Original Article

Evaluation of Blood Transfusion Practice in Obstetrics and Gynaecology at a Tertiary Hospital in Port Harcourt, Nigeria

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Abstract

Background: Blood transfusion is an important part of patient management in obstetrics and gynaecology. There is a need to periodically assess blood transfusion practices in order to identify areas for improvement. **Objectives:** This study aimed to determine the rate of blood transfusion, indications, local use pattern, and variability of blood type transfused. **Patients, Materials and Methods:** A prospective observational study over six months was conducted at the Rivers State University Teaching Hospital. Obstetric patients in the peripartum period and gynaecological admissions who underwent blood transfusion were included. The patients' characteristics, blood type, pretransfusion packed cell volume (PCV), indication for transfusion, blood product used, number of pints, and donor group were recorded. Analysis was performed using SPSS version 23, and statistical significance was set at $P < 0.05$. **Results:** Overall, 84 out of 1000 patients were transfused, giving a rate of 8.4%, 7.4% in obstetric patients, and 13% in gynaecological patients. Haemorrhage was the main reason for transfusions in obstetrics 40 (65.6%), made up of postpartum haemorrhage 27 (44.3%) and antepartum haemorrhage 13 (21.3%), while antepartum anaemia was 17 (27.9%). In gynaecology, chronic anaemia was the main reason for transfusions 10 (43.5%), while acute haemorrhage was 7 (30.4%). Blood components used were whole blood 66.7% (56/84) and sedimented blood 33.3% (28/84) only. About a quarter of the patients who received blood transfusion, had a pretransfusion PCV of 25% or more (20/84) and received only one pint of blood (21/84). **Conclusion:** The rate of blood transfusion was relatively high, with gynaecology rates higher than obstetric. The indication for blood transfusion in obstetrics was mainly haemorrhage, while in gynaecology, it was chronic anaemia.

Keywords: Blood components, blood transfusion, blood utilisation, transfusion rate

Introduction

Blood transfusion is one of the life-saving interventions in obstetric practice. It is recognised as one of the eight essential components of comprehensive emergency obstetric care, which has been shown to reduce maternal mortality.[1]

Obstetric and gynaecological conditions associated with the need for blood transfusion often lead to severe morbidity and mortality. Obstetric haemorrhage remains a commonly encountered phenomenon that poses grave danger to the health of pregnant women worldwide, especially in sub-Saharan Africa. Both antepartum and postpartum haemorrhage are common indications for blood transfusion in emergency obstetric care.[2]

Globally, haemorrhage remains one of the most common and preventable causes of maternal mortality worldwide.[3] According to a systematic analysis of the World Health Organisation (WHO), haemorrhage was the leading direct cause of maternal deaths worldwide, representing 27.1% of maternal deaths.[4]

The appropriate use of blood implies that the transfusion has become inevitable to prevent significant morbidity or mortality.[5] Recently, there has been a tendency to decrease the use of blood transfusion in obstetric practice, the reason for this being risk of transfusion of blood-borne diseases, as well as better pharmacological, surgical, and mechanical innovations

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to reduce postpartum blood loss, and iron supplementation to prevent antepartum anaemia.[6]

Although the blood transfusion rate in some studies has been quoted as between 0.16% and 6% in obstetrics, transfusion rates vary among countries, hospitals, and doctors due to different practices.[7] In high-resource countries, the frequency of blood transfusion in obstetrics is reported to be 0.2%–3.2%,[8] while a rate of 2.2% has been reported by a study in a resource-poor country like Nigeria.[9] The rates of blood transfusion vary among different clinicians, with junior doctors and surgical specialists more likely to transfuse patients than physicians and anaesthesiologists.[10]

