Journal of Blood Research & Hematologic Diseases

Review Article A SCITECHNOL JOURNAL

Synopsis of Blood Transfusion Services in a Low Resource Economy: Southwestern Nigeria

Patrick Osho[1*], Victor Koledoye[2], Akadri Olumide[3], Adesoa Matilda[4], Okunuga Aisha[5], and Oluwatosin Oni[6]

[1,4]Department of Hematology and Blood transfusion, University of Medical Sciences Teaching Hospital, Ondo State, Nigeria

[2]Department of Hematology and Virology, University of Medical Sciences Teaching Hospital, Ondo State, Nigeria

[3]Department of Obstetrics and Gynecology, University of Medical Sciences Teaching Hospital, Ondo State Nigeria

[5]Department of Surgery (Oncology Unit), University of Medical Sciences Teaching Hospital, Ondo state, Nigeria

[6]Ondo State Primary Health Care Development Agency, Oke-Eda, Akure

[*]Corresponding author: Patrick Osho, Department of Hematology and Blood transfusion, University of Medical Sciences Teaching Hospital, Ondo State, Nigeria E mail: droshopo@unimed.edu.ng

Received date: 19 April, 2021, Manuscript No. JBRHD-21-29901;

Editor assigned date: 01 August, 2022, Pre QC No. JBRHD-21-29901 (PQ);

Reviewed date: 15 August, 2022, QC No. JBRHD-21-29901;

Revised date: 22 August, 2022, Manuscript No. JBRHD-21-29901 (R);

Published date: 29 August, 2022, DOI: 10.4172/ JBRHD.1000323

Abstract

The demand for blood transfusion in Ondo State southwestern Nigeria is increasing daily. This has since posed a major challenge to the establishment of blood transfusion services in the State. More importantly, poor implementation of blood transfusion guidelines, poor screening methods, and superstitious belief has placed the health system in the state in a precarious position. This study was carried out to review literatures on the current status and challenges of blood transfusion services within Ondo State. In order to achieve this, we reviewed search engines such as Google Scholar, PubMed, Pro Quest, CINAHL, and Science Direct. Studies done within 2015 to 2020 where relevant data related to the study were sufficiently reviewed. Criteria for selections include publication in peer-reviewed journals, studies published in the last 5 years, studies with full-text available and written in English. The study concluded that minimal improvement has been made in the transfusion services in the State over the years resulting in increase in cases of TTI in Ondo State. In order to address this issue, the study recommends that government should enforce adherence to laid down guides in the Ondo State blood transfusion policy. Also, rational use of blood should be practiced to avoid unnecessary transfusion and risks attached to the transfusion practices. Furthermore, collection of blood, plasma and other blood components from low-risk donors from voluntary donors without monetary remunerations is strongly advised.

Keywords: Blood transfusion; Donors; Blood system

Introduction

Blood transfusion is the administration of donated blood products with the intention to replace lost blood, increase the flow rate of cardiac output, boost blood elements, and to replace missing clotting factors and immune system elements. It is an important part of day-to-day clinical practice which provides unique and life-saving therapeutic benefits to patients. Blood transfusion plays a major role in the resuscitation and management of surgical patients. It is used to treat a variety of medical and surgical conditions such as accidents, bleeding disorders, major operations, chemotherapy, acquired haematological disorders and malignancies in both emergency and elective situations.

Transfusion medicine involves practices such as blood banking (the collection, preparation, testing, and storage of blood components and plasma derivatives) as well as the therapeutic uses of blood components, plasma derivatives, and apheresis technology.

Blood banking and transfusion medicine is an integral aspect of every health care system. In spite of the relevance of blood transfusion medicine, the blood transfusion services still remain fragmented, uncoordinated, unregulated and safety has not been satisfactory nationwide. A blood transfusion service encompasses both, blood banking, and transfusion Medicine. The service ensures adequate sourcing/supply of blood and blood products to meet the clinical demands and emergencies, as well as providing safety of donors, collection and screening for blood transmissible diseases, optimal maximization of blood/blood products, and monitoring the use of the blood products at the transfusion centers to ensure the safety of the recipients [1].

The Need for Blood in Ondo State

The data on number of units available to meet up with transfusion demand is scarce and most blood banks do not have enough units to transfuse. Blood needs in Nigeria exceeds the blood supply. With increase in population of the country and positive developments of health care system, the need of blood is still greater.

The obstetrics need for blood is high due to the lack of accessibility to standard ante and pre-natal care leading to pre- and post-partum hemorrhages. A maternal death rate of 814/100000 deliveries have been observed recently in the country and most are caused by fatal bleeding. Availability of blood components for emergency will save many of young women during delivery.

