however, concludes that the blood did run all the time of those two minutes and it was concluded upon the man's saying that he thought he had had enough blood. The recipient, during and after the operation, found himself in a better condition and hath given in his own narrative, urging that the experiment be repeated on him within three or four days after the exercise, but it was thought advisable to put it off somewhat longer. A 34-year old man, Antoine Mauroy, was described by Denys as suffering a severe phrensy, which apparently had lasted for seven to eight years and was reportedly caused by an unfortunate love affair. One day, the man escaped from his wife's control and paraded through the streets of Paris. Clothed shortly after, 10 ounces of blood were removed from the vein of his right arm and was replaced with five or six ounces of blood from a calf with no obvious untoward (or obviously beneficial) effects. Two days later, the man was transfused a second time. This resulted in what is now recognized as a haemolytic transfusion response. Denys also recounted that the following morning (the second day), Mauroy had further haemoglobinuria and epistaxis. However, by the third day, his urine had cleared and his mental state having apparently improved, the man returned to his wife. Denys attributed the colour of

the urine to a black choler, which had been retained in the body and had sent vapors to the brain, causing the patient's mental disturbance. Several months later, Antoine Mauroy, again, became violent and irrational and his wife persuaded Denys and his associate, Emmerez, to repeat the transfusion. A transfusion was attempted, but since the flow of blood was poor, it was apparently abandoned. Mauroy eventually died the following evening, (Kaadan and Angrini, 2009).

2.4 Blood transfusion from Man to Man

James Blundell (1790-1877) was a notable physician, physiologist and one of the outstanding obstetricians of his day. He is credited not only with rekindling interests in blood transfusion in the second decade of the 19th century and providing it with a semblance of a national approach, but he was also the first to transfuse human blood. Many people, in fact, regard Blundell as the father of modern blood transfusion. From his experiments, he concluded that the blood from one animal could not be substituted for that of another with impunity and he, therefore, turned to the use of human blood for human transfusion. Besides, there is impracticability in using animal blood due to the difficulty of finding an appropriate animal in an emergency. Later, Blundell invented another instrument, the Gravitator, which, as the name implies, gravitates the motive force for pushing the blood into the patient's vein, (Brailey, 2000).

2.5 Blood transfusion in the last 60 years

Blood was collected into reusable glass bottle in the first half of the twentieth century, where whole blood was transfused. In 1949, trials of plastic bags were conducted by the American Red Cross. The plastic bags were disposable and because of their flexibility, they facilitated the separation of blood components. The advent of ACD preservation solution was supplanted in 1957 by Citrate Phosphate Dextrose (CPD), which extended the vitality of blood units to 28 days. CPDA-1 (Citrate Phosphate Dextrose Adenine) was developed in 1979 and it extended the shelf time of blood units to 35 days. CPDA-2 was developed in the 1980s, which extended the shelf time of blood units to 42 days and cryoprotective agents such as glycerol, gained usage in the 1960s, as they enable freezing of blood for long term storage. The voluntary blood donor scheme was pioneered in London in 1921 by British Librarian, Percy Lane Oliver (1878-1944), following a request of the Red Cross service to provide two blood donors at short notice. The

development of electrical refrigeration of blood resulted shortly after in the first blood bank that was set up in Barcelona in 1936 (Kaadan and Angrini, 2009).

2.6 Blood shortages in Africa

Blood donation rates in Africa are generally very low (about 5 per 1000 population) compared to developed countries (for example, 47 per 1000 population in the United States). In its most recent global survey on blood safety and availability, WHO collected data from 40 of the 48 countries in sub-Saharan Africa (WHO, 2006). These data indicate that 35 (87.5%) countries collect less than half of the blood needed to meet the transfusion requirements of their populations. In the year 2004, only about 2.8 million units of blood were collected for a population of about 720 million people (11% of the world's population).

However, severe anemia occurs more frequently in Africa than in most other parts of the world. This results from the high number of patients with pregnancy-related complications, malaria, worm infestations, malnutrition and sickle cell disease. Blood transfusion is frequently central to the management of life-threatening anemia, but blood shortages are experienced throughout Africa. This has a particular impact on women and children. Globally, more than half a million women die each year as a result of complications from pregnancy and childbirth (WHO, 2005). Of the 20 countries with the highest maternal death rates, 19 are in sub-Saharan Africa where the risk of maternal death is 1 in 16, compared to 1 in 2800 in rich countries. The most common cause of maternal death is severe bleeding, which can kill even a healthy woman within two hours if unattended. In Africa, severe bleeding during delivery or after childbirth contributes to up to 44% of maternal deaths (WHO, 2006). Many of these deaths could be prevented through access to safe blood. Children are also particularly vulnerable to shortages of blood in Africa because of their high requirement for transfusion arising from severe life-threatening anemia caused by malaria or malnutrition. More than 1 million deaths each year worldwide is as a result of *Falciparum* malaria. It also contributes indirectly in many additional deaths, mainly in young children through synergy with other infections and illnesses (WHO, 2005). About 60% of the cases of clinical malaria and over 80% of malarial deaths occur in sub-Saharan Africa, where 9 out of 10 malarial deaths occur in children under five years of age. Studies reported that up to 50% of transfusions given to children are related to malaria-induced anemia. This poor quality of

clinical care also reduces the availability of blood for patients for whom transfusion is essential and is a waste of scarce resources. Serious blood shortages also contribute to an increased risk of HIV and hepatitis, because inadequate stock of blood forces a reliance on unsafe family or paid donors and increased pressure to issue blood without testing. In 2004, about 1.2 million units of blood were collected from family or paid donors who were considered at high risk for transmitting HIV, Hepatitis B or Hepatitis C. Only 12 sub-Saharan countries (Botswana, Burundi, Central African Republic, Cote d'Ivoire, Malawi, Namibia, Rwanda, Senegal, South Africa, Swaziland, Togo and Zimbabwe) have achieved 100 per cent voluntary unpaid blood donation, which is the cornerstone of a safe blood supply.

Every African country has a policy to test donated blood for HIV; most also aim to test blood for Hepatitis B and Syphilis and, increasingly, for Hepatitis C. Data from 30 African countries indicate that in 2004, transfusion-transmissible infections were detected in 183,000 units of blood (9.8%), which were subsequently discarded. Countries with a predominance of family or paid donors had higher rates of infected blood units than countries with voluntary unpaid blood donors (WHO, 2006).

2.7 Strategy for blood safety and availability in Africa

The transmission of HIV through unsafe blood transfusion is preventable and it is, in fact, the only approach to HIV prevention that is almost 100% effective. Blood safety is, therefore, one of the most cost-effective strategies for reducing the burden of HIV infection in Africa. The strategy advocated by WHO to achieve effective, cost-efficient and safe national blood supply system has been endorsed by all governments through successive World Health Assembly resolutions and has also been adopted by the PEPFAR initiative. It has three main components:

(i) **Voluntary unpaid blood donation**; the first line of defense is the donation of blood only by regular, voluntary unpaid blood donors from low-risk populations, who are the safest possible blood donors, and a careful assessment of their suitability to donate blood.

(ii) **Universal testing of donated blood**; the second line of defense is the screening of all donated blood in accordance with quality requirements for, at minimum, HIV, Hepatitis B, Hepatitis C and Syphilis.

(iii) **Reducing unnecessary transfusions**; the third line of defense is the appropriate use of transfusion only when medically indicated for patient's survival and wellbeing, minimizing the loss of blood during surgery and the use of suitable alternative treatment.

In most cases, the demand for blood far outweighs the supply. In Nigeria, about 500,000 units of blood are collected yearly out of the required 1.5 million units (Federal Ministry of Health Nigeria 2006). Blood is usually obtained on an emergency basis. A typical scenario is that of a patient with an urgent need of blood transfusion and the doctor asking the patient's guardians/relatives to provide blood. The relatives donate blood or procure blood from private laboratories and blood banks. They may also employ the services of commercial blood donors, popularly known as "blood touts". A poor blood donation culture exists in sub-Saharan Africa and this is fuelled by religious, spiritual and superstitious beliefs (Koster and Hassall 2011). In another research conducted in Bayelsa State, South-South Nigeria, majority of the donors (80.61%) were found to be commercial/professional donors, while 18.45% were family replacement donors. Only 0.93% of donors were voluntary donors (Kemebradikumo, Ebidor and Crosdale, 2013).

Human blood is an essential element of human life and it has no substitute. The theme of World Health Day in 2000 was "Blood Saves Life. Safe blood starts with me." The use of whole blood is now a well-accepted and well-used measure in many major surgeries and emergency care of trauma patients. Blood transfusion has been responsible for saving millions of lives each year around the world. Yet the quantity and quality of blood pool available for transfusion is still a major concern across the globe, especially in the developing countries (Aggarwal and Sharma, 2012). People have fears and misconception about blood donations in spite of the fact that blood donation is a desirable behaviour. A study on knowledge, attitudes, beliefs and motivations about blood donations among blood donors in Lagos, South-West Nigeria, shows that 47.0% are afraid of what they regard as side effects of blood donation, such as weight loss (23.8%), sexual failure (5.9%), high blood pressure (5.2%), sudden death (3.3%) and convulsion (1.4%), (Olaiya, Alakiya, Ajala and Olatunji, 2004).

2.8 The blood donor and donor recruitment

According to WHO, 2013, all blood establishments in the country shall collect blood from voluntary, non-remunerated donors recruited from low risk, safe and healthy population within the community. No payment shall be made to any donor.

1. Pre-donation information shall be provided. Basic information on the following topics shall be included:

a) Blood science.
b) Importance of voluntary blood donation.
c) General information about blood donation process and pre and post-donation care.
d) Importance of honest answers during the donor interview procedure.
e) The tests conducted on donor and donated unit.
f) HIV transmission and HIV risk reduction.

2. Pre-donation counselling shall be provided to all potential donors by authorized staff in a private and confidential manner. It shall include information on:

a) High risk behaviours and mode of transmission of infections like HIV and hepatitis.
b) Signs and symptoms of HIV/AIDS, hepatitis and other sexual transmitted infections.
c) Importance of true answers and self-exclusion or self-deferral by unsuitable donors.
d) Mandatory tests done on all donated blood.
e) Confidentiality of test results.
f) Obtaining an 'Informed Consent'.
g) Available testing options or sites for HIV test (WHO, 2013).

2.9 Donor selection

According to WHO, 2013, all potential blood donors shall be assessed before blood donation by authorized Blood Transfusion Center (BTC). Blood banks' personnel assessment of blood donors shall include the following steps:

a. Donor interview through donor questionnaire and consent form.

b. Physical appearance examination for any jaundice, swollen glands, skin rashes, tattoos, needle or body piercing marks.

c. Check for body weight, temperature and blood pressure.

d. Check for haemoglobin content and ABO/Rh blood group.

The interviewer will then decide on the fitness of the donor based on the national donor selection criteria.

2.10 Criteria for blood donor acceptance

a) The donor shall be in the age group of 18 to 65 years.

b) For 16 or 17 aged individuals, a written consent from parents/guardians should be obtained before blood donation. Elderly donors from 60 - 65 age groups must be assessed by a doctor for suitability to donate.

c) Minimum acceptable body weight shall be 45kg for 350ml and 50kg for 450ml blood collection. Blood volume collected in any case should not exceed 10ml/kg body weight.

d) Minimum haemoglobin level must be 12.0gm%

e) Blood pressure: Systolic reading should be between 90mmHg and 180mmHg - Diastolic reading, between 50mmHg and 100mmHg.

f) The donor shall be having normal body temperature on the day of donation

g) The donor shall be free from any skin disease at the phlebotomy site on the arm.

h) The last blood donation must be at least three months ago.

i) The donor shall be in good health and mentally alert on the day of donation.

j) The donor shall not be a jail inmate or a drug/alcohol addict.

k) The donor should have eaten something in the last 4 hours and had 5 hours sleep (WHO, 2013).

2.11 Donor deferral

WHO, 2013, says donors shall be deferred based on national donor deferral guidelines. The following individuals must not be allowed to donate blood as they are at risk of contracting HIV/AIDS, Hepatitis B, Hepatitis C or Syphilis due to their risky lifestyles:

a. Intravenous drug users or individuals sharing sharp injectable objects.

b. Persons with multiple sex partners.

c. Commercial sex workers.

d. Persons who had paid, casual or unsafe sex.

e. Individuals with homosexual behaviours.

f. Sex partners of all the above.

The following steps shall be followed when a donor is not accepted for donation:

a. The donor shall be told in a clear and understandable language the reason for deferral.

b. The donor shall be informed whether the deferral is temporary or permanent. If temporary, encourage the donor to come after the deferral period is completed.

c. The donor shall be referred to a doctor for consultation if required.

d. All records of deferred donors shall be maintained.

e. Reassure the donors and encourage them to ask questions or clarify any doubts before they leave the blood centre (WHO, 2013).

2.12 Blood donation services in Nigeria

In the early 60s, efforts to establish a National Blood Transfusion Service (NBTS) was geared towards adequate provision and equitable distribution of safe donor blood throughout the country in order to eliminate the hazards associated with hospital-based and unregulated blood transfusion services. It is estimated that in Nigeria, about 1.5million units of blood per annum would be required. In August 2005, a National Baseline Data Survey on blood transfusion indicated that only about half a million units of blood were collected from private and public sources in the previous one year with paid donors accounting for more than 90% of the blood donated. The adequate supply of blood and blood products resulted from safe blood donors. The safest blood donors are voluntary, unpaid donors. Largely practiced in Nigeria is the family/replacement and paid blood donations, which are associated with higher risk of transfusion transmissible infections (TTI) like HIV, Hepatitis B, Hepatitis C and Syphilis (NBTS, 2007). Transfusion of unsafe blood in Nigeria accounts for the second largest source of HIV infection among infected individuals.

With this fact, there is urgent need for a system that will effectively address the issue of blood transfusion safety in Nigeria. It is important to know that blood saves lives when the blood itself is safe and so, it is necessary to put in place measures to screen blood before it is transfused to a patient. In Nigeria, blood transfusion is an essential component of healthcare delivery and prior to the strengthening of the NBTS, blood supply was inadequate and often in unsafe condition.

An estimated 10% prevalence of HIV/AIDS in sub-Saharan Africa is as a result of unsafe blood, (Obi, 2007). Blood transfusion in colonial Nigeria was fragmented, haphazard, unregulated and its safety could not be guaranteed. Nigeria became an independent sovereign nation on the 1st of October, 1960 with only one University Teaching Hospital and numerous General or District Hospitals scattered over a land mass area of over 900,000 square kilometers.

The increasing prevalence of other transfusion transmissible infections such as Hepatitis B, Hepatitis C and Syphilis in Nigeria is due to inappropriate screening of donor blood, sourced mostly from paid donors. It was these challenges that led to the establishment of National Blood Transfusion Service, (NBTS, 2008).

The Nigerian National Blood Transfusion Service was re-established by Safe Blood for Africa with a USAID grant. Safe Blood for Africa transferred the original center it developed as a demonstration project as well as operation for the programme that was expanded in the Nigeria Ministry of Health in 2007. The U.S CDC funded the training and technical assistance through the PEPFAR programme and the Exxon Mobil Corporation. The initial programme expansion led to the partnership between the Nigeria Ministry of Health, the CDC, USAID and Exxon Mobil to expand the programme in Nigeria to the current development of 18 Zonal Blood Centers. Additional centers will become operational soon. Safe Blood for Africa, since 2003, has trained with the funding from Exxon Mobil, over 1000 blood service and healthcare staff in providing safe blood supply. Also, with the support of Exxon Mobil, Safe Blood for Africa has provided HIV test kits to hospitals in some areas in Nigeria that previously had no capacity to do some tests. The agency has assisted the government of Nigeria in establishing a National Blood Transfusion Policy, which stated that blood products must be available and accessible to the generality of Nigerians irrespective of geopolitical setting, socio-economic standing, gender, cultural background and other societal variables, and that such blood should be sourced from low-risk voluntary non-remunerated blood donors, (NBTS, 2008).

However, a survey by the Federal Ministry of Health in 2007 revealed that in the public sector, 25% and 75% respectively are paid/commercial and replacement donor, while voluntary non-remunerated donors are negligible. For private sector, the reverse was the case with 75% and 25% respectively being commercial and replacement donors, while voluntary non-remunerated donors remained insignificant. This should not be allowed to continue, as it is an unsatisfactory

situation. To this extent, this evidence-based appraisal underscores the urgent need for a system that will address the issue of transfusion practice and blood safety in Nigeria. It is important to build on the pervious initiatives and the goals of the task force were to formulate a National Blood Transfusion Policy and as well, formulate appropriate legislations to back it up. It is also very important to develop and articulate guidelines towards achieving the objectives, (NBTS, 2008).