There are no firm criteria for initiating red cell transfusion.[6] Transfusion decisions are clinical judgments that should be based on the overall clinical assessment of the individual patient and not on laboratory parameters alone.[11] However, accurate evaluation of blood loss, required to determine whether transfusion would be performed, is difficult in obstetric haemorrhage.[12-14] Obstetric haemorrhage remains the largest risk factor for blood transfusion apart from operative delivery and instrumental delivery. This can be antepartum (resulting from placental causes, mainly placenta previa and abruptio placentae), intrapartum (ruptured uterus), or postpartum (from uterine atony, genital lacerations, retained placenta, and disseminated coagulopathy).[7,15] The other clinical condition in pregnancy requiring transfusion is chronic or compensated anaemia, which can occur in the antenatal or postnatal period, and can be worsened by sepsis and haemorrhage. Gynaecological indications include first-trimester bleeding (abortions and ectopic pregnancy), menorrhagia, and postoperatively following hysterectomy and myomectomy.[16]

The mainstay of blood transfusion services involves the use of whole blood and packed (sedimented) cells, while other less common practices include the use of platelet concentrates, fresh frozen plasma (FFP), and cryoprecipitate.[17] These blood transfusion practices are associated with complications, even when indicated and safety protocols are observed.[7,15,17]

There is a need to periodically review blood transfusion practices at any centre to ensure blood is being used judiciously. Information on blood utilisation will assist in establishing clinical practice guidelines, strategising on new donor recruitment, streamlining resources for the therapeutic benefit of the patient, and conducting cost-effective analysis.[18,19] Various studies have shown varied indications for blood transfusion,[20,21] but few have looked into the variability of the blood type used based on the blood type of the recipients. This study, therefore, sought to determine the indications and rate of blood transfusion, local use pattern, as well as the variability of blood type transfused based on the blood type of the recipient.

Patients, Materials and Methods

Study setting

This study was conducted at the obstetric and gynaecological wards of the Rivers State University Teaching Hospital (RSUTH). The hospital provides emergency obstetric services to women referred from other centres, as well as antenatal care (ANC) and delivery services for pregnant women booked with the hospital. Full gynaecological consultations and surgeries are also provided. There is the availability of laboratory and blood bank services in the hospital. Ethical approval was obtained from the Research and Ethics Committee of the hospital before the commencement of the study.

Study design

A prospective observational study of all women who received blood transfusion in the obstetrics and gynaecology department of the RSUTH was carried out. The study was conducted over six months, from July 1 to December 31, 2021.

Study procedure

All consenting women who were admitted in the peripartum period for obstetric and gynaecological care, who received blood transfusion were included in the study. The participants were recruited after a decision to transfuse had been taken, and the recruitment was done consecutively for the study period. The blood type and pre-transfusion packed cell volume (PCV) were recorded along with the indication for blood transfusion. The group of blood transfused and the number of units of blood received were noted. The PCV was checked 24–48 h after the last transfusion and was recorded.

The decision to transfuse blood was taken by the managing team of doctors, as there is no institutional policy on blood transfusion, but in most cases, the trigger for transfusion in our centre was PCV ≤18 and cases with PCV ≤21 who have haemodynamic instability. Patients with acute haemorrhage presenting in shock are usually transfused blood irrespective of their PCV at presentation.

Data collection

Data were collected using a structured pro forma sheet, retrieving the sociodemographic characteristics from the case notes, recipients' blood group and type of blood received, indication for blood transfusion, units of blood transfused, and pretransfusion and posttransfusion PCV levels.

Data analyses

Data were entered in an Excel spreadsheet and exported to SPSS version 23.0 software (Armonk, NY, USA, IBM Corp) for statistical analysis. The data were evaluated using descriptive statistical methods. Categorical measurements were given as numbers and percentages, numerical measurements as mean and standard deviation, and differences between groups were compared with Student's *t*-test or analysis of variance and Fisher's exact test or Chi-square tests as appropriate. Statistical significance was set at $P < 0.05$.