Despite the availability of governmental blood services in Ondo state, there has been no significant improvement in transfusion medicine over the last years with most blood transfusion services coming from paid volunteers in hospitals. Furthermore, due to the resource limitations, the blood product does not always get to the patient at the appropriate time. The main concern of both the patient and prescriber is the availability of clean, reliable, and high-quality blood when it is required [2].

Methodology

A comprehensive literature search was made in Google Scholar, PubMed, ProQuest, CINAHL, and Science Direct. The search terms used were blood transfusion practice in South West Nigeria; current status and challenges.

All articles published in Journal of Blood Research & Hematologic Diseases are the property of SciTechnol and is protected by copyright laws. Copyright © 2022, SciTechnol, All Rights Reserved.

The related studies done between 2015 -2020 were retrieved. Only those studies that were applicable to the goals were examined. Publication in peer-reviewed journals, studies conducted within the last five years, studies with full text available, and studies written in English were among the criteria used.

Ondo State is situated in the South-West geo-political zone of Nigeria alongside 5 other states (Ekiti, Oyo, Osun, Lagos, and Ogun) with a population size of about 3.5 million people.

According to the planning, research and statistics, ministry of health, Akure, there are 142 registered private hospitals, 30 private maternity 101 registered private clinics, 1 psychiatric hospital, 15 general hospitals, 4 State Specialists Hospitals, 41 Comprehensive Health Centre, 346 Basic Health Centres, 6 Federal Clinics, 7 School Clinics, 1 NUJ clinic, 16 private clinics and 3 leprosy clinics among others in Ondo state.

The National Blood Policy

Nigeria established a national blood transfusion policy in May, 2006 with the following objectives

- Establish and coordinate blood transfusion services on a country-wide basis within the national health plan
- Develop a system of blood donor mobilization and motivation, based entirely on a voluntary, non-remunerative donation of blood
- Standardize the methods of collection, transportation, processing, testing, storage and distribution of blood, blood components and derivatives which are safe for transfusion and other medical therapy
- Ensure the rational and optimal use of blood products
- Provide the modalities for human resource recruitment, training, professional and career development to satisfy the needs of the system
- Encourage the development of technology and research into all aspects of blood transfusion
- Maintain a cost-effective and long term operation by prudent budgeting and resource allocation
- Uphold a structure of Total Quality Management (TQM) and haemovigilance at all levels of operation
- Ensure the equitable distribution of equipment and consumables
- Establish a data and information support system
- Ensure compliance with existing universal legislation and regulations on blood services
- Relate to and co-operate with international organizations and other stakeholders in the field of blood safety

Though, the desire for a stable and coordinated Blood transfusion services which underlies this policy was admirable, the current status of blood transfusion services is wide of the mark on several counts. The blood supply in Nigeria is presently being maintained by private and public hospital based transfusion services. Individual hospitals find their own blood, check them for TTIs, and then bank the units for clinical use in this case.

Blood Transfusion Services in Ondo State

In compliance with section IX and subsection 26 of the National Blood policy, 2016, the Ondo State blood transfusion service was inaugurated in 2014 by the State and approved by the Federal Ministry of Health. However, lack of political will and poor funding in the state has reduced the functionality of the services within the State, as well as reduced collaborative efforts with the national blood transfusion services [3].

Types of Blood Donation Practises in Ondo State

Some types of blood donation services practiced in Ondo State includes;

Voluntary Blood Donation: A voluntary non-renumerated blood donor gives blood, plasma or cellular components of his or her own free will and receives no payment, either in the form of cash or in kind which could be considered a substitute for money. This will include some time off work that isn't strictly necessary for the donation and travel. Small gifts, refreshments, and reimbursements for direct travel expenses are all acceptable forms of compensation for voluntary, non-renumerated donations.

Family / replacement donation: Many who donate for a sick family member, friend or associate are considered family (replacement) donors and this is largely non-renumerated, depending entirely on the good will of friends and family members. There is a dependency on family replacement and renumerated donors in developing countries like Nigeria. Family blood donors are not considered safe because they donate blood under family, peer or circumstantial pressure and may hide their high-risk behavior or illnesses.

Paid/commercial donors: Due to persistent blood shortages and rising poverty in Nigeria (and most other African countries), the most common form of donor is one who donates blood solely for financial gain; these are known as commercial (paid) donors. This practice has become more prominent in Nigeria, fueled by the severe shortage of blood.