Safe Blood for Africa Foundation (SBFAF) made an initial contact with the Federal Ministry of Health in Nigeria in 2002 with funding from the United States Agency for International Development (USAID), a non-profit, non-governmental organization, whose main goal was to put a stop to the spread of HIV/AIDS in Africa by ensuring the provision of safe blood for transfusion. SBFAF worked as technical partner to the NBTS and partnered with it to establish the Abuja Demonstration Center of the NBTS, which was housed originally by the SBFAF in Abuja. The formal commissioning of the center was done by the former President and Commander in Chief of the Armed Forces, Chief Olusegun Obasanjo on the 12th of May 2005. The president presented himself for blood donation and donated a unit of blood on that occasion to encourage the initiative and boost the national blood bank, (NBTS, 2008).

2.13 Services provided by NBTS

Blood donor recruitments

Voluntary blood donations are based on the principle of regular, non-remunerative donation and the financial reward for blood or blood components is prohibited. The donors' care, safety and comfort are enforced by NBTS. Donors' appreciation by the giving of certificates, T-shirts, badges and direct transport expense refunds are acceptable and donors' motivation and mobilization are promoted through extensive awareness and sensitization programmes by organizing blood drives, public campaigns, prints and electronic media advertisements, jingles, billboards, IEC materials, poster and other methods. Specified NBTS guidelines are donors' selection, deferral, counselling and appropriate record keeping. Voluntary blood donation programme has being established, as family replacement donation is gradually phased out, while specific training is given to workers in the donor units to promote efficiency and donor-friendly attitudes. NBTS sought for cooperation from government authorities, local communities, non-

governmental and voluntary agencies and religious organizations in the motivation and mobilization of voluntary donors. Blood collection from prospective donors recruited by them is done only at designated centers, (NBTS, 2008).

An overview of the functions of NBTS

NBTS carries out the following functions:

a) Secures annual budget from the Ministry of Health (MoH) for all blood transfusion service (BTS) operations.
b) Performs strategic planning and develops action plan and implements activities.
c) Co-ordinates all operations of blood transfusion service in the country.
d) Develops national guidelines, standard procedures and donor educational materials.
e) Creates national awareness and conducts multi-media campaigns on voluntary blood donations (VBDs).
f) Co-ordinates with relevant agencies on human resource development, capacity building through in-service training and CMEs for doctors, laboratory technicians, technologists, nurses, ACOs and other relevant health personnel.
g) Co-ordinates with DVED in the procurement of equipment, reagents and supplies.
h) Co-ordinates with DRA.
i) Monitors blood centers by conducting periodic supervisory visits/audits.
j) Manages blood safety data through collection, compilation and analysis of reports from all blood centers.
k) Co-ordinates with the National Blood Center to organize National External Quality Assurance scheme in blood group serology and TTIs.
l) Organizes National Hemovigilance System. (NBTS, 2008).

2.14 Quality assurance and processing of blood

Blood transfusion is a life-saving intervention that has an essential role in the total patient management within healthcare delivery. Operational guidelines and standard operating procedures for all areas of services are developed by NBTS. A system of Internal Quality Control and External Quality Assurance is set up and supervised by the National Reference

Centre. All donor blood for transfusion is screened for specified transfusion transmissible infections, including Hepatitis B, Hepatitis C, Human Immunodeficiency Virus (HIV) and Syphilis. Handing and processing of blood and record keeping are in conformity with the technical guidelines issued by NBTS. It is an offence to issue or transfuse unscreened blood or blood components. The principle of 'cold chain' at appropriated temperature is maintained for the storage and transportation of blood products throughout the NBTS, and sanctions are applied where necessary. Compliance with the national technical guidelines by all blood services nationwide is monitored and verified by an inspectorate system organized by the Directorate of Clinical Services of the NBTS, (NBTS, 2007).

2.15 The National Blood Policy

Blood transfusion is a life-saving intervention that has an essential role in the total patient management within healthcare delivery. Irrespective of geopolitical setting, gender, cultural backgrounds and other societal variables, it is important that blood products be available and accessible to the generality of Nigerians. Such products would be sourced from low-risk, voluntary non-remunerated blood donors, (NBTS, 2006). The funding of the NBTS is primarily done by the federal, state and local governments in Nigeria. They are also responsible for the funding of its operations at the federal and zonal levels. Additional funds with appropriate authorization and other forms of assistance are sought by the NBTS from international donor agencies, non-governmental organization and others.

NBTS is centrally co-ordinated by a national co-ordinator, who co-ordinates the activities of the zonal and state centers, which are under zonal and state co-ordinators. The State Blood Service Center is headed by a state co-ordinator, who is preferably medically qualified and has acquired training in administration of blood services. The recruitment and blood collection is done at the centres designated by the state co-ordinator, who must have the relevant training and experience. It is important to note that blood services of Tertiary Health Institutions will relate to the state or zonal blood service centres in their state or zones, (NBTS, 2008).

The NBTS centres are located in the following zones and places in Nigeria:

1. NBTS/SBFAF Abuja Demonstration Centre
2. NBTS North-West Zonal Centre, Kaduna
3. NBTS North-East Zonal Centre, Maiduguri
4. NBTS North Central Zonal Centre, Jos
5. NBTS South-East Zonal Centre, Owerri
6. NBTS South-West Zonal Centre, Ibadan
7. NBTS South-South Zonal Centre, Benin
8. NBTS State Centre, Lokoja
9. NBTS Armed Forces Centre, Port Harcourt
10. NBTS Sokoto Centre
11. NBTS Katsina Centre
12. NBTS Nangere Centre, Potiskum
13. NBTS Ado Ekiti Centre
14. NBTS Abeokuta Centre
15. NBTS Lagos State Blood Service
16. NBTS Calabar Centre
17. NBTS Enugu Centre
18. NBTS Jalingo Centre (NBTS, 2008).

NBTS has major guiding principles for its operations, which include:

a. There are no effective or acceptable alternatives to human blood therapeutic use.
b. A good blood transfusion policy should facilitate the provision of a safe and adequate blood and blood products for the population.
c. Human blood and tissues are scarce resources which should not be traded like commodities.
d. Donated blood is a scarce national resource and must be shared equitably, used in the most effective and efficient manner.
e. Donated blood from regular voluntary non-remunerated and altruistic donors has been proven worldwide to be the safest for therapy.
f. The procurement of blood must protect and promote the health of both the donor and the recipient.

g. The recommendation and experience of international bodies of experts such as the World Health Organization (WHO), the International Society for Blood Transfusion (ISBT) and others is that a nationally organized, regulated and co-ordinated blood programme is the best way to achieve the desired goals, (NBTS, 2008).

Appropriate use of blood

The medical practitioner has the authority to prescription and administration of blood and blood products. The national sufficiency in blood and blood products supply is promoted and wastage reduced through a "bridging" system, which is moving excess blood products to areas of demand throughout NBTS. NBTS promotes the application of internationally accepted principles of blood component therapy, including autologous techniques to maximize the benefits of blood therapy. A reduction of transfusion requirements such as early diagnosis, prevention and treatment of anaemia was a strategy promoted by the NBTS, (NBTS, 2008).

2.16 Blood Transfusion Service in Oyo State

The Oyo State Ministry of Health had no documentation on the numbers of private blood banks registered in the state, but it has documented 86 laboratory scientists. The ministry had budgetary allocations for Bloods Transfusion Service, quite unlike some other states in Nigeria. It operated blood transfusion service without any enacted laws on blood safety, but had copies of the National Blood Policy and had developed some guidelines for blood transfusion services. Oyo State had sometime collected and collated data on blood transfusion. The state also documented that safe blood supply and utilization was a priority in its ministry, but had neglected regular training of staff on blood safety, (NBTS, 2007).

There are only three certified blood banks by the Federal Government in Oyo State. They are:

1. Oyo State Hospital Management Board Central Blood Transfusion Service (OYSHN).
2. National Blood Transfusion Service (NBTS), South-West Zonal Centre. Ibadan.
3. University College Hospital Blood Bank, Ibadan.

Oyo State Hospital Management Board Central Blood Transfusion Service (OYSHN)

The establishment of NBTS South-West Zonal Centre, Ibadan, was conceived to ensure safe blood, and before the establishment, three types of blood donors were dealt with in the states. They include:

i. Commercial donors (paid or professional donors) - these are blood donors that collect money after the donation of their blood. These donors donate their blood in private laboratories and hospitals and the blood is brought to OYSHN for screening and labeling before it is issued out to patients.
ii. Family replacement donors (relatives donors) - these are blood donors that are brought in by the person that needs blood to donate on their behalf. The donor can be a friend, neighbour or relative to the patient.
iii. Voluntary donors - these persons give their blood willingly, free and receive no payment either in the form of cash or in kind, which could be considered a substitute for money for the donation. They are also called regular voluntary/non-remunerated blood donors.

The blood collected from private laboratories and hospitals are screened by OYSHN and labeled appropriately for use.

2.17 National Blood Transfusion Service (NBTS), South-West Zonal Centre, Ibadan

The NBTS South-West is a centrally co-ordinated blood service, based on regular, voluntary non-remunerated blood donations. It started operation in 2006 and was commissioned in 2007. The states under South-West Zonal Centre, Ibadan, are Oyo, Ondo, Osun, Ekiti, Lagos and Ogun. The departments in the NBTS South-West Zone are Donor Clinic, Laboratory and Accounts/Administration.

Donor Clinic – this is where donors are received on daily basis, the register of the numbers of donor per month is kept. The members of staff in this department go to the field to look for voluntary non-remunerated blood donors. They go out to different parts of the communities and institution (like the Schools of Nursing and the Police Academy) in Oyo State to source for willing blood donors. The Donor Clinic's members of staff are divided into two groups: (1) Counsellors – they counsel prospective donors by given both per-donation and post-donation

counselling. (2) Phlebotomists – these are members of staff that collect blood from voluntary donors, which is also called bleeding.

Laboratory – this department is where donated blood is screened.

Accounts/Administration – this department deals with the salary and welfare of members of staff in NBTS.

When voluntary donors come to donate blood in NBTS, they are given incentives such as glucose, 2 bottles of malt drinks, biscuits and tea. On occasion like the World Blood Donor Day (WBDD), regular, voluntary non-remunerated blood donors are given T-shirts, pens, and face caps with the inscription of the WBDD's theme.

2.18 University College Hospital Blood Bank, Ibadan

From the current University College Hospital (UCH) Blood Bank, Ibadan modalities, the types of donors that are received in the hospital's blood bank are relative donors, autologous donors and voluntary donors. Before the collection of blood from these donors**,** the following questions are asked:

1. **Medical history**
    - Are you feeling well and healthy today?
    - In the past 12 months, have you had any major illness or surgery?
    - Have you ever had chest pain, heart disease, or a recent or severe respiratory disease?
    - Have you ever had cancer, a blood disease or a bleeding problem?
    - In the past 36 hours, have you taken aspirin or any aspirin combined therapy?
    - In the past 4 weeks, have you had any shot vaccinations?
    - In the past 12 months, have you been given rabies shots?
2. **Personal details**
    a. Age: Between 18 and 65 years
    b. Sex: Both male and female
        - Female: In the past 6 weeks, have you been pregnant or are you pregnant now?
        - When was your last menstrual period or are you on it now?
        - Are you breastfeeding now?

c. Frequency of donation: Time of last donation must not be less than 6 months.
d. Weight: Not less than 50kg.

3. Physical appearance
4. Likelihood of ill effect during or after donation.
5. Time of last meal.
6. Blood pressure

(UCH, undated information), see Appendix II.

When the donor has been confirmed fit from the above questions, he/she is asked to go for the following tests:

- Copper sulphate solution
- Rapid Kits screening
- Screening for Transfusion transmissible infections (TTIs)

The copper sulphate solution test is to ascertain whether or not the donor has enough blood in his or her body to donate. After checking the volume or haemoglobin level of the client/donor and it is okay, the fellow is sent in for Hepatitis Sulphate Antigen test and HIV. The UCH Blood Bank screens donated blood internally with rapid kits after the blood has been collected from the donor.

Donors received at the UCH Blood Bank are:

1. Relative or family replacement donors

2. Autologous donors

3. Voluntary non-remunerated donors

1) Relative or replacement donors – the names of these clients are documented on behalf of their patients and they donate blood for such patients depending on the number of units of blood needed by the patients.
2) Autologous donors – are for those patients that need the blood donated for them for any procedure.

3) Voluntary non-remunerated donors – these are the regular voluntary blood donors. A register is opened for them. After donation, they are given a pink card for next appointment/donation.

Men can donate blood four times in a year, while women can donate three times in a year. The relatives, after blood donation, are given incentives like a cup of tea and biscuits and sometimes, bottled water on request. The voluntary donors, after donation, are given water, Maltina (or any malt drink of choice), biscuits and sometimes, T-shirts for two times and above donors. They are also given certificates after making three donations. On WBDD, such donors are well taken care of. A voluntary donor may not need to donate blood when he/she needs blood transfusion and also, does not need to bring a donor when any member of his/her nuclear family needs blood transfusion. Iron tablets are also given to such donors after making blood donation.

Note: The Blood Bank UCH does not sell blood, though a sum of N3,750:00 and N6,000:00 for a child and an adult respectively, are collected from patients who need blood transfusion. The money is meant for screening the blood to be used for the patient. When blood is used for a patient, the patient's relatives are expected to replace the blood in order to ensure that the bank does not run short of blood. To replace the blood collected by patients, prospective donors are advised to donate blood voluntarily and on a regular basis (Blood Bank UCH, undated information).

2.19 Knowledge about blood donation

A study was conducted among students of a tertiary institution in Nigeria and less than two-third (61%) of the total respondents had good knowledge of blood donation. More than three quarters (85%) of the respondents had never donated blood. Of the 15% that had donated, only 3% donated voluntarily. Among those that had ever donated, males (57%) were more than females. Many of the donors (57%) made blood donations to relatives. The majority of the respondents (75%) were compelled to donate on emergency situations. The reasons many (45%) offered for not donating blood were lack of opportunity due to tight lecture schedules and inadequate knowledge (24%). Some of the respondents (29%) believe that gift items such as haematinic, T-

shirts and wrist bands could motivate respondents to make blood donations, (Salaudeen and Odeh, 2011).

A cross-sectional study was conducted by the Department of Transfusion Medicine of the Tamilnadu Dr. M.G.R Medical University, Chennai, Tamil Nadu, India in 2013 to find the level of the knowledge, attitude and practice of blood donation among voluntary blood donors. A total of 530 voluntary blood donors were selected to participate in the study, using a self-administered questionnaire on various aspects of blood donation. Among the 530 donors, 436 (93%) were males, while 36 (7%) were females. 273 (51.2%) donors knew about the interval of the donation and 421 (79.4%) donors knew about the age limit for the donation. 305 (57%) donors felt that creating an opportunity for donation was an important factor for motivating blood donation and 292 (55%) donors felt that the fear of pain was the main reason for the hesitation of the donors in coming forward to donate blood, (Uma, Arun, and Arumugam, 2013).

A study was conducted in the Department of Physiology, College of Medicine, King Saud University Hospital, Riyadh, Saudi Arabia. The sample consisted of 335 males (55%) and 274 females (45%). The majority of the samples (65.84%) were non-donors. These non-donors (78.98%) were between the ages of 15-30 years. 88.5% of the people who participated in the study believed that blood donation was not harmful. 20% stated that they would refuse blood transfusion even if they were in need because of the risk of acquiring infectious diseases. 84.5% preferred direct donation, 49% of the sample stated that they would accept blood donation only from relatives and 55.1% believed that blood transfusion was safe. However, 11.6% claimed to have acquired different infectious diseases after blood transfusion. 58% of the females, in addition to 11.34% male, preferred to receive blood from female donors not from males, and 17.4% believed that all surgical procedures require blood donation, (Abdul, 2008).

A cross-sectional descriptive study was carried out at the University of Benin Teaching Hospital, Benin City in 2013. A total of 163 members of the staff were recruited. Pretest questionnaires were used to assess their knowledge, attitude and practice of voluntary blood donation. The median age of the respondents was 32 years (18–56) with females accounting for 55.6% (90). A total of 74.8% (122) attained tertiary education, and 55.8% (91) of the respondents were senior staff of the institution. The majority had good knowledge and positive attitude towards blood donation. However, only 22.1% (36) had donated blood, with 41.7% (15) of them doing it

voluntarily. Male workers were more likely to donate blood. Forty-four (27%) of them stated that the minimum interval between donations is 6 months, 35 (21.5%) said 3 months, and 13 (8.0%) said a month, while 33 (20.2%) said they had no knowledge of it, (Nwogoh, Aigberadion and Nwannadi, 2013).