Results

Out of the total admitted cases of 1000 in obstetrics and gynaecology, 84 patients were transfused, giving an overall transfusion rate of 8.4%. In obstetrics, 61/828 (7.4%)

were transfused, and in gynaecology 23/172 (13%) were transfused. The mean age of obstetric patients was 31.31 ± 6.10 years, with a median age of 31 years and a range of 20–46 years, while the mean age of gynaecological patients was 35.83 ± 6.46 years, with a median age of 34 years and age range of 24–48 years.

Table 1 shows the characteristics of the blood recipients in obstetrics and gynaecology. Majority of the patients were ≥30 years old, 36 (59.1%) in obstetrics and 18 (78.2%) in gynaecology; were educated to secondary level and above, 59 (97.7%) in obstetrics and 22 (95.6%) in gynaecology; while the majority parity group was para 2–4 in obstetrics 29 (47.5%) and para 0–1 in gynaecology 13 (56.5%). Among the obstetric patients, majority had term pregnancies 46 (75.4%), were booked for ANC in the hospital 26 (42.6%), and had a spontaneous vaginal delivery 30 (49.2%).

Haemorrhage was responsible for majority of transfusions in obstetrics, accounting for 40 (65.6%), made up of PPH 27 (44.3%) and APH 13 (21.3%), while chronic compensated anaemia alone was responsible for 17 (27.9%), chronic anaemia with sepsis 3 (4.9%), and chronic anaemia with bleeding 1 (1.6%). In gynaecology, chronic compensated anaemia was responsible for majority of transfusions 10 (43.5%), while haemorrhage was the reason in 7 (30.4%) and intraoperative bleeding was 6 (21.6%).

Table 1: Characteristics of obstetric and gynaecological patients who received blood transfusion

Variables	Frequency (%)	
	Obstetric patients (*n*=61)	Gynaecology patients (*n*=23)
Age category (years)		
20-29	25 (41.0)	5 (21.7)
30-39	32 (52.5)	9 (39.1)
≥40	4 (6.6)	9 (39.1)
Educational level		
Primary	2 (3.3)	1 (4.3)
Secondary	36 (60.0)	11 (47.8)
Tertiary	23 (37.7)	11 (47.8)
Parity		
Para (0-1)	26 (42.7)	13 (56.5)
Para (2-4)	29 (47.5)	8 (34.8)
Para (≥5)	6 (9.8)	2 (8.7)
Gestational age		
Preterm	12 (19.7)	
Term	46 (75.4)	
Postpartum	3 (4.9)	
Booking status		
Booked	26 (42.6)	
Unbooked	23 (37.7)	
Booked elsewhere	12 (19.7)	
Mode of delivery		
SVD	30 (49.2)	
CS	23 (37.7)	
Laparotomy (uterine rupture)	8 (13.1)	

SVD: Spontaneous vaginal delivery, CS: Caesarean section

Table 2 shows the various causes or complications leading to the indications for blood transfusion in obstetric patients. APH was mainly due to the ruptured uterus 7 (53.8%) and abruptio placenta 2 (15.4%); PPH resulted mainly from uterine atony 19 (70.4%), birth lacerations 4 (14.8%), and retained placenta 1 (3.7%); while chronic compensated anaemia was mainly secondary to surgeries 14 (82.4%) and following birth lacerations 2 (11.8%).

Table 3 shows the various causes or complications leading to the indications for blood transfusion in gynaecological patients. Anaemia was mainly from menorrhagia 7 (70.0%), pelvic and intraperitoneal abscess 2 (20.0%), and malignancy 1 (10.0%); acute haemorrhage was mainly from ectopic pregnancy 5 (71.4%) and incomplete abortion 2 (28.6%); while transfusions intraoperatively were all from fibroid surgery 6 (100%).