Autologous blood transfusion: This practice is not as commonly practiced as the 3 stated earlier above. Autologous blood transfusion involves reinfusion of blood or blood products taken from the same patient. Due to substantially reduced chances of blood transfusion reactions, red cell sensitization to antibodies, and transmission of TTIs, autologous blood transfusion has been proven to increase transfusion protection. Patients with rare blood group particularly benefit by this technique allowing for the continuous availability of an otherwise scarce blood type. Three techniques are currently in use for analogous blood transfusion. Pre- operative blood donation usually begins 4-5 weeks before the proposed surgery depending on the number of blood units needed. Acute normo-volaemic haemodilution refers to the removal of blood from the patient immediately before surgery and its replacement with fluid. Intra/Post-operative blood savage involves collection of blood and mixing with anticoagulants in a reservoir.

Erythropoietin use: this is an unpopular method involving the use of erythropoietin (30.4-KD) which plays a key role in production of red blood cells. This hormone manufactured by the kidneys and liver, stimulates erythropoiesis by inhibiting erythroid precursors apoptosis, particularly at the colony-forming units-erythroid stage. This, however is an expensive method and requires many administrations for adequate action.

Challenges to Blood Transfusion in Ondo State

Blood Shortage: WHO estimates that blood donation by 1% of the population is generally the minimum needed to meet a nation's most basic requirements for blood; the requirements are higher in countries with more advanced health care systems. The typical donation rate is

however a lot lower in developing countries compared to developed countries. Most countries with low blood donation rates rely heavily on blood donated by relatives or friends of patients who need transfusion as well as paid donations. According to 0.28 units of blood were collected/1000 population in Ondo State. This is seriously lower than the World Health Organization recommended standard for blood donation which is between 10 units to 20 units/1000 populations per year.

Poor Screening Method: Most Health facilities in Ondo State rely on the rapid Diagnostic Test to screen prospective donors for the TTIs. As at 2015, just three Health facilities have the ELISA reader and washer for screening against Transfusion Transmissible Infections. Poor funding and will had also rendered some of the machines non-operational.

Poor Financial support / Political will: The lack of politically driven will by the government to sustain the State Blood Transfusion services had led to the collapse and breakdown of Blood Transfusion services in the State. This has reduced blood acquisition to mainly through pay or commercial blood donors.

Poor Attitude of Health Professionals: Majority of the staff in the blood transfusion unit of health facilities in the State had contributed majorly to streamlining the access of blood transfusion to mainly commercial blood donors. Even in cases of voluntary/non-renumerated donors or family replacement, some staff within the unit ensures that such people are screened out from donating while proposing commercial blood donors. Certainly, the Staff will play a major role in getting a commercial donor because of the stake or kick back the staff gets from such commercial blood donors.

Socio cultural factors, taboos and superstitious beliefs: Blood donation is not a culture in most African societies. Many people are fraught with misconceptions about blood donation such as religious values and potential risk of death, infection from the procedure, sexual libido loss, infertility, and high blood pressure.

Funding: National budgets allocated the health sector has dwindled over the last decade. This has adversely affected the health system in the State. As a result, government alone cannot drive the health sector. The private health sector has also not made any significant improvement due to the absurdly high interest rates from financial Institutions.

Poor Power distribution: Power remains a major challenge to blood transfusion service in the State due to the long hours needed to run the equipment used in such laboratories. This has led to the use of generators for powering these devices with the effect of increased spending on fueling.

Present Status of Blood Transfusion Services in Ondo State

The present blood transfusion practice in Ondo State is such that many private and public health institutions are involved in blood transfusion racketeering such as collection of blood from high-risk donors, drug addicts, alcoholics, touts, etc. collection of blood in unacceptable unhygienic manner, diluting collected blood samples with saline to obtain more volume, use of inappropriate/expired test kits for blood screening, storage of blood in ordinary refrigerators, where appropriate storage condition is not met [4].

Almost all blood being transfused is not subjected to the appropriate internationally accepted screening standard. This involves use of PCR/ELISA for screening of most blood transmissible diseases such as HIV, instead of using common rapid tests that has been shown to be ineffective and inefficient in blood transfusion services.

Empirical evidence from most of the Public Hospitals shows that lack of blood transfusion services, with appropriate regulations, and haemovigilance, has led to increase in blood transmissible infections such as Hepatitis B and C in Ondo State [5]. The increase in Incidence and prevalence of blood transmissible infections has the following health and socio-economic impact in the state.

Increasing cost of Public and Private spending on health; cost that could be diverted to other areas of development are spent on diseases treatment which are preventable.

Increase demand/consumption for health care services, increasing the burden on the health care provision.

Loss of man-hour from illness, reducing the overall labor productivity in the State.

Reduction in already low life expectancy, from increased mortality. This tend to worsen the socio-economic situation of the state, from loss of manpower, increased demand for social security from government due to increased number of vulnerable people, from the death of family bread winners, which can easily be avioded.