A cross-sectional study was also conducted in India among 400 healthcare medical students from Tagore Medical College and Hospital, Matha Medical College and Research Institute, and Tagore Dental College and Hospital, Chennai, Tamil Nadu, South India in 2013 on the knowledge, attitude and practice on blood donation among health professional students using a structured survey questionnaire. The overall knowledge on blood donation among respondents was 35.65%, majority of the participants (89.25%) had never donated blood and few of the non-donors (36.41%) had negative attitude; like blood donation leads to weakness (12.61%), anemia (19.61%) and 4.2% of the non-donors felt that blood donation could reduce immunity. Majority of the non-donors (63.59%) showed positive attitude by expressing their willingness to donate blood if the need arises. About 7% of the non-donors do not know the importance of blood donation, and 24.37% do not know where to donate blood. In the study, 10.75% of the students had donated blood only once, in which 34.88% of the blood donors said that no privacy was provided for them while making the donation. A few (11.63%) experienced some discomfort after the donation and 53.49% of them said that they have not tried donating blood again, (Manikandan, Srikumar and Ruvanthika, 2013).

2.20 Perception towards blood donation

A study was conducted in a Tertiary Care Hospital in Gujarat, India, on knowledge, perceptions and practices related to blood donation among healthcare support staff. Hundred healthcare support staff were randomly selected using a pretested questionnaire. 91% of the respondents felt that blood donation was not safe. Only 16% had adequate knowledge about the eligibility for blood donation and all of them were females. 39% of the respondents had donated blood and 79% of them had family history of blood donation. None of the socio-demographic factors, except young age, was found to be associated with better knowledge or positive perceptions about blood donation. However, many among those who had donated blood also did not perceive blood donation as being safe. Apprehension about blood not properly being used and having not

been approached by anyone, were their commonest reasons for not donating blood, (Mullah, Kumar, Antani and Gupta, 2013).

Another study was conducted to evaluate the causes of declining frequency of voluntary blood donations among educated elites as seen at the Blood Bank of the University of Maiduguri Teaching Hospital, Maiduguri, Nigeria over the past years. The number of blood units received from educated elite donors during a 10-year period (1995-2004) at the blood bank were determined and expressed as percentages of total donations collected annually. The reasons for elite donor default were obtained through the use of questionnaires filled by defaulting donors. The proportion of educated elite donations steadily fell from 28% in 1995 to 7% in 2004. Reasons for defaulting from voluntary blood donations included fear for HIV screening in 86.7% of respondents, economic hardship/poor nourishment in 50.6% of respondents, changed address/logistic difficulties in 4.8% of respondents and ill health in 2.4% of the respondents. Therefore, the steady fall in the proportion of elite donors over the years was mainly due to fear of HIV screening, coupled with economic difficulties. Hence, there is the need to review our donor campaign strategy with respect to pre-donation counselling for HIV, initiate regular haematinic supplementation for donors and introduce sustainable mobile donor clinic services for distant donors. They, however, concluded that there is need for a functional national blood transfusion service in Nigeria, (Ahmed, Gamas and Kagu, 2006).

2.21 Practice of voluntary blood donation

A study conducted in Lithuania on blood donors' motivation and attitude to non-remunerated blood donation, revealed 89.9% as paid donors, while 10.1% of the respondents were non-paid donors. The findings showed that 93% of the paid donors gave blood on a regular basis, while among the non-remunerated donors the same figure amounted merely to 20.6%. The idea of the remuneration necessity was supported by 78.3% of the paid donors, while 64.7% of the non-remunerated respondents believed that remuneration was not necessary. The absolute majority of the paid donors (92%) felt that they should be offered a monetary compensation for blood donation, while more than half of the non-remunerated donors (55.9) claimed that they were contented with mere appreciation of the act. Even without remuneration, 28.44% of the respondents said that they would continue to make blood donations, 29.6% admitted that they

would donate blood only on emergency situations. 29.6% would donate blood to their family members and friends alone, while 12.3% would not accept donating blood again. However, most respondents admitted having donated blood for either willingness to help the sick person or for monetary gain. Majority of the respondents would consent to free blood donation only on emergency situation or as a family replacement. This leads to the conclusion that provided monetary remuneration is completely terminated, part of the currently active paid donors will withdraw from donating blood and this will seriously affect the national supply of blood and its products, (Ilona, Laimute, Aurelija, Ruta and Vida, 2006).

According to a study conducted on Knowledge, Attitude and Practices (KAP), as it regards voluntary blood donation by medical and paramedical personnel conducted in Pakistan in 2003, voluntary blood donations by doctors were comparatively higher than that of the paramedics. It was concluded from the study that there was an urgent need to create and strengthen programmes for motivating, recruiting and retaining Voluntary Non-remunerated Blood Donors (VNDs). A good number of the non-donors (both medical and paramedical) in the study stated that '*no one has ever asked them to donate blood*.' This implies that even the increased level of awareness on the subject does not result in actual act of donating blood, (Gilani, Kayani et al. 2007).

A study carried out at the Armed Forces Hospital, Sharourah, Kingdom of Saudi Arabia, 2003, contains epidemiological data on knowledge, attitude and practice regarding blood donation and reasons for blood donation or non-donation. Majority of the respondents replied that a person more than 45 years of age could not donate blood and the non-donors answered that they were not approached by anybody for blood donation. Some of the non-donors, also, considered themselves unfit for blood donation due to some weaknesses. Among the donors, one could donate blood once a year and some had donated blood for their family members or friends. Some of them were volunteer blood donors. The study concluded that the misconceptions regarding blood donation need to be corrected through proper education and motivation with effective dissemination of information on the subject through the electronic media, (Alam and Masalmeh Bel, 2004).

2.22 Barriers to voluntary blood donation

A research conducted in Saudi Arabia has shown that perceived risk of contracting HIV, preference of direct donations from relatives, lack of knowledge that a blood bank is in need of

blood, and mistrust of modern medicine and hospitals, contribute to a population not donating sufficient amount of blood (Al-Drees, 2008). Additional belief barriers may include the perception that the procedure is painful or could make the donor weak, as well as having fear for needles or becoming anaemic after donating blood. Logistical barriers, such as the effort it takes to go to the location and perform the act of donating blood, also have been shown to be impediments in other locations, (Zago, Freitas de Silveira, and Dumith, 2010). Sometimes, the simplest barrier may be that an individual has never been approached about donating blood and, therefore, does not know how to go about the act. This can be a critical dynamics to the factor, (Al-Drees, 2008).

The study was to assess barriers on donation of blood by women and the level of knowledge, attitude and practice regarding blood donation, which revealed that levels of knowledge were different between the various groups. The most important motivational factor was the sense of moral duty, with a spiritual reward. The most important barriers for donating blood were anaemia, fear, lack of time and difficulty in accessing blood donation sites. Increase in the level of knowledge of women and correction of false belief systems should be the topmost priority, (Javadzadeh, Shahshahani, 2007). Also a study on Barriers and Motivators to Blood and Cord Blood Donations in Young African American Women revealed that there were multiple reasons African-American women did not donate blood. When asked what could prevent them from donating blood, 19% of the respondents said that it was too inconveniencing, 16% were afraid of needles, 15% stated that the procedure takes much time, 12% were concerned about contracting disease while giving blood and 7% were concerned about finding out if they already had a disease. Medical reasons reported as preventing blood donations include anaemia (11%), diabetes (4%) and pregnancy (4%). Eleven per cent of the respondents answered “don’t know” or refused to give an answer, while 7% gave no reason, (Grossman, Andre, Watkins, Fleming and Michael, 2005).

Barriers and motivators for blood donation

The overall barriers to blood donation in African-American women do not appear to be different from what was seen in the Caucasian population, (Gillespie, Hillyer and Oswalt, 2002). Our results confirmed previous findings that the most common barriers to blood donation are the inconvenience of the blood donation process and the fear of needles, (Gillespie et al, 2002). To

attract and maintain an adequate blood donor base among all potential blood donors, blood-collecting facilities must find ways to accelerate the donation process and, also, find the appropriate time and locations that will be more convenient for donors to make blood donations. Recent efforts have been made by blood collection agencies to shorten the health history and make repeat donation a faster process, (American Association of Blood Banks, 2002). Similar to previous results, most of the study participants did not believe that any recognition was necessary, (Glynn, Kleinman, Schreiber and Oswalt, 2002). Some suggested that a thank you or feedback on how their donation aided another individual would be helpful. This finding suggests that altruism may act as a sufficient motivator for blood and cord blood donations.

An important finding that appears to be unique in the African-American community is the perception of the positive influence of a pastor or priest in supporting blood drives. Almost one-fifth of those surveyed believed that such support would be influential in motivating African-American individuals to donate blood. A programme in St. Louis has used the potential influence of clergy leadership to motivate blood donations among African-Americans by creating a community-based programme known as Sickle Cell Sabbath. The focus of the programme was to have the clergy at their church commit to three programmatic objectives: (1) allowing an education session about SCD at their church, (2) hosting a blood drive, and (3) providing an opportunity for congregants to have sickle cell trait testing performed. This programme has been encouraging, and early outcomes suggested some impact in decreasing the racial disparity in the proportion of blood donations in the St. Louis area. A similar programme has been initiated to increase awareness of the importance of cord blood donations within the African-American Community.

2.23 Conceptual framework

The model reviewed and used to guide this was the PRECEDE Model. The acronym, PRECEDE, stands for Predisposing, Reinforcing and Enabling Causes in Educational Diagnosis and Evaluation. The model was developed by Green, Kreuter and others. It has served as a conceptual framework in health education planning aimed at diagnosing the health problems of a community, understanding the factors that influence the people's behaviour and developing intervention to promote healthy behaviour, (Green and Kreuter, 1999). The model consists of

three groups of factors namely; predisposing, enabling and reinforcing factors, which can influence behaviour. These factors are often called behavioural antecedent factors.

Predisposing factors

The predisposing factors are behavioural antecedent factors that make any given health-related behaviour more (or less) likely to occur. They are factors which must be present before a behavioural decision takes place (antecedent). Predisposing factors include knowledge, perceptions, values and inherent qualities, which are useful for throwing light on the issue of voluntary blood donation among secondary healthcare workers. For example, little knowledge on voluntary blood donation, perceptions and norms/barriers prevent voluntary blood donation. Predisposing factors that were considered in the study include knowledge and perceptions of voluntary blood donation. (See figure 2.1).

Enabling factors

These are factors that make any given health-related behaviour more (or less) likely to occur. Enabling factors are present before the behavioural decision takes place (antecedent). They facilitate the realization or achievement of blood donation and they include time, skills, place, health service, laws, policies, availability of transport and finances to be used to get to the facilities where blood will be donated, and adequacy of health facilities and procedures. With respect to time as an enabling factor, blood donation may occur more during the day or working hours. Some variables related to enabling factors measured in the study were availability of health education, awareness, skills related to practice of voluntary blood donation. (See figure 2.1).

Reinforcing factors

These are factors that are related to the influence of significant order, such as co-staff, parents, spouse, religious bodies, and other relations, etc. For instance, co-staff may encourage blood donation and believe in regular practice of voluntary blood donation. Also, friends and family members may discourage one to become a blood donor. (See figure 2.1).

The planning process outline in the model rests on two principles:

(1) The principle of participation, which states that success in achieving change, is enhanced by the active participation of the members of the target audience in defining their own high priority problems and goals, and in developing and implementing solutions. This principle is derived from the community development root theories and the empowerment education model exemplified by Green et al, 1980.

(2) The role of the environmental factors, as determinants of health and health behaviour, are as important as those of the media, politics and social inequities.

Description of the first 5 phases of the PRECEDE Model

Phase 1: Social Diagnosis

This seeks to subjectively define the QOL (problems and priorities) of priority population. It is all about self-assessment of needs and aspirations

Phase 2: Epidemiological Diagnosis

Here, we determine the health problems associated with blood donation. Epidemiology is the study of the distribution and determinants of disease. Epidemiological data like mortality, morbidity, disability, fertility, incidence rates and prevalence rates are collected.

Phase 3: Behavioural and Environmental Diagnosis

This focuses on behavioural and non-behavioural causes (personal and environmental factors), which seem to be linked to health problems defined in Phase 2. Behaviour of the people whose health is in question, or behaviour of those who control resources or rewards, community leaders, legislators, parents, teachers, health professionals, genetic predisposition, age, gender, existing disease, workplace, adequacy of health care facilities. Also, determinants outside the person that can be modified to support behaviour, health or quality of life, are also considered. This includes physical, social and economic determinants.

Phase 4: Educational and Organizational Diagnosis

This identifies causal factors that must be changed to initiate and sustain the process of behavioural and environmental changes identified in Phase 3. This is done by evaluating three types of influencing factors:

Predisposing factors

These include knowledge, attitudes, values, beliefs and perceived needs and abilities.

Enabling factors

These entail environmental and personal resources that impact accessibility, availability and affordability of programmes and services, skills, money, time, facilities and laws.

Reinforcing factors

These are positive or negative feedbacks from peers, family, healthcare workers, law enforcement agencies and the media.

After identifying the three types of influencing factors, assessment of their relative importance and changeability is conducted after which related learning and organizational objectives can be written so that health promotion programmes can focus where they will do the most good in facilitating development or making changes in behaviour and environment.

Phase 5: Administrative Diagnosis

This focuses on administrative and organizational concerns, which must be addressed prior to programme implementation. This includes assessment of resources, budget development and allocation, development of implementation timetable, organization and co-ordination with other administrative diagnosis. Also, analysis of policies, resources and circumstances prevailing organizational situations that could hinder or facilitate the development of the health programme is carried out.

PROCEED – the second 4 phases

Phase 6: Implementation

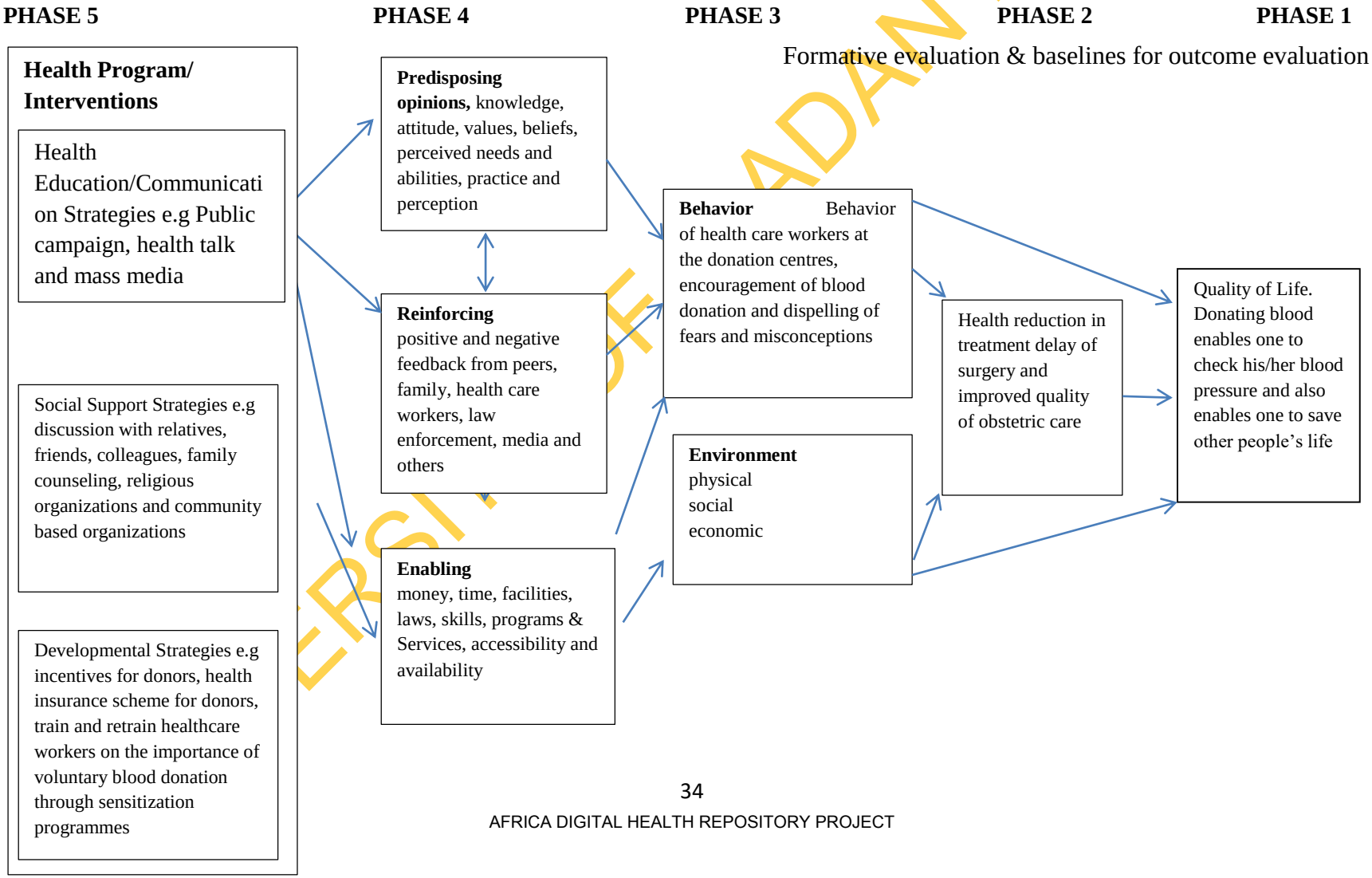
Phase 7: Process Evaluation

Phase 8: Impact Evaluation

Phase 9: Outcome Evaluation

The theoretical model, as applied to this study, is shown below:

Figure 2.1 – Schematic application of PRECEDE model to Voluntary blood donation



CHAPTER THREE

METHODOLOGY

This section deals with the research design, study population, sampling technique, methods and instrument for data collection, procedure for data collection and data analysis.