Possibility of increasing litigations, from blood related transfusion infections, and complications, as it happened in Lagos University Teaching Hospital some years ago.

National Blood Services *Vs* Hospital Based Services in Ondo State

Blood transfusion in many Nigerian states is hospital based. Several countries have launched coordinated attempts to establish a centralized blood transfusion program, mostly based on the European model of centralized blood service organization. As an example, in Nigeria, the National Blood Transfusion Service (NBTS) was inaugurated more than 15 years ago. Its mission is to promote sustainable safe blood availability to individuals that need them. The NBTS should get more blood donors, test for TTIs using an ELISA-based methodology and distribute the units to all hospitals. The expectation is that the NBTS should be able to perform all the above stated responsibilities.

The national blood transfusion services in Ekiti State has been able to collaborate with some health facilities in Ondo State over the last years. However, a lot of their efforts are not sustainable with collaboration dwindling in the past 2-3 years as a result of poor funding from the federal government [6-8].

Conclusion and Recommendations

The study concludes that, despite the creation of the Ondo State blood transfusion service in 2014, there hasn't been any significant improvement in the transfusion medicine over the years. This can be attributed to poor political will, on the part of the government to legalize the blood transfusion policy in the state. Poor funding of public health institutions to finance the procurement of high end blood screening devices has reduced the commitment of staffs leading to the increase of paid blood donors within the state. Also, blood donation is still frowned upon in some parts of the state due to cultural beliefs. In

order to address this issues, the study recommends the following actions:

- Establishment of a blood system that can provide adequate and timely supplies of healthy blood and blood products to meet the transfusion needs of all patients, with well-organized and structured blood transfusion programs, effective evidence-based and ethical blood policies, legislation, and regulation [9].
- Strengthening donation services and appropriate donor management, including treatment and counselling, to collect blood, plasma, and other blood components from low-risk, regular, non-renumerated donors.
- Transfusion Committee should be set up at the Hospitals for periodical audits on transfusion practices and implement feedback strategies to improve blood transfusion surveillance [10].
- All donated blood to be screened for transfusion-transmissible infections such as HIV, Hepatitis B, Hepatitis C and Syphilis. Confirmatory testing of the results of all donor's screen-reactive for infection markers, blood grouping and compatibility testing.
- To reduce risks associated with rational use of blood and blood products is important. The use of alternatives to transfusion where possible should be encouraged. Implementing appropriate quality processes in a step-by-step manner, including guidelines, documentations, training of all staff, and quality assessment.
- The government should give enabling platforms to the health sector through reduced tax on health equipment as well as reduced interest rates to single digit on loans from financial Institutions.
- Power generation, transmission, and distribution should be improved upon in the State as this will contribute to the improvement of the health service delivery.

References

1. Osho PO, Oluwole MT, Fasipe OJ, Koledoye VO, Oni OI, et al. (2019) Do we meet up with the standard blood demand, usage, and availability levels in state specialist hospital, Akure, Ondo State, Nigeria?. J Clinical Sci 16: 125-132.
2. IbrahimSZ, Mamdouh HM, Ramadan AM (2011) Blood utilization for elective surgeries at main university hospital in Alexandria, Egypt. J Am Sci 7: 683-689.
3. Butler EK, Hume H, Allain JP, Birungi I, Ainomugisha B, et al. (2015) Blood utilization at a national referral hospital in sub-Saharan Africa. Transfusion 55:1058-1066.
4. Lawani OL, Iyoke CA, Onyebuchi AK (2013) Blood transfusion trends in obstetrics at the Federal Teaching hospital in Abakaliki, South East Nigeria. Int J Women Health 5: 407-412.
5. Aneke JC, Okocha CE (2017) Blood transfusion safety; current status and challenges in Nigeria. Asian J Transfus Sci 2017; 11:1-5.
6. Osaro E, Charles AT (2011) The challenges of meeting the blood transfusion requirements in sub-Saharan Africa: The need for the development of alternatives to allogenic blood. J Blood Med 2011; 2:7-21.
7. Ahmed SG, Ibrahim UA, Hassan AW (2007) Adequacy and pattern of blood donations in North-Eastern Nigeria: The implications for blood safety. Ann Trop Med Parasitol 101:725-31
8. Bates I, Hassall O, Mapako T (2017) Transfusion research priorities for blood services in sub-Saharan Africa. Br J Haematol 177:855-863.
9. Barro L, Drew VJ, Poda GG, Tagny CT, Ekiaby ME et al. (2018) Blood transfusion in sub-Saharan Africa: understanding the missing gap and responding to present and future challenges. Vox Sang 113:726–736
10. Zhou J (2016) A review of the applications of autologous blood transfusion. Braz J Med Biol Res 49:9.