3.1 **Study design and scope**

This is a descriptive cross-sectional study, designed to investigate knowledge, perception, practice and barriers of voluntary blood donation among secondary healthcare workers in Ibadan Metropolis.

3.2 **Study settings**

The study was carried out in seven secondary health facilities in Ibadan Metropolis. They are as follows: Adeoyo Maternity Teaching Hospital, Yemetu, Dental Centre, Dugbe, Jericho Nursing Home, Government Chest Hospital, Jericho, Maxillofacial Unit, Ring Road, Oni Memorial Hospital and Ring Road State Hospital.

Ibadan is the capital of Oyo State. It is unarguably the largest city in West Africa and the third largest in Africa. Ibadan is made up of 11 local government areas (LGAs), with five of them located within the metropolis, while the other six are in the surrounding rural hinterlands. The five LGAs within Ibadan Metropolis include: Ibadan North, Ibadan North-East, Ibadan North-West, Ibadan South-West and Ibadan South-East.

Adeoyo Maternity Hospital, Yemetu, Ibadan, was founded in 1927 and it is one of the biggest maternity hospitals in Ibadan, Oyo State, South-Western Nigeria. Adeoyo Maternity Hospital serves Ibadan municipality with its five urban LGAs. It is mostly patronized by the Ibadan residents, especially those within the low and middle socio-economic class. Being a tertiary hospital in the state, Adeoye Maternity Hospital serves as a referral centre for Primary Health Care (PHC) centres and other secondary healthcare centres in Ibadan. It was upgraded to the status of a teaching hospital in 2004. The hospital is very close to the University College Hospital (UCH), Ibadan, which is a tertiary institution. Where need be, referrals are sent from Adeoyo Maternity Hospital to the UCH. There are about 42 doctors, 203 nurses, 6 pharmacists plus other health staff working at Adeoye Maternity Hospital at the time of this study. The

hospital has seven main service departments: Obstetrics and Gynecology, Paediatrics, Casualty, Pharmacy, Medical Records, Transport and Administration.

The Dental Centre, Dugbe, is located in Dugbe area of Ibadan, Oyo State. It is mostly patronized by Ibadan residents, especially those living in that area of the metropolis. There are doctors (dental surgeons) among other healthcare workers working at the centre.

Jericho Nursing Home was a private hospital before the Oyo State government decided to take over the healthcare unit. It is mainly an obstetrics and gynecology hospital and there are doctors, nurses and other categories of healthcare workers working at the facility.

The Government Chest Hospital, Jericho, is a secondary health facility in Ibadan, and it serves the residents of Ibadan and beyond, who have chest problems.

The Maxillofacial Unit, Ring Road, is located within the Ring Road State Hospital. It serves patients that are referred from Ring Road State Hospital on maxillofacial cases.

The Oni Memorial Hospital is strictly a paediatric centre for children. It is located at Ring Road in Ibadan.

The Ring Road State Hospital serves as a referral centre for Primary Health Care (PHC) centres and other secondary health centres in Ibadan. The hospital has departments, which include; Obstetrics and Gynecology, Paediatrics, Casualty, Pharmacy, Medical Records, Transport and Administration.

3.3 Study population

Healthcare workers at the secondary health facilities in Ibadan Metropolis constituted the study population. They were healthcare workers, who were officially working at the secondary health facilities in Ibadan Metropolis. They include doctors, nurses, community health extension workers (Chews), laboratory technicians, pharmacies, public health technicians, health attendants, medical record officers and health assistants.

3.4 Inclusion and exclusion criteria

One of the criteria for this study was that a study participant must be a healthcare worker, who works at a secondary health facility. Another criterion was that a study participant must be on duty and among the category of healthcare workers in the health facilities. These inclusion criteria, automatically excluded healthcare workers, who were not from the secondary health facilities and who were not of the above category of healthcare workers and who were not on duty.

3.5 Sample size

The appropriate sample size was determined using Leslie Kish Formula. The formula is as follows:

$$N = \frac{Z^2pq}{d^2}$$

Where **Z** is standard normal deviation at 5% (Standard value of 1.96)

P is the assumed prevalence of blood donation 50%

P =0.5

q =1-0.5=0.5

d = 5% (degree of accuracy i.e. precision) constant.

n = minimum sample size.

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 384$$

An attrition or incomplete response rate of 10% of 384 (38) was added to increase the sample size to 422.

3.6 Sampling technique

A multi-stage sampling technique involving three stages was used in selecting respondents for the study. The stages are as follow:

Stage 1

Simple random sampling was use to select seven (7) out of the nine (9) secondary health facilities in Ibadan Metropolis.

Stage 2

Proportionate sampling was used to determine the number of healthcare workers to be interviewed from each local government area.

Stage 3

Proportionate sampling was used to determine the number of each category of health worker to be picked from each health facility. (See table 3.1 for details).

Stage 4

Random sampling was used to select the final respondents from each cadre of health workers in each facility. (See table 3.1 for details).

Table 3.1: Distribution of healthcare workers in secondary health facilities in Ibadan Metropolis

S/No.	Names of Health facilities	Total number of healthcare workers in each facility	Number of healthcare workers in each facility	Proportion of respondents to be selected from each health facility	Proportion of respondents to be selected from each health facility
1	Adeoyo Maternity Hospital	359	Doctors – 42 Nurses - 203 Chew - 4 Laboratory Technicians - 26 Pharmacy - 6	$\frac{359 \times 422}{835}$ = 181	21 102 2 13 3

			Public Health Technicians - 2 Medical Record - 18 Health Attendant - 49 Health Assistant - 9		1 9 24 6
2	Dental Center, Dugbe	25	Doctors - 6 Nurses - 10 Medical Record - 2 Health Attendants - 4 Health Assistants -3	$\frac{25 \times 422}{835} = 13$	3 5 1 2 2
3	Jericho Nursing Home, Jericho	71	Doctors -7 Nurses - 45 Laboratory Technicians - 2 Pharmacy - 3 Medical Record - 7 Health Assistants - 7	$\frac{71 \times 422}{835} = 36$	4 22 1 1 4 4
4	Government Chest Hospital	36	Doctors - 3 Nurses - 14 Laboratory Technicians - 6 Pharmacy - 1 Public Health Technicians - 3 Health Attendants - 9	$\frac{36 \times 422}{835} = 18$	2 7 3 1 1 4
5	Maxillofacial Unit, Ring Road	10	Doctors - 6 Nurses - 4	$\frac{10 \times 422}{835} = 5$	3 2
6	Oni Memorial Hospital	101	Doctors - 14 Nurses - 59 Chew - 1 Laboratory Technicians - 6 Pharmacy - 3 Medical Record - 5 Health Attendants - 4 Health Assistants - 9	$\frac{101 \times 422}{835} = 51$	7 30 1 3 1 3 2 4
7	Ring Road State Hospital	233	Doctors - 29 Nurses - 145 Chew - 2 Laboratory Technicians – 11	$\frac{233 \times 422}{835} = 118$	15 73 1 6

			Pharmacy - 6 Public Health Technician - 1 Medical Technicians -14 Health Attendants - 17 Health Assistants - 8		3 1 7 8 4
	TOTAL	**835**		**422**	**422**

Source: Data from Ministry of Health, Oyo State.

3.7 Method and Instrument for Data Collection

Data collection was carried out using a pretested semi-structured questionnaire.

The design of the questionnaire was done after a review of literature. The questionnaire was organized into five sections labeled A – E. (See Appendix I).

Section A was used to assess respondents' socio-demographic characteristics. Information on respondents' level of knowledge related to voluntary blood donation was documented using questions in Section B. The respondents' perception towards blood donation was assessed using the questions in Section C. Section D contained questions that were used to determine respondents' blood donation related practices. Questions in Section E were used to determine the barriers to voluntary blood donation.

3.8 Validity and Reliability

Validity

The content validity of the instrument (the questionnaire) was ensured using pertinent variables teased out from the literatures reviewed. The input of my research supervisor, other lecturers in the Department of Health Promotion and Education and senior colleagues, were used to enhance the face and content validity of the instrument.

Reliability

In order to determine the reliability of the instrument (questionnaire), a pre-test was conducted among healthcare workers of St. Peter's Aremo Maternity Hospital and Aremo Dental Centre in Ibadan. The health facilities share similar characteristics with other health facilities within the Ibadan Metropolis. These health facilities are located within similar socio-cultural settings.

The questionnaire was pre-tested among 42 healthcare workers of St. Peter's Aremo Maternity Hospital and Aremo Dental Centre. The pre-tested questionnaire was cleaned, coded and entered into the computer. Its reliability was determined using Cronbach's Alpha Model Technique of SPSS (Version 17.0). The reliability co-efficient was 0.767, implying that the instrument was very reliable. Few revisions were made on the instrument before it was finally used.

3.9 Training of field assistants

Three field assistants were recruited and trained. The training focused on the objectives and importance of the study, the sampling processes, how to administer the study instrument, how to secure respondents' informed consent and general interviewing skills. The study instrument was discussed in details during the training, and the field assistants became familiar with it by conducting role play with one another. The field assistants were involved in the pretest of the study instrument and this created the opportunity for them to learn how to collect the required data and practice how they would go about collecting the data. While they practiced the technique, the researcher keenly watched them and made necessary corrections.

3.10 Data collection process

The quantitative data were collected using the semi-structured questionnaire (see Appendix I) with the help of three trained field assistants, who were all healthcare workers. The questionnaire was self-administered since the research participants could read and write in English language. The questionnaires given out were 450, but 422 valid questionnaires were retrieved due to attrition and incomplete responses. This yielded a response rate of 95.9%.

The questionnaires were administered at the secondary health facilities in the morning and afternoon for a period of two weeks. The consent of the participants was sought before the administration of the questionnaire after explaining to them the purpose of the research and its benefits to the populace. Each of the questionnaires was collected immediately after a respondent was through with it. After a field assistant had collected a questionnaire from a respondent,

he/she checked if the questionnaire was completed. The attention of a respondent was drawn to cases of omission and incomplete responses in his/her questionnaire.

3.11 Data Management and Analysis

The questionnaires were collated, checked and edited by the researcher. Each questionnaire was given a serial number for easy identification and recall. Responses in each questionnaire were hand-coded. This was facilitated by the use of a coding guide developed by the researcher after a careful review of the responses in all the questionnaires. After the entire questionnaire had been hand-coded, a template was designed on the SPSS (Version 17.0) for entering the coded data into the computer. Each questionnaire's response was entered into the computer using the SPSS software version. The quantitative data were analyzed using descriptive statistics and Chi-square. The results are presented using tables and bar graphs in Chapter 4. The knowledge mean score was generated by assigning one point to every correct answer on knowledge of voluntary blood donation i.e. there is 1 point for every correctly mentioned answer on knowledge of blood donation, leading to a 37-point score which was within a range of 0 and 37 with an overall mean score of 22.9±4.6. For scoring points, the respondents' that score from ≤16 was categorized as poor knowledge while scores >16 were categorized as good knowledge.

The perception mean score was generated by assigning one point to every correct answer, leading to a 17-point score which was within a range of 0 and 17 with a mean score 10.3±1.9. For scores ≤8 was categorized as negative perception while >8 was categorized as positive perception.

3.12 Ethical consideration

The ethical principles guiding the use of human participants in research were taken into consideration in the design and conduct of the study. Ethical approval was provided by the Oyo State Ethics Review Committee at the state's Ministry of Health. (See Appendix III for the letter of approval). Permission was obtained from the secretaries and or chief consultants of each of the secondary health facilities used in the study. The privacy of participants was secured by using

serial numbers on the information collected, rather than writing their names and the serial numbers were assigned to the questionnaires after the data were collected. Only the researcher knew the identification numbers, and the information was kept secret. The research was relatively risk free. Participation in the study was made completely voluntary, and based on informed consent obtained from the respondents. Participants were made to understand that they were free to withdraw from the study at any time. Also, permission was obtained from the Secondary Health Facilities Management Board before the research was conducted.

3.13 Limitation of the study

The results of this study cannot be generalized for all secondary healthcare workers in Nigeria as a whole; this is because it was carried out only in Ibadan, Oyo State. Also, it was very tedious to assess respondents due to their busy schedules.

CHAPTER FOUR

RESULTS

4.1 Socio-demographic characteristics of respondents

Majority of the respondents (67.1%) were female, 66.6% of them were married, while 31.5% accounted for those who were singles. The Yoruba made up majority of the respondents (93.4%), with few from other ethnic groups like Igbo (4.3%), Hausa (1.2%) among others. (See Table 4.1a for more details). Most of the respondents (64.7%) were Christians, 34.4% were Muslims and 0.9% indicated that they practice traditional religion. Their highest level of educational qualification include: Ordinary National Diploma (38.2%), Bachelors in Science and Bachelors in Dental Surgery (27.3%), Higher National Diploma (10.4%), MBBS (14.2%) among others, as shown in Table 4.1b.

The respondents were between the ages of 26 and 58 years. Mean age of the respondents was 36.5±8.5 years, with the age group 26-55 years accounting for 55.5% of the respondent. Tables 4.1a and 4.1b have more details on other socio-demographic characteristics of the respondents.

Table 4.1a: Respondents' Socio-Demographic Characteristics

N=422

Socio-demographic characteristics	Number	%
Sex		
Male	139	32.9
Female	283	67.1
Department		
Obstertrics and Gynaecology	32	7.6
Family planning	7	1.7
Paediatrics	25	5.9
Pharmacy	38	9.0
Physiotherapy	15	3.6
Surgery	36	8.5
Nursing	92	21.8
X-Ray	21	5.0
Laboratory	27	6.4
Medical Record	16	3.8
OPD (Outpatient Department)	18	4.3
Dental	42	10.0
Maxillofacial	18	4.3

Psychiatry	7	1.7
Casualty	9	2.1
Special Clinic	3	0.7
MOP (Medical Out- patient)	6	1.4
Public Health	3	0.7
Family Medicine	7	1.7
Marital status		
Single	133	31.5
Married	281	66.6
Cohabiting	3	0.7
Separated	2	0.5
Divorced	2	0.5
Widowed	1	0.2
Ethnic group		
Yoruba	394	93.4
Igbo	18	4.3
Hausa	5	1.2
Others*	5	1.2

***** Other ethnic groups include: Efik (0.5%), Delta (0.2%), Edo (0.2%) and Benue (0.2%)

Table 4.1b: Respondents' Socio-Demographic Characteristics

N=422

Socio-demographic characteristics	Number	%
Religion		
Christianity	273	64.7
Islam	145	34.4
Traditional	4	0.9
Highest level of educational qualification		
OND (Midwifery, Nursing, Community Health)	161	38.2
HND (Public Health, Dental therapy, Microbiology, Community Health)	44	10.4
Bachelors of Science (B.Sc.) and Bachelors of Dental Surgery (B.D.S)	115	27.3
Laboratory Technologist	6	1.3
B. Pharmacy	18	4.3
Post Graduate	18	4.3
MBBS	60	14.2
***Age group (years)**		
26 – 35	234	55.5
36 – 45	110	26.1
46+	78	18.4

*Mean age of respondents = 36.5±8.5

4.2 Knowledge relating to voluntary blood donation

Most of the respondents (73.2%) had poor knowledge of voluntary blood donation, while 26.8% accounted for respondents with good knowledge about the subject. The mean knowledge score obtained among respondents was 22.9±4.6.

Majority of the respondents (95.0%) knew that giving blood saves lives. Similarly, most of them (96.0%) correctly stated 100/80 – 130/80 as the adequate blood pressure a person should have before donating blood. However, just a little above half (52. 1%) of the respondents knew the minimum weight one must attain before donating blood.

Only a few of the respondents (22.0%) knew that males could donate blood up to four times in a year. Only 19.2% correctly stated that females could donate blood only three times in a year. Table 4.2a contains more details about the knowledge of the respondents as it relates to voluntary blood donation.

Majority of the respondents (91.9%) indicated that dizziness was one of the possible side effects of blood donation. Among possible diseases that can be transmitted through blood transfusion, HIV was selected by 91.5% of the respondents. The major types of blood donors identified by the respondents were voluntary blood donors (90.5%), followed by paid blood donors (72.3%). (See Table 4.2b for details).

Table 4.2c shows respondents responses to some statements relating to blood donation. The majority (96.0%) of them correctly selected that pregnant women cannot donate blood, 97.9% also correctly knew that people with blood disorders cannot donate blood. (See Table 4.2c for details). Generally, 73.2% of the respondents had poor knowledge of blood donation, while 26.8% had good knowledge of the subject.

Inferential analysis revealed that there was a significant relationship between the age of respondents and their knowledge of voluntary blood donation; see Table 4.2d for details.

Table 4.2a: Respondents' knowledge relating to voluntary blood donation

N=422

Variable	Number	%
What is voluntary blood donation		
Giving blood to saves lives*	401	95.0
Giving blood for money to saves lives	1	0.2
Giving blood for incentives to save lives	20	4.7
What is the suitable age for donating blood		
Less than 15 years	9	2.1
15 years of age	24	5.7
18 years to 65 years*	389	92.2
65 years and above	0	0
What is the minimum weight(kg) for donating blood		
40	171	40.5
50*	220	52.1
60	31	7.3
What is the required blood pressure for a person to donate blood		
100/80 – 130/80*	405	96.0
140/80 – 189/80	17	4.0
How many times in a year can a healthy male donate blood		
Once a year	55	13.0
Twice a year	194	46.0
Three times a year	80	19.0
Four times in a year*	93	22.0
How many times in a year can a healthy female donate blood		
Once a year	192	45.5
Twice a year	132	31.3
Three times a year*	81	19.2
Four times in a year	17	4.0
How many pint(s)of blood should a person donate at a time		
1 pint*	398	94.3
2 pints	24	5.7
3 pints	0	0
What is the volume(ml)of a pint of blood		
300mls	72	17.1
350mls	76	18.0
450mls*	113	26.8
500mls	161	38.2
How many days can a donated blood last after collection		
20 days	197	46.7
35 days*	173	41.0
45 days	52	12.3

***correct responses**

Table 4.2b: Respondents' knowledge relating to voluntary blood donation

Variable	Number	%
****Which of the following are possible side effects of blood donation**		
Chills	200	47.4
Dizziness	388	91.9
Fainting	336	79.6
Collapsing	256	60.7
Illness	81	19.2
Nausea and Vomiting	144	34.1
****Which of the following are the possible diseases that can be transmitted through blood transfusion**		
Malaria	199	47.2
HIV	386	91.5
Human T-Lymphocytotrophic virus	190	45.0
Hepatitis B	349	82.7
Hepatitis C	262	62.1
Leishmaniasis	77	18.2
Chagas disease	43	10.2
Babasiosis	55	13.0
Toxoplasmosis	135	32.0
****Which of the following are the different types of blood donor**		
Paid blood donors	305	72.3
Family replacement donors	264	62.6
Autologous blood donors	169	40.0
Voluntary blood donors	382	90.5
How long is the entire process of blood donation		
30 minutes*	224	53.1
1 hour	181	42.9
2 hours	17	4.0
What is the minimum time of last meal before donation		
At least 4 hours before donation*	323	76.5
At least 6 hours before donation	87	20.6
At least 12 hours before donation	12	2.8

***correct responses**

****All options were correct and multiple choice responses were allowed**

Table 4.2c: Respondents' knowledge relating to voluntary blood donation

Variable	True		*false	
	Number	%	Number	%
A pregnant woman can donate blood	17	4.0	405	96.0*
A breastfeeding mother can donate blood	45	10.7	377	89.3*
Menstruating woman can donate blood	50	11.8	372	88.2*
A person who is asthmatic can donate blood	83	19.7	339	80.3*
A person who is diabetic can donate blood	52	12.3	370	87.7*
A person who is hypertensive / with heart problems can donate blood	24	5.7	398	94.3*
A person with blood disorder can donate blood	9	2.1	413	97.9*

***correct responses to all statements were false**

Table 4.2d: Relationship between respondent's knowledge and some socio-demographic characteristics

Socio-demographic characteristic	Poor Knowledge (%)	Good knowledge (%)	X^2	Df	P-value
Marital status					
Single	76.5	23.5	1.08	1	0.18
Married	71.7	28.3			
Sex					
Male	72.7	27.3	0.03	1	0.47
Female	73.5	26.5			
Respondents' Age					
26-35	70.1	29.9	6.45	2	*0.04
36-45	71.8	28.2			
46+	84.6	15.4			
Level of Education					
OND	75.8	24.2	6.23	5	0.28
HND	78.0	22.0			
B.Sc/B.D.S	69.6	30.4			
MBBS	65.0	35.0			
B.Pharm	72.2	27.8			
PG	88.9	11.1			

***significant at p≤0.05**

4.3 Perception towards blood donation

Positive and negative perceptions toward blood donation were almost distributed equally among the respondents, with 51.9% having a positive perception about the subject, while 48.1% had negative perception towards blood donation. The mean perception score obtained from the respondents was 10.3±1.9.

Most of the respondents (96.9%) disagreed that blood donation is sinful. A similarly percentage also disagreed that blood donation is a waste. However, a little above half of the respondents (52.4%) agreed that only the people who have more than enough blood should make blood donations. 69.7% responded that those who donate blood should be rewarded. (See Table 4.3a for details on respondents' perception towards blood donation).

Further analysis using Chi-square revealed that there was a significant relationship between respondents' level of education and their perception towards blood donation.

Table 4.3a: Respondents' perception towards blood donation

N=422

Variable	Response			
	Agree		Disagrees	
	Number	%	Number	%
It is risky to donate blood	103	24.4	319	*75.6
Blood donated may be sold for ritual purposes	90	21.3	332	*78.7
Accepting donated blood is a sin	13	3.1	409	*96.9
A donor's behavior and characters can be transmitted through blood transfusion	36	8.5	386	91.5
Blood donation is a waste of blood	31	7.3	391	*92.7
Only people who have more than enough blood should donate blood	221	*52.4	201	47.6
Blood donation can lead to death	108	25.6	314	*74.4
Donated blood can be used for witchcraft	39	9.2	383	*90.8
Blood donation leads to shortage of blood in the body	116	27.5	306	*72.5
People should not be asked to donate blood because there are no incentives for	71	16.8	351	*83.2

those who donated blood				
Voluntary blood donation is a noble work	288	*68.2	134	31.8
Blood donation can save someone's life	357	*84.6	65	15.4
Blood donation should be made compulsory	85	20.1	337	*79.9
Healthcare worker should not be made to donate blood because they are already making a lot sacrifice by caring for the sick	102	24.2	320	*75.8
Those who donate blood should be rewarded	272	64.5	150	*35.5
Blood donation policy is necessary to promote	294	*69.7	128	30.3
Blood donation cannot save someone's life; it a waste of time	47	11.1	375	*88.9

***Favourable perceptions**

Table 4.3b: Relationship between respondent's perception and some socio-demographic characteristics

Socio-demographic characteristic	Unfavourable perception (%)	Favourable perception (%)	X^2	df	P-value
Marital status					
Single	56.6	43.4	5.83	1	0.16
Married	44.1	55.9			
Sex					
Male	72.7	27.3	0.03	1	0.47
Female	73.5	26.5			
Respondents' Age					
26-35	51.7	48.3	2.83	2	0.24
36-45	44.5	55.5			
46+	42.3	57.7			
Level of Education					
OND	59.0	41.0	30.9	5	*0.00
HND	48.0	52.0			
B.Sc/B.D.S	48.7	51.3			
MBBS	20.0	80.0			
B.Pharm	61.1	38.9			
PG	27.8	72.2			

***Significant at p≤0.05**

4.4 Blood donation related practices

Only few respondents (33.6%) reported to have ever donated blood with majority of them (66.2%) stating the number of times they had donated blood to range between 1-2 times. Various reasons given by respondents, who donated blood include emergency situation (50.0%), for storage purpose in case someone needs it (45.1%). Some of them (4.9%) reported that they made blood donation for autologous purposes. Some of those who have never donated blood (66.4%), when asked why they have not considered donating blood necessary, stated health challenges, underweight, low packed cell volume (PCV) among others, as their reasons. (See details in Figure 4.1).

The places the respondents who make blood donations indicated they usually go to donate blood include hospitals (54.2%), NBTS (14.8%), blood banks (25.4%) and private laboratories (5.6%). The respondents reported the various categories of persons they donated blood for to include friends, relatives and spouses. (See Table 4.4a for more information).

Among all the health workers in the study, 91.5% reported that they encourage people to donate blood. More than half of the people the respondents (56.4%) encouraged to donate blood were relations of patients. Table 4.4a gives details of respondents' blood donation related practices. While Figure 4.2 gives details of the various reasons 8.5% of the respondents, who do not encourage people to donate blood do so like religion, having no cause to do so, not approached to by anybody to donate blood, etc.

Table 4.4b shows that there is a significant relationship between sex and respondents who have ever donated blood.

Table 4.4a: Respondents' blood donation related practices

N=422

Variable	Number	%
Have you ever donated blood		
Yes	142	33.6
No	280	66.4
How many times have you ever donated (N=142)		
1-2 times	94	66.2
≥5 times	48	33.8
What were your reasons for donating blood (N=142)		
Emergency situation	71	50.0
For myself (Autologous)	7	4.9
For storage in case someone needs it	64	45.1
****Who of the following category of persons have you ever donated blood for? (N=142)**		
A friend	74	52.1
Relatives	64	45.1
Spouse	20	14.1
Children	23	16.2
Other/ Voluntary / Storage	104	73.2
Where do you usually donate blood (N=142)		
Hospital	77	54.2
National blood transfusion service (NBTS)	21	14.8
Blood bank	36	25.4
Private Laboratory	8	5.6
***When last did you donate blood (N=133)**		
This year	32	24.1
Last year	40	30.1
2 years ago	17	12.8
≥3 years ago	44	33.1
Do you encourage people to donate blood		
Yes	386	91.5
No	36	8.5
If yes how many people have you encouraged (N=386)		
1-10	279	72.3
11-20	48	12.4
21+	59	15.3
****What category of people did you inform (N=939)**		
Relative of patients	238	56.4
Co-staff	143	33.9
Family member	164	38.9
Friends	192	45.5
General populace	202	47.9

No responses were excluded** * Multiple responses were allowed**

Table 4.4b: Association between respondent's sex and ever donated blood

Socio-demographic characteristic	Ever donated blood		X^2	df	P-value
	Yes (%)	No (%)			
Sex					
Male	48.9	51.1	22.4	1	0.00*
Female	25.8	74.2			

***Significant at p≤0.05**

N=287

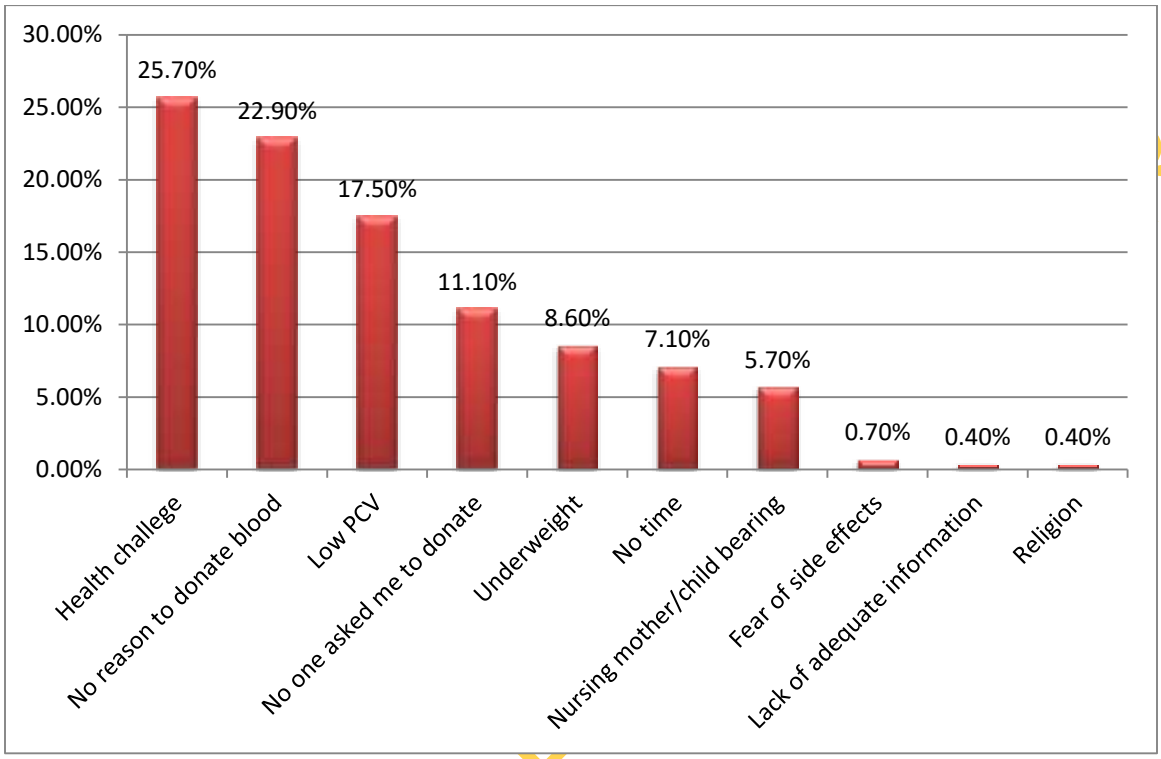


Figure 4.1: Reasons given by respondents who do not donate blood.

N=36

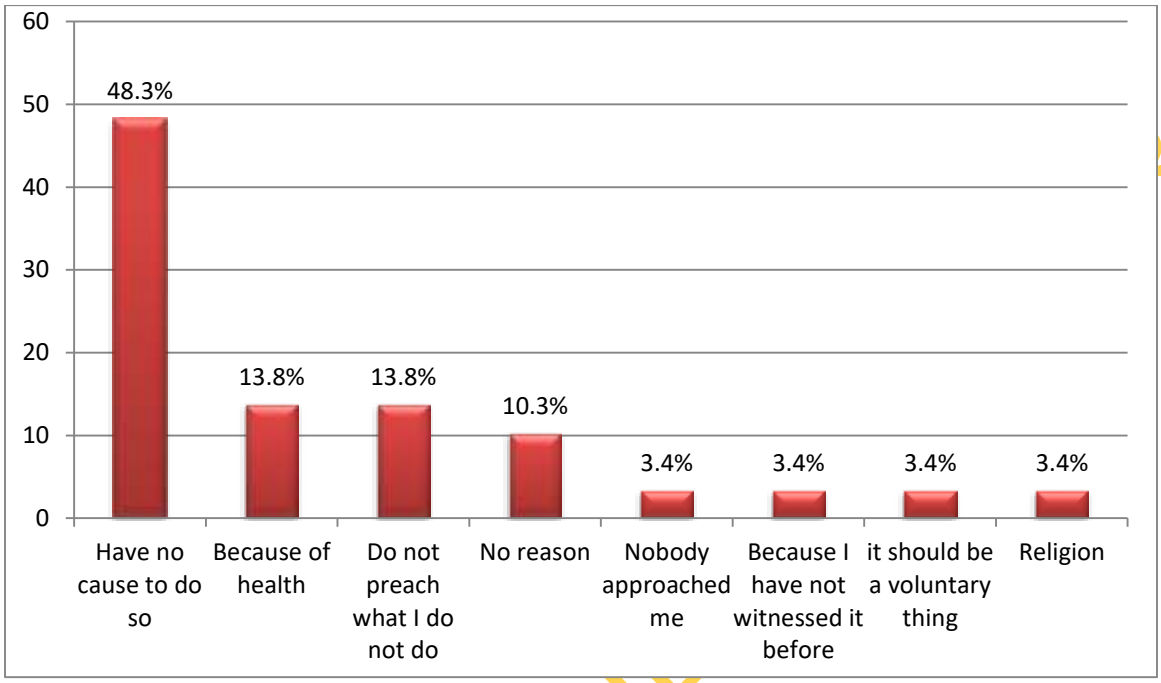


Figure 4.2: Reasons why some respondents would not encourage anyone to donate blood

4.5 Barriers to voluntary blood donation

A little over half (50.5%) of the respondents reported that nobody has ever approached them to donate blood. While some (25.4%) stated that donated blood could be sold, a few of them (24.9%) also stated that they could not donate blood because of health challenges. Other responses on barriers to blood donation are presented in Table 4.5a.

Majority of the respondents (70.1%) had the intention to donate blood in the future if the need arises. The 29.9%, who would not be willing to donate blood in the future, stated various reasons for their decision. Some of the reasons include; being a female (3.9%), health challenges (31.0%), low PCV (15.5%) and not being interested in blood donation (8.7%), as shown in Table 4.5b.

More than half (52.2%) of the respondents suggested that greater awareness and sensitization/health education on blood donation should be created. While some of them (12.9%) suggested that there should be further mobilization and encouragement to people to embrace blood donation. (See Table 4.5c for the various suggestions on how to promote voluntary blood donation).

Table 4.5a Barriers to voluntary blood donation among respondents

N=422

Barriers	Yes		No	
	Number	%	Number	%
Nobody approached me to donate blood	213	50.5	209	49.5
Fear of needles stops me from donating blood	72	17.1	350	82.9
Fear of knowing the pre-screening results stops from donating blood	31	7.3	391	92.7
My religion forbids blood donation	14	3.3	408	96.7
Donated blood may be sold	107	25.4	315	74.6
No remuneration after blood donation	69	16.4	353	83.6
Blood donation leads to shortage of blood in one's body	93	22.0	329	78.0

The process of blood donation takes too much time	71	16.8	351	83.2
It is a painful process	87	20.6	335	79.4
It takes time for the body to replace the blood donated	95	22.5	327	77.5
Fear of misusing collected blood	77	18.2	345	81.8
Health challenge prevent me from donating blood	105	24.9	317	75.1
Fear of dying	45	10.7	377	89.3
Bad experience of others e.g fainting, dizziness etc	86	20.4	336	79.6
Blood bank does not provide blood for free	215	50.9	207	49.1

Table 4.5b: Respondents intention to donate blood and reasons for unwillingness to donate

Variables			Number	%
Intention to donate blood in the future		**(N=422)**		
Yes			296	70.1
No			126	29.9
***Reasons why blood would not be donate in the future**	Because I am a female	**N= 103**	4	3.9
	Low PCV		16	15.5
	Health challenges		32	31.0
	Blood banks do not provide blood for free		5	4.9
	Fear of fainting and dizziness		9	8.7
	No time		11	10.7
	Because of old age		7	6.8
	I am a Nursing mother		5	4.9
	No interest		9	8.7
	I don't like needles pricking my body		4	3.9
	Religion		1	1.0

***Only 103 respondents reported reasons why they do not intend to donate blood in the future out of 126 who responded to question relating to intention to donated blood.

Table 4.5c: Suggestions proffered by respondents on how to promote voluntary blood donation among healthcare workers

N = 380*

Suggestions	Number	%
Incentives should be provided	36	9.4
Create Awareness and sensitization /Health education	202	53.2
Government should stop collecting money for transfusion	25	6.6
Healthcare workers family members should be given blood free when needed	10	2.6
Adequate information should be provided for blood donors / healthcare workers	32	8.4
Mobilization and encouragement	50	13.2
Healthcare worker needs to donate blood in order to complement relatives' donation and allay the anxiety of donating blood to people who are in need of it	14	3.7
Blood donation policy should be implemented	5	1.3
Create more accessible blood donation centres	5	1.3
Prevention of shortage of blood is better than blood donation / transfusion	1	0.3

*No responses were excluded

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Socio-demographic characteristics of respondents

The age of the respondents ranged from 26-58 years; an age structure which revealed an adult population and a workforce within the official 65 years retirement age from Public Service in Nigeria. The study population revealed a higher proportion of females compared to males, a finding which may be explained by the high number of nurses working in hospitals, as the profession is dominated by females (Sullivan, 2001). The finding that majority of the respondents were married, points to respondents' age range, which revealed an adult population within "marital age". It is not surprising that most of the respondents were from the Yoruba ethnic group since the study was conducted in Ibadan, a city predominantly inhabited by people from the ethnic stock.

5.2 Respondents' knowledge of voluntary blood donation

Respondents' knowledge of voluntary blood donation was generally poor. This finding is contrary to the good knowledge of voluntary blood donation that was reported by Benedict, Usimenahon and Alexander (2013). A very encouraging finding from this study was that most respondents knew that voluntary blood donation means giving blood to save lives without any form of remuneration. The National AIDS Control Organization (NACO), (2007), stated that the safest blood donors are voluntary, non-remunerated blood donors from low-risk populations and described voluntary blood donors as the cornerstone of a safe and adequate supply of blood and blood products.

Consistent with the finding of this study, a study conducted among health workers at the University of Benin Teaching Hospital, revealed that most respondents (91.4%) knew that HIV can be transmitted through blood transfusion (Benedict et al., 2013). Although with a lower proportion compared to this study, the authors also reported that their respondents also knew that Hepatitis B (69.9%) and Hepatitis C (42.9%) could be transmitted through blood transfusion. The study by Benedict, Usimenahon, Alexander and Isi (2012) among physicians, however, reported a higher proportion of knowledge of Hepatitis B (97.9%) and Hepatitis C (73.6%) as Transfusion-Transmissible Infections (TTI) compared to this study.

Almost half of the respondents in this study knew that malaria is a TTI, a finding which is contrary to the 4.3% reported by Benedict et al. (2013). Malaria is readily transmitted by blood transfusion through donations collected from asymptomatic, parasitaemic donors. The parasite is released into the bloodstream during its lifecycle and it will, therefore, be present in the blood donated by infected individuals. The parasites are stable in plasma and whole blood for at least 18 days when stored at +4^{o}C and for extended periods in a frozen state (Kitchen and Chiodini, 2006). Donor selection criteria to exclude collecting blood from individuals with current or past history of malarial infection and at risk of transmitting malaria through transfusion, should be based on local epidemiological evidence and endemicity of the infection (WHO, 2012). The Organization, therefore, recommended for malaria endemic areas; "donor selection and deferral strategies", which should be developed to identify individuals with evidence of current malarial infection and defer them for a period of 6 months after symptoms (fever with rigors) or on completion of treatment and full recovery. Alternatively, the Blood Transfusion Service (BTS) should screen all donations for parasitaemia, using thick blood films or for evidence of malarial antigen, using a highly sensitive enzyme immunoassay (WHO, 2012). The National AIDS Control Organization likewise, stated that a donor must not have been treated for malaria three months prior to donation (NACO, 2007).

It is heartwarming that most health workers were knowledgeable about the suitable age for donating blood (92.2%) and the required blood pressure for a person to make blood donation (96.0%). The majority (76.5%) knew the minimum time of last meal prior to donation, more than half (53.1%) knew the length of time blood donation process takes and the minimum weight for donating blood (52.1%). Stating the pre-donation eligibility, the National Blood Transfusion Services (NBTS), (2013), revealed that a balanced meal should be eaten at least four hours before donation and the process of donation of blood takes about 30 minutes, minimum weight of donor should be at least 50kg and the age range of donors should be between 16 and 65 years. The NBTS further clarified that criterion for using donors who are up to 65 years applies to first-time and lapsed-donors only. The WHO (2012) similarly recommended a lower age limit of 16 years and upper age limit of 65 years, weight of prospective donors should be at least 50kg to donate 450 ml ± 10%; arbitrary acceptable limits of systolic BP of 100-140 mmHg and arbitrary acceptable limits of diastolic BP of 60-90 mmHg.

It is noteworthy that a high proportion of the respondents knew that there are different types of blood donors, ranging from voluntary to paid, family replacement and autologous blood donors. In the operational guideline prepared by NACO (2007), blood donors were categorized as voluntary, family/replacement, paid, forced, autologous and apheresis.

On the frequency of blood donation, only 22.0% knew that a healthy male can donate blood up to four times in a year, while only 19.2% knew that a healthy female can donate blood only three times annually. According to WHO's recommendations, the minimum interval between donations of whole blood should be 12 weeks (four times annually) for males and 16 weeks (three times annually) for females (WHO, 2012). This finding thus provides an evidence of deficit knowledge about interval for blood donations among the health workers.

Worthy of note is the result that a very high proportion of the respondents knew the categories of people who cannot donate blood. While discussing eligibility to donate blood, NACO reported that any healthy adult, both male and female can donate blood, but added donation exclusion criteria for pregnant women, breastfeeding mothers, menstruating women, asthmatics, diabetics, hypertensive and people suffering from blood disorders (NACO, 2007). The WHO (2012), however, dissented that menstruation should be a reason for deferral, except in women who report regular excessive menstrual bleeding and are found to have low haemoglobin levels. Such should not donate blood and should be referred for medical assessment, (Newman, 2006).

This study found an inverse and statistically significant association between age of respondents and knowledge of blood donation. Contrary to this finding, the study by Mullah, Kumar, Antani and Gupta (2013) revealed that age of their respondents was not associated with significant difference in knowledge score. As found in this study, Devi, Laishram, Shantibala and Elangbam (2012) similarly reported that having adequate knowledge was not significantly associated with sex.

5.3 Perception towards blood donation

Even though a little above half of the respondents in this study had positive perception towards blood donation, almost half of them still had negative perceptions. This is highly unacceptable of any community, and particularly among healthcare workers. Contrary to the finding of this study in which only 24.4% perceived that blood donation is risky, a study conducted in India among healthcare support staff of a tertiary care hospital, revealed that most (91.0%) of their respondents were of the perception that it was not safe to donate blood, (Mullah et al., 2013). Majority of the respondents were of the view that those who donate blood should be rewarded; a perception that is rather unfavourable for blood donation in a developing country like Nigeria. WHO introduced the 100% unpaid, voluntary blood donation policy in 1997. On the World Blood Donor Day held in Geneva in 2006, WHO published the findings from its recent global survey on blood collection and blood testing practices. The findings of the survey showed that slow progress was made towards the goal of 100% unpaid voluntary blood donation. It showed that out of 124 countries that provided data to WHO for the study, 56 countries saw an increase in unpaid voluntary donation. The remaining 68 had either made no progress or had seen a decline in the number of unpaid voluntary blood donors. Of the 124 countries, 49 reached 100% unpaid voluntary blood donation. Out of these 49, only 17 were developing countries, (WHO, 2006).

A dismal finding was that some of the respondents had some misconceptions about blood donation. For instance, some were of the belief that blood donation could lead to death, donated blood could be used for witchcraft, it could lead to shortage of blood in the body, people should not donate blood because of lack of incentives and donation cannot save someone's live. It is a well-established fact that donated blood can be life-saving for various categories of individuals such as those who have lost large volumes of blood from serious accidents, obstetric and gynecological hemorrhages, or surgery and stem cell transplant patients, as well as for individuals who have symptomatic anaemia from medical or cancerous hematologic conditions, (Agravat Amit, Gharia Amit, Dhruva Gauravi and Kakadia, 2014). In as much as a true substitute for blood and blood components may not be available for many years (Lowe and Ferguson 2003), blood donation by humans will continue to be the major source for blood and blood components.

A disheartening finding from this study revealed that about one-third of the respondents were of the belief that blood donation policy is not necessary to promote donation. The importance of a blood donation policy cannot be overemphasized. In justifying the need for a policy brief on blood donation, the NBTS of the Federal Ministry of Health stated inter-alia: "As much as blood can be life-saving, its misuse could be dangerous and life threatening. Blood is specie-specific, which means that we can only use human blood for human beings and because of this, blood is a very scarce resource. We have to depend on other humans for it. We need to encourage the spirit of volunteerism in our people to ensure a regular supply of this very important commodity. It is, therefore, necessary to have a policy that effectively addresses the issue involved in blood safety," (Federal Ministry of Health, 2006).

Bivariate analysis of perception towards blood donation revealed a statistically significant relationship with respondents' level of education with those who have the MBBS qualification (doctors) having a more positive perception. This finding may not be unrelated to doctors' basic and advanced medical education. A research conducted by Mullah et al. (2013) found no significant relationship between the level of education and perception towards blood donation among healthcare support staff.

5.4 Respondents' practice of blood donation

Despite being health workers and within the age range of potential donors, only one-third of the respondents had ever donated blood. Other studies have reported differing proportions of blood donors: 39.0% among healthcare support staff (Mullah et al., 2013), 22.1% among healthcare workers (Benedict et al., 2013), 41.4% among physicians (Benedict et al., 2012) and 13.9% among medical students (Devi et al., 2012).

Although up to 47.1% of the study respondents donated blood for storage in case it is needed (voluntary blood donation), which is consistent with the 41.7% reported by Benedict et al. (2013), half of this study's respondents donated blood only because of emergency situations; a finding which depicts the behaviour of respondents as one which does not favour the promotion

of voluntary donation of blood and whose decision to donate blood is based on family/friend's needs during emergencies. This type of behaviour indicates a deviation from the tenet of the national blood policy, which stated that blood donations should be based on the principle of regular, voluntary, non-remunerative donation, and family replacement donation system should gradually be phased out, as voluntary donation programmes become well established, (Federal Ministry of Health, 2006). This observed finding suggests that despite the number of years of regulating blood donation in the country, there is still a large dependence on family replacement donors. Only 24.1% of the respondents had donated blood within the last one year, which further indicates an aversion for blood donation among respondents.

Albeit, majority of the health workers have never donated blood, but it is interesting to note that most of them (91.5%) had encouraged people to make blood donation. This finding implies that health workers probably do not see themselves as role models when it comes to practicing what they express in words to other people. The result that more than half of the health workers reported that they had encouraged relatives of patients to donate blood infers a practice probably done out of their obligation as health workers.

Relationship between respondents' sex and ever donated blood revealed a statistically significant relationship in which more males had donated blood compared to females and thus, probably indicating a greater aversion for blood donation among the female respondents. A similar association was established in the study conducted by Benedict et al. (2013); more male healthcare workers (14.5%) were donors compared to the female healthcare workers (7.5%). Such aversion by females may be quite understandable since women within the donor age range usually may have one factor or another interfering with their chances of being suitable to donate blood. Factors such as menstrual cycles, pregnancy and lactation may prevent them from making blood donations. This is in affirmation to the WHO report that there are more male donors in Nigeria, (WHO, 2011).

Generally, some of the reasons adduced for not donating blood, were similar to those reported by Benedict et al. (2012), Devi et al. (2012) and Mullah et al. (2013) and they included not having been approached to donate blood, not medically fit to donate blood due to health challenges or

ineligibility, fear of needle prick, claims of not having the chance to donate blood (which may be related to respondents' attitude), as a result of bad experiences of others during blood donation e.g. fainting, dizziness etc., fear of side effects, fear that pre-screening result precludes donation and because blood banks do not provide blood for free. Though some of these reasons are genuine, others are unfounded. The expectation of some of the respondents that they should be approached before the donate blood despite being expected as health workers to be conversant with the challenges of blood procurement, is absolutely dismal and thus, underscores the need for serious sensitization and education among health workers.

Respondents' willingness to donate blood in the future was quite encouraging. Nevertheless, this finding ought to be interpreted with caution because the proportion of those who may eventually donate blood (actual behaviour) when the situation presents itself may be less than those who had the intention (behavioural intention). The reasons adduced for unwillingness to donate blood in future were quite related to the misconceptions about blood donation, which were given as being females, old age and being nursing mothers. As it was earlier explained and advanced by WHO (2006) and NACO (2007), the fact that females at one time or the other may not be eligible to donate blood, does not preclude them as potential donors. The age range of respondents (26-58 years) falls within the prescribed age range (18-65 years) for blood donation (Federal Ministry of Health, 2006); hence age should not be a factor for future blood donation among the respondents.

5.5 Implication for health promotion and education

Findings from this study revealed that many respondents were not knowledgeable about voluntary blood donation, thereby creating opportunities for misconceptions. Informed people are privileged in a sense that they can use the information they have to act accordingly. People without the proper knowledge can never be trusted to act like those who are knowledgeable (Mamabolo, 2012). Proper education should, therefore, be provided about blood donation matters, as it would to some extent help in improving their knowledge, deal with the misconceptions healthcare workers may have and also, help them to confidently deal with questions and misconceptions that might arise from the general public. Periodic educational events like quiz, debates and poster competition, which are knowledge-tasking, can be conducted

among healthcare workers with special focus on competition between professions. Evidence that donated blood is actually transfused to the needy and not used for other purposes should be provided. This can be achieved through the use of Information, Education and Communication (IEC) materials.

Introduction of in-depth information about blood donation into the training curriculum of healthcare workers irrespective of their profession, with emphasis on voluntary blood donation, will go a long way in improving the knowledge, perception and practice of future healthcare workers, which in turn will increase voluntary blood donation rates in future.

Some respondents perceived that a form of compensation should be provided for donors, as this will encourage voluntary blood donations. However, it has been revealed that the more people do not require any form of compensation after donating blood, the better for the blood transfusion services. Consequently, advocacy can be used as a strategy to ensure the introduction of due incentives by government, which will improve voluntary blood donation without compromising on the spirit of voluntarism. Such incentives may include introduction of donor cards with certain incentives, half day leave to employees who donate blood on fixed dates, (Dixit, 2012).

There is an urgent need to create awareness about the benefits of donating blood, e.g., the occurrence of positive effects elicited by blood donation like feeling of satisfaction, greater alertness, increased wellbeing, which were lacking among the respondents of the present study, need to be highlighted in workshops organized to educate people on blood donation. Creation of the awareness can also be achieved through the mass media, both the print and electronic. The electronic media, especially the internet, will go a long way in making great impact on young people.

Findings from this study revealed that reasons such as never being approached or asked by anyone to make blood donation, as well as no reason to donate blood, meant that people are not considering themselves invited to the scheme in spite of whatever public awareness campaign that is currently running. Thus, the use of newsletters designed to enlighten people on blood use patterns, blood needs and some inspiring stories on blood donation can be placed on notice

boards and other strategic places in different hospitals to draw the attention of healthcare workers to the subject. Efforts relating to the issues of blood donation should be channelled through the various professional bodies which healthcare workers belong to. Furthermore, public awareness on the need for blood donation needs to be embellished with clear health talks designed to motivate listeners and help them to understand why they should donate blood and as well, direct and encourage others to make blood donations as permitted by their health status.

5.6 Conclusion

The research explored the knowledge, perception and practices relating to blood donation by healthcare workers in secondary health facilities in Ibadan Metropolis. From the results, it shows that majority of the respondents had poor knowledge about voluntary blood donation, almost equal number of them had positive and negative perceptions towards voluntary blood donation, and blood donation practices were poor, as seen in the number of respondents who had ever donated blood.

What motivated those who had ever donated blood most were emergency situations to donate blood. However, some of them made blood donations voluntarily. The reasons adduced for the unwillingness to donate blood or barriers to donating blood include not being asked to make blood donation, health challenges and blood banks not giving blood free to patients even when people make free blood donations to them. Others indicated were lack of a good reason to donate blood and fear of needles, pre-screening results, side effects and death. Noted misconceptions about blood donation were that donated blood could be sold; fear of misusing donated blood, religious beliefs and that blood donation causes shortage of blood in the body.

While the knowledge of blood donation was significantly associated with age, perception about the subject was significantly associated with the level of education, and practice was associated with sex. Due to the fact that the need for voluntary blood donation constitutes an issue of public health importance considering the fact that blood, when it is needed, has no substitute, the above identified gaps in knowledge, perception and practice need to be addressed with greater urgency.

Recommendations

1. The content elements of blood donation education should be integrated into the basic and continuing training curricula of healthcare workers with a view to upgrading their knowledge about blood donation.
2. Accessible blood donation centres should be provided with convenience of approach to the blood centres and comfort during the process to increase the chances of having a good donation experience and hence, aid blood donor retention.
3. The amount charged for screening of blood should be subsidized in order to further encourage healthcare workers who would like to donate blood voluntarily, knowing that the blood they donate will be given out to patients at almost no cost.
4. Relatives of healthcare workers, who are regular voluntary blood donors should be given blood at no cost when they need it.
5. There is also the need to launch appropriate motivational campaigns on voluntary blood donation to draw the attention of the general public and enlighten them on the subject. In the campaigns, healthcare worker should be the main target, as well as the key actors, as they stand as role models to the public on health matters.

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APPENDIX I

QUESTIONNAIRE

NAME OF HOSPITAL.....

NAME OF LGA.....

SERIAL NUMBER.....

INFORMED CONSENT FORM

KNOWLEDGE, PERCEPTION, PRACTICE AND BARRIERS OF VOLUNTARY BLOOD DONATION AMONG SECONDARY HEALTHCARE WORKERS IN IBADAN METROPOLIS

Good day to you Sir /Madam. My name is Agogo Ehiaghe Winifred a postgraduate student at the University of Ibadan Department of Health Promotion and Education, Faculty of Public Health. Presently I am undertaking a research project titled KNOWLEDGE PERCEPTION PRACTICE AND BARRIERS OF VOLUNTARY BLOOD DONATION AMONG SECONDARY HEALTHCARE WORKERS IN IBADAN METROPOLIS. I request your permission to participate in the study, your participation is voluntary and honest responses will be greatly appreciated.

All information obtained from you will be treated privately and confidentially. The knowledge gained will be used to improve quality of information skills and competences imparted to healthcare workers on voluntary blood donation.

Instruction: Please, kindly indicate by ticking the appropriate box below to indicated or show your willingness to participate or not

Would you like to participate? **YES [ ] NO [ ]**

SECTION A: Social Demographic Characteristics

Please tick any of the response that apply to you in the boxes [ ] provided or complete the blank spaces provided as applicable.

1. Gender (1) Male [ ] (2) Female [ ]
2. Department……
3. Marital status (1) Single [ ] (2) Cohabiting [ ] (3) Married [ ] (4) Separated (5) Divorced [ ] (6) Widowed [ ] (7) Others specify……..
4. Ethnic group (1) Yoruba [ ] (2) Igbo [ ] (3) Hausa [ ] (4) Others (Specify)…….....
5. Religion (1) Christianity [ ] (2) Islam [ ] (3) Traditional [ ] (4) Others (specify)……
6. Highest Educational level? (1) Diploma in Community Health [ ] (2) Higher Diploma in Community Health [ ] (3) Diploma in Midwifery [ ] (4) Diploma in Nursing [ ] (5) BSc [ ] (6) MBBS [ ] (7) MSc [ ] (8) PhD [ ] (9) Others (Specify)……..
7. How old were you (as at last birthday)……

SECTION B: Knowledge relating to Voluntary Blood Donation

8. What is voluntary blood donation? (1) Giving blood to save lives [ ] (2) Giving blood for money to save lives [ ] (3) Giving blood for incentives to save lives [ ]

9. What is the suitable age for donating blood? (1) Less than 15 years [ ] (2) 15 years of age [ ] (3) 18 years to 65 years [ ] (4) 65 years and above [ ]

10. What is the minimum weight (kg) for donating blood? (1) 40 [ ] (2) 50 [ ] (3) 60 [ ]

11. What is the required blood pressure for a person to donate blood? (1) 100/80 – 130/80 [ ] (2) 140/80 – 180/80 [ ]

12. How many times in a year can a healthy male donate blood? (1) Once a year [ ] (2) Twice a year [ ] (3) Three times in a year [ ] (4) Four times in a year [ ]

13. How many times in a year can a healthy female donate blood? (1) Once a year [ ] (2) Twice a year [ ] (3) Three times in a year [ ] (4) Four times in a year [ ]

14. How many pint(s) of blood should a person donate at a time? (1) 1 pint [ ] (2) 2 pints[ ] (3) 3 pints[ ]

15. What is the volume (ml) of a pint of blood? (1) 300mls [ ] (2) 350mls [ ] (3) 450mls [ ] (4) 500mls [ ]

16. How many days can a donated blood last after collection? (1) 20 days [ ] (2) 35 days [ ] (3) 45 days [ ]

Instruction: please kindly tick (√) the appropriate options for questions 16 – 19.

17. Which of the following are possible side effects of blood donation? Tick [√] as many as you consider correct.

a) Chills [ ]
b) Dizziness [ ]
c) Fainting [ ]
d) Collapsing [ ]
e) Illness [ ]
f) Nausea and Vomiting [ ]

18. Which of the following are the possible diseases that can be transmitted through blood transfusion? Tick [√] as many as you consider correct.

a) Malaria [ ]
b) HIV [ ]
c) Human T – Lymphocytotrophic virus [ ]
d) Hepatitis B [ ]
e) Hepatitis C [ ]
f) Leishmaniasis [ ]
g) Chagas disease [ ]
h) Babasiosis [ ]
i) Toxoplasmosis [ ]

19. Which of the following are the different types of blood donors? Tick [√] as many as you consider correct.

a) Paid blood donors [ ]
b) Family replacement donors [ ]
c) Autologous blood donors [ ]
d) Voluntary blood donors [ ]

20. How long is the entire process of blood donation? (1) 30 minutes [ ] (2) 1 hour [ ] (3) 2 hours [ ]

21. What is the minimum time of last meal before donation? (1) At least 4 hours before donation [ ] (2) At least 6 hours before donation [ ] (3) At least 12 hours before donation [ ]

Instruction: please kindly fill any option that is appropriate by ticking (√) True or False

S/No	Statement	True	False
22(i)	A Pregnant woman can donate blood		
22(ii)	A Breastfeeding mother can donate blood		
22(iii)	Menstruating woman can donate blood		
22(iv)	A Person who is asthmatic can donate blood		
22(v)	A Person who is diabetic can donate blood		
22(vi)	A Person who is hypertensive / with heart problems can donate blood		
22(vii)	A Person with blood disorder can donate blood		

SECTION C: Perception towards Blood Donation

Below are some statements of people's perception of voluntary blood donation. **For each statement tick (√) whether you agree or disagree.**

	Statement	Agree	Disagree
23(i)	It is risky to donate blood		
23(ii)	Blood donated may be sold for ritual purposes		
23(iii)	Accepting donated blood is a sin		
23(iv)	A donor's behaviour and characters can be transmitted through blood transfusion		
23(v)	Blood donation is a waste of blood		
23(vi)	Only people who have more than enough blood should donate blood		
23(vii)	Blood donation can lead to death		
23(viii)	Donated blood can be used for witchcraft		
23(ix)	Blood donation leads to shortage of blood in the body		
23(xii)	People should not be asked to donate blood because there are no incentives for those who donate blood.		
23(xiii)	Blood donation is a noble work		
23(xiv)	Blood donation can save someone's life		
23(xv)	Blood donation should be made compulsory		
23(xvi)	Healthcare workers should not be made to donate blood because they are already making a lot of sacrifice by caring for the sick		
23(xvii)	Those who donate blood should be rewarded		
23(xviii)	Blood donation policy is necessary to promote		
23(xix)	Blood donation cannot save someone's life; it's a waste of time.		

SECTION D: Blood donation related practices

24a. Have you ever donated blood? (1) Yes [ ] (2) No [ ]. **If No, go to Question 28**

24b. If yes, how many times have you ever donated blood? **(*Numbers*)**.....

24c. what were your reasons for donating blood? (1) Emergency situation [ ] (2) For myself (Autologous) [ ] (3) For storage in case someone needs it [ ] (4) others (please specify)…….....

25. Who of the following category of persons have you ever donated blood for?

1. A friend [ ]
2. Relatives [ ]
3. Spouse [ ]
4. Children [ ]
5. Others (Please Specify)…….

26. Where do you usually donate blood? …….. ……..

27. When last did you donate blood? ***(in years)*** ……

28. **If No, to Q 24** what were the reasons why you have never donated blood before? (1) Health challenges [ ] (2) Low PCV [ ] (3) Underweight [ ] (4) others specify……..

29. Do you encourage people to donate blood? (1) Yes [ ] (2) No [ ]

30. If yes, how many people have you ever encouraged to donate blood? (***Numbers***).....

31. If you have never encouraged anyone to donate blood, why? ……

32. What category of people did you inform to donate blood? (1) Relatives of patients [ ]

(2) Co- Staff [ ] (3) Family members [ ] (4) Friends [ ] (5) General populace [ ]

SECTION E: Barriers to Voluntary Blood Donation.

Instruction: please kindly fill any option that is appropriate by ticking (√) yes or No

S/No	Items	Yes	No
33(1)	Nobody approached me to donate blood		
33(ii)	Fear of needles stops me from donating blood		
33(iii)	Fear of knowing the pre-screening results stops me from donating blood		
33(iv)	My religion forbids blood donation		
33(v)	Donated blood may be sold		
33(vi)	No remuneration after blood donation		
33(vii)	Blood donation leads to shortage of blood in one's body		
33(viii)	The process of blood donation takes too much time		
33(ix)	It is a painful process		
33(x)	It takes time for the body to replace the blood donated		
33(xi)	Fear of misusing collected blood		
33(xii)	Health challenges prevent me from donating blood		
33(xiii)	Fear of dying		
33(xiv)	Bad experience of others e.g. fainting, dizziness etc.		
33(xv)	Blood bank does not provide blood for free		

34. Do you intend to donate blood in the future? (1) Yes [ ] (2) No [ ]

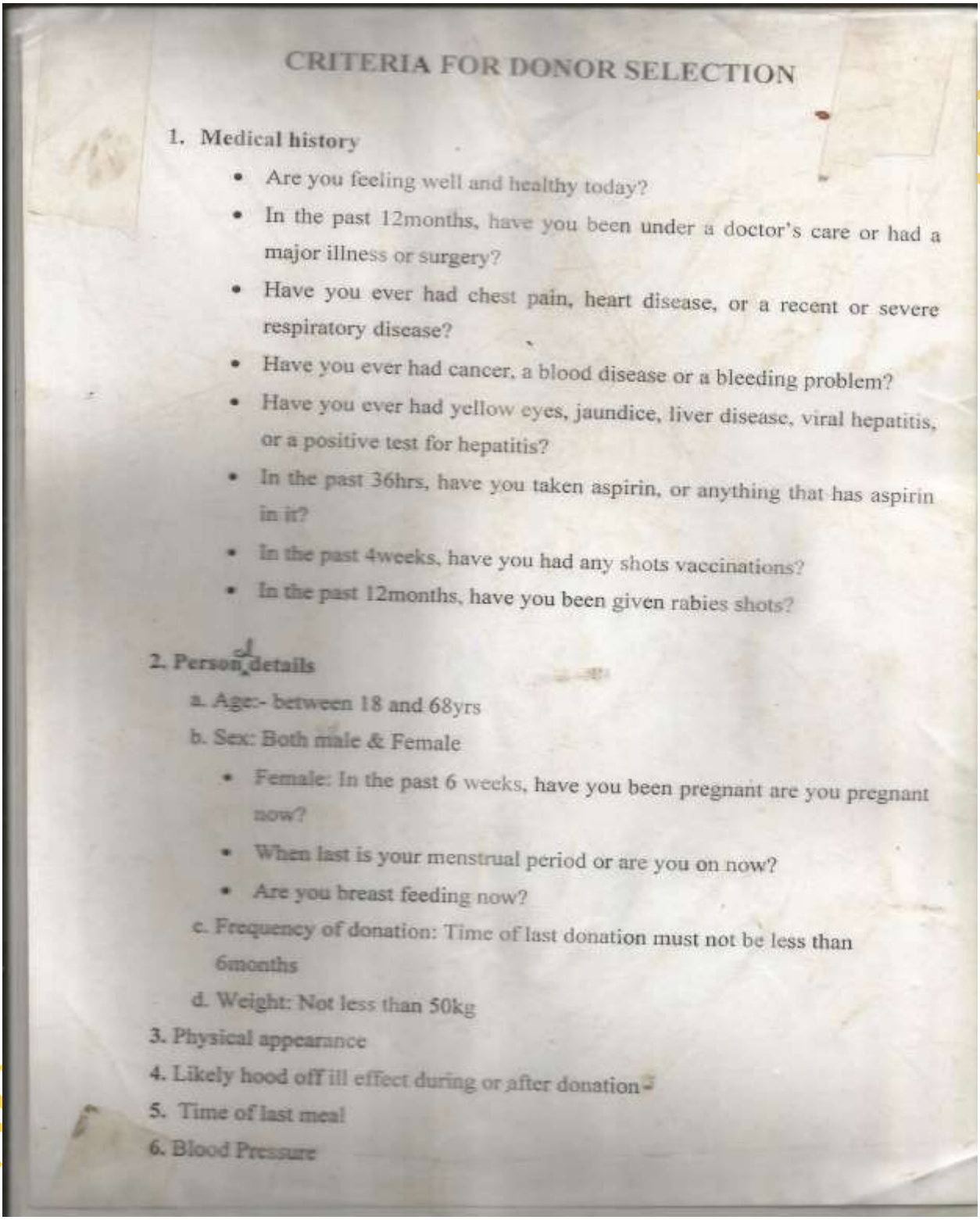
35. If you do not intend to donate blood in the future why? ……....

36. What are your suggestions for promoting voluntary blood donation among healthcare workers?.....

……

……

APPENDIX II



CRITERIA FOR DONOR SELECTION

1. Medical history
   - Are you feeling well and healthy today?
   - In the past 12months, have you been under a doctor's care or had a major illness or surgery?
   - Have you ever had chest pain, heart disease, or a recent or severe respiratory disease?
   - Have you ever had cancer, a blood disease or a bleeding problem?
   - Have you ever had yellow eyes, jaundice, liver disease, viral hepatitis, or a positive test for hepatitis?
   - In the past 36hrs, have you taken aspirin, or anything that has aspirin in it?
   - In the past 4weeks, have you had any shots vaccinations?
   - In the past 12months, have you been given rabies shots?

2. Person details
   a. Age:- between 18 and 68yrs
   b. Sex: Both male & Female
      - Female: In the past 6 weeks, have you been pregnant are you pregnant now?
      - When last is your menstrual period or are you on now?
      - Are you breast feeding now?
   c. Frequency of donation: Time of last donation must not be less than 6months
   d. Weight: Not less than 50kg
3. Physical appearance
4. Likely hood off ill effect during or after donation
5. Time of last meal
6. Blood Pressure

APPENDIX III

6 IBADAN NORTH LOCAL GOVERNMENT

S/N	NAME OF FACILITIES	DOCTOR		NURSES/ MIDWIFES		CHO		CHEW		JCHEW		LAB TECH		PHARM		PH TECH		MED. REC		H/ATTEND		H/ASST		OTHERS		TOTAL		
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	TOT
1	**ADEOYO MAT. TEACHING HOSP. YEMETU**	**19**	**23**	**197**	**6**	**0**	**0**	**0**	**4**	**0**	**0**	**7**	**19**	**1**	**5**	**2**	**0**	**2**	**16**	**6**	**43**	**0**	**9**	**71**	**77**	**305**	**305**	610
2	AGBOWO PHC	0	0	0	4	0	3	0	3	0	1	0	0	0	0	0	0	1	0	0	0	0	3	0	1	1	15	16
3	AGODI-GATE HC	1	0	0	3	0	2	0	2	0	0	0	0	0	1	0	0	0	1	0	0	1	4	0	0	2	13	15
4	ASHI HEALTH POST	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	4	4
5	BARIKA PHC	0	0	0	4	0	0	0	4	0	1	0	0	0	0	0	0	1	0	0	0	0	2	0	0	1	11	12
6	BASORUN PHC	0	0	0	7		5	0	3	0	2	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	20	20
7	BODIJA PHC	0	0	0	1		2	1	3	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	8	9
8	GOVERNMENT HOUSE CLINIC																											
9	HEAD QUARTER OYO STATE HOSPITAL MANAGEMENT BOARD	5	0	1	44	0	0	0	1	0	0	0	1	1	2	1	2	3	7	1	11	0	2	97	88	109	158	267
10	IDI OGUNGUN PHC	0	0	0	7	0	3	0	7	0	1	0	1	0	1	0	0	0	1	0	0	0	4	0	0	0	25	25
11	OBASA PHC	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3
12	OKE-ARE PHC	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	4
13	OKE-ITUNU PHC	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
14	SABO PHC	0	0	0	0	1	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	5	6
15	SAMONDA HC	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	4	5

16	SANGO PHC	0	0	0	3	0	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1		12	12
17	SECRETARIAT CLINIC																											
18	**UNIVERSITY COLLEGE HOSPITAL, IBADAN**																											
	GRAND TOTAL	**25**	**23**	**198**	**79**	**3**	**23**	**1**	**41**	**0**	**6**	**7**	**21**	**2**	**9**	**3**	**2**	**7**	**26**	**7**	**54**	**1**	**31**	**168**	**169**	**422**	**588**	1010

IBADAN NORTH EAST LOCAL GOVERNMENT

7

S/N	NAME OF FACILITIES	DOCTOR		NURSES/ MIDWIFES		CHO		CHEW		JCHEW		LAB TECH		PHARM		PH TECH		MED. REC		H/ATTEND		H/ASST		OTHERS		TOTAL		
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	TOT
1	AGUGU HEALTH POST	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
2	AJOBO HEALTH POST	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
3	AKEKE PHC	0	0	0	0	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	6	6
4	ALAFARA PHC	0	0	0	4	0	2	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	5	0	0	1	14	15
5	ALAFARA TUBERCULOSIS AND LEPROSY CONTROL UNIT	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	3	1	4
6	AREMO HEALTH CENTRE	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	5	5
7	**ST PETERS AREMO**	**0**	**3**	**1**	**32**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**2**	**1**	**0**	**1**	**1**	**1**	**1**	**10**	**1**	**6**	**15**	**26**	**22**	**81**	103

	MATERNITY HOSPITAL																											
8	AYEKALE PHC	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	8	8
9	IDERA OLUWA HEALTH CENTRE	0	0	0	2	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	5
10	IREFIN /BABASALE HEALTH CENTRE	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	4
11	IWO ROAD PHC	1	0	0	4	0	4	0	0	0	0	0	1	0	0	0	0	1	2	0	0	0	0	1	0	3	11	14
12	IWO ROAD TUBERCULOSIS AND LEPROSY CONTROL UNIT	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	2	4
13	KOLOKO HEALTH CENTRE	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4	5
14	LAGELU ILUPEJU HEALTH CENTRE	0	0	0	1	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	10	10
15	LAGELU YOUTH FRIENDLY CLINIC	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4	4
16	ODE AJE HEALTH POST	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1		1	0	0	0	3	3
17	ODO OSUN HEALTH POST	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	3
18	OGUNDIPE HEALTH POST	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	2
19	OJE HEALTH CENTRE	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	5	6
20	OKE ADU PHC	0	0	0	2	0	1	0	4	0	1	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	12	12

21	OKEBADA HEALTH CENTRE	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5	5
22	OMOWUMI HEALTH CENTRE	0	0	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	6	7
23	ST. MARY HEALTH CENTRE	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	3
24	**AREMO DENTAL CENTRE**	**1**	**2**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**2**	**0**	**1**	**2**	**6**	**4**	18	22
25	STAFF AND AGED CLINIC	0	0	0	0		1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
GRAND TOTAL		**2**	**5**	**1**	**55**	**2**	**21**	**4**	**30**	**2**	**10**	**1**	**2**	**2**	**1**	**0**	**1**	**2**	**7**	**3**	**18**	**2**	**33**	**18**	**34**	**39**	**218**	257

8 IBADAN NORTH WEST LOCAL GOVERNMENT

S/N	NAME OF FACILITIES	DOCTOR		NURSES/ MIDWIFES		CHO		CHEW		JCHEW		LAB TECH		PHARM		PH TECH		MED. REC		H/ATTEND		H/ASST		OTHERS		TOTAL		
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	TOT
1	AGED CLINIC	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
2	AYEYE PHC	0	0	0	2	0	2	1	4	0	1	0	1	0	0	0	0	0	1	0	0	0	3	0	0	1	14	15
3	**DENTAL CENTRE, DUGBE**	**2**	**4**	**2**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**4**	**0**	**3**	**18**	**24**	**24**	**43**	67
4	ELEYELE PHC	0	0	0	2	0	2	1	4	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	12	13
5	**JERICHO NURSING**	**4**	**3**	**5**	**40**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**1**	**0**	**0**	**1**	**6**	**0**	**0**	**2**	**5**	**19**	**33**	**32**	**91**	123

	HOME, JERICHO																											
6	KOSEHUNTI PHC	0	0	0	1	0	1	0	6	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	13	13
7	NPI OFFICE	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
8	OGUNPA HEALTH CENTRE	0	0	0	0	1	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	5	6
9	ONIREKE HEALTH CENTRE	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	4	5
10	ONIYANRIN PHC	0	0	0	4	0	3	1	5	0	2	1	2	0	0	0	1	0	2	0	0	2	0	0	2	21	23
11	OPOYEOSA PHC	0	0	0	0	1	1	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	4	6
12	ORI-ERU PHC	0	0	0	2	0	2	1	5	0	1	0	1	0	0	0	0	0	0	0	0	3	0	0	1	14	15
13	PHC OFFICE	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	6	6
14	**SCHOOL OF HYGIENE CLINIC**																								0	0	0
15	**SCHOOL OF NURSING CLINIC**																								0	0	0
GRAND TOTAL		**6**	**8**	**7**	**63**	**3**	**15**	**4**	**31**	**0**	**6**	**1**	**6**	**2**	**1**	**0**	**2**	**3**	**10**	**0**	**4**	**3**	**25**	**38**	**57**	**66**	**230**	296

9 IBADAN SOUTH EAST LOCAL GOVERNMENT

S/N	NAME OF FACILITIES	DOCTOR		NURSES/ MIDWIFES		CHO		CHEW		JCHEW		LAB TECH		PHARM		PH TECH		MED. REC		H/ATTEND		H/ASST		OTHERS		TOTAL		
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	TOT
1	ORANYAN PHC	0	0	0	4	1	5	0	6	0	0	0	1	0	0	0	0	0	2	2	6	0	4	1	6	4	34	38
2	AGBONGBON PHC	0	0	0	4	0	3	0	6	0	0	0	1	0	0	0	0	0	2	1	2	0	6	1	6	2	30	32
3	BOLUWAJI HEALTH CENTRE	0	0	0	2	0	4	0	7	0	1	0	0	0	0	0	0	0	1	1	1	0	2	0	6	1	24	25
4	ODINJO PHC	0	0	0	2	0	0	0	6	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	6	1	17	18
5	MOLETE PHC	0	0	0	0	1	4	1	3	0	0	0	0	0	0	0	1	1	0	0	1		2	2	4	5	15	20

6	FELELE PHC	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	5	6
7	BALARO PHC	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	4	5
8	EYIN GRAMMER PHC	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	1	5	6
9	OMIYALE PHC	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	3
10	LANIOKA HEALTH CENTRE	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	2
11	ORITA-APERIN PHC	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	5	6
12	ELEKURO PHC	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		3	3
13	ORITA CHALLENGE HC	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	2
14	OWODE HEALTH CENTRE	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	3
15	MAPO PHC	0	0	0	0	0	3	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	6	1	12	13
16	LOCAL GOVT. CLINIC	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		1
GRAND TOTAL		**0**	**1**	**0**	**16**	**2**	**23**	**2**	**42**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**1**	**1**	**6**	**6**	**18**	**2**	**18**	**6**	**36**	**20**	**163**	183

IBADAN SOUTH WEST LOCAL GOVERNMENT

S/N	NAME OF FACILITIES	DOCTOR		NURSES/ MIDWIFES		CHO		CHEW		JCHEW		LAB TECH		PHARM		PH TECH		MED. REC		H/ATTEND		H/ASST		OTHERS		TOTAL		
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	TOT
1	ADIFASE PHC	0	0	0	2	0	2	0	4	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	0	0	13	13
2	ADIFASE TBL CLINIC	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1	3
3	AGED & WIDOW CLINIC	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	3	3
4	AKERELE PHC	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	4
5	AKURO HEALTH	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	5

	CENTRE																												
6	ALESINLOYE PHC	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	4	6
7	APATA MATERIAL AND CHILD CLINIC	1	1	0	23	0	0	0	0	0	0	0	2	1	0	0	1	0	2	1	7	0	0	9	18	12	54	66
8	AWODIFE PHC	0	0	0	1	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	6	6
9	BODE PRIMARY HEALTH CENTRE	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	4
10	ELEWURA PHC	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	3
11	FOKO PHC	0	0	0	2	0	2	0	4	0	1	0	0	0	0	0	0	1	0	3	0	1	1	0	1	14	15	
12	G-C-I YOUTH FRIENDLY	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	4
13	**GOVERNMENT CHEST HOSPITAL, JERICHO**	**2**	**1**	**0**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**3**	**1**	**0**	**1**	**2**	**0**	**0**	**3**	**6**	**0**	**0**	**11**	**14**	**21**	**40**	61
14	ISALE OSI PHC	0	0	0	0	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	5	6
15	JERICHO GENERAL HOSPITAL	15	6	4	48	0	0	0	0	0	0	1	5	1	1	0	1	2	4	1	5	0	6	12	32	36	108	144
16	KOSOSI PHC	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4	4
17	**MAXILLOFACIAL UNIT, RING ROAD**	**3**	**3**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**5**	**8**	**10**	18
18	MOLETE PHC	0	0	0	1	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	5	5
19	MOLETE TBL CLINIC	0	0	0	0	0	1	0	0	0	0	1	2	0	0	0	0	0	0	1	0	0	0	0	0	2	3	5
20	ODO-ONA PHC	0	0	0	1	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	6	6
21	OKE-AYO CLINIC	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4	5
22	OKE-BOLA PHC	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	5	5
24	OLUYOLE CLINIC	1	0	0	2	1	2	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	2	12	14
25	OLUYOLE	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4	4

	ESTATE PHC																											
26	**ONI MEMORIAL HOSPITAL**	**8**	**6**	**0**	**59**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**5**	**0**	**3**	**0**	**0**	**4**	**1**	**0**	**4**	**0**	**9**	**22**	**29**	**35**	**117**	152
27	**ORTHOPAEDIC HOSPITAL, JERICHO**																									**0**	**0**	0
28	**RING ROAD STATE HOSPITAL**	**22**	**7**	**17**	**128**	**0**	**0**	**0**	**2**	**0**	**0**	**3**	**8**	**3**	**3**	**1**	**0**	**2**	**12**	**4**	**13**	**3**	**5**	**43**	**93**	**98**	**271**	369
29	SHARP CORNER PHC	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4	4
	GRAND TOTAL	**52**	**24**	**23**	**287**	**2**	**20**	**3**	**48**	**0**	**4**	**9**	**25**	**6**	**8**	**2**	**4**	**8**	**23**	**10**	**44**	**3**	**28**	**104**	**197**	**222**	**712**	934

APPENDIX II

TELEGRAMS..... TELEPHONE.....

OYO STATE: THE PACESETTER

MINISTRY OF HEALTH

DEPARTMENT OF PLANNING, RESEARCH & STATISTICS DIVISION

PRIVATE MAIL BAG NO. 5027, OYO STATE OF NIGERIA

Your Ref. No. .....
All communications should be addressed to the Honorable Commissioner quoting
Our Ref. No. AD 13/ 479/686

24th October, 2014

The Principal Investigator,
Department of Health Promotion and Education,
Faculty of Public Health,
University of Ibadan.
Ibadan.

Attention: Agogo Ehiaghe

Ethical Approval for the Implementation of your Research Proposal in Oyo State

In response of your letter requesting for Renewal of your Research Proposal tittled: "Knowledge, Perception, Practice and Barriers of Voluntary Blood Donation among Secondary Healthcare workers in Ibadan Metropolis."

2. The committee has noted your compliance with all the ethical concerns raised in the initial review of the proposal. In the light of this, I am pleased to convey to you the approval of committee for the implementation of the Research Proposal in Oyo State, Nigeria.

3. Please note that the committee will monitor closely and follow up the implementation of the research study. However, the Ministry of Health would like to have a copy of the results and conclusions of the findings as this will help in policy making in the health sector.

4. Wishing you all the best.

OYO STATE RESEARCH ETHICAL REVIEW COMMITTEE
Signature & Date

Sola A[illegible]o (Dr)
Director, [illegible] & Statistics
Secretary, Oyo State, Research Ethical Review Committee