The blood components used for transfusion were whole blood and sedimented (packed red cells) blood only; there was no transfusion of FFP, platelets, white blood, and cryoprecipitate during the study period. In obstetric patients, whole blood transfusion occurred in 44 (72.1%) and sedimented blood in 17 (27.9%), while in gynaecological patients, whole blood was used in 12 (52.2%) and sedimented blood was used in 11 (47.8%). Table 4 shows the distribution of blood components used against indications for blood transfusion among obstetric and gynaecological patients. In obstetric patients, whole blood was used mainly in cases of acute haemorrhage, APH 13 (100%) and PPH 26 (96.3%), while sedimented blood was used mainly in cases of chronic compensated anaemia 13 (76.5%). In gynaecological patients, whole blood was used mainly in acute haemorrhage 7 (100%) and intraoperative cases 5 (83.3%), while sedimented blood was used in cases of chronic compensated anaemia 10 (100%).

The pretransfusion PCV levels revealed that the majority of the patients transfused had moderate anaemia (PCV 19%–24%), among obstetric patients 38 (62.3%) and gynaecological patients 14 (60.9%), a few had severe anaemia (PCV ≤18%) as seen in 9 (14.8%) obstetric and 3 (13%) gynaecological patients. Those with mild anaemia or none (PCV ≥25%) constituted 14 (22.9%) in obstetrics and 6 (26.1%) in gynaecology. There was no statistically significant difference (P = 0.631) between the mean pretransfusion PCV in obstetric patients (22.26 ± 3.61) and gynaecological patients (22.74 ± 5.66), and no statistically significant difference (P = 0.652) between the mean posttransfusion PCV of obstetric patients (29.85 ± 3.05) and gynaecological (29.48 ± 4.12) patients.

All the O+ patients received O+ donor blood, as recorded in 41 (100%) of obstetric and 14 (100%) of gynaecological patients. Majority of those with blood group A+ also got A+ donor blood, as seen in 8 (80%) obstetric and 4 (66.7%) gynaecological patients. However, majority of B+ patients received O+ donor blood in 8 (88.9%) of obstetric patients.

Table 2: Distribution of cause or complication leading to the indications for blood transfusion among obstetric patients

Cause or complication	Indications for blood transfusion					Total, *n* (%)
	Anaemia, *n* (%)	APH, *n* (%)	PPH, *n* (%)	Anaemia + Sepsis, *n* (%)	Anaemia+bleeding, *n* (%)	
Operative (surgery)	14 (82.4)	4 (30.8)	2 (7.4)	0	1 (100.0)	21 (34.4)
Atony	0	0	19 (70.4)	0	0	19 (31.1)
Laceration	2 (11.8)	0	4 (14.8)	0	0	6 (9.8)
Ruptured uterus	0	7 (53.8)	0	0	0	7 (11.5)
Puerperal infection	0	0	1 (3.7)	2 (66.7)	0	3 (4.9)
Abruptio placenta	0	2 (15.4)	0	0	0	2 (3.3)
IUFD (with chronic anaemia)	1 (5.9)	0	0	0	0	1 (1.6)
Obstructed labor	0	0	0	1 (33.3)	0	1 (1.6)
Retained placenta	0	0	1 (3.7)	0	0	1 (1.6)
Total	17 (100.0)	13 (100.0)	27 (100.0)	3 (100.0)	1 (100.0)	61 (100.0)

APH: Antepartum haemorrhage, PPH: Postpartum haemorrhage, IUFD: Intrauterine fetal death

Table 3: Distribution of cause or complication leading to the indications for blood transfusion among gynaecological patients

Cause or complication	Indication for blood transfusion			Total, *n* (%)
	Anaemia, *n* (%)	Haemorrhage, *n* (%)	Operative, *n* (%)	
Menorrhagia	7 (70.0)	0	0	7 (30.4)
Fibroid surgery (myomectomy and hysterectomy)	0	0	6 (100.0)	6 (26.1)
Ectopic pregnancy	0	5 (71.4)	0	5 (21.7)
Abscess (intraperitoneal)	2 (20.0)	0	0	2 (8.7)
Incomplete abortion	0	2 (28.6)	0	2 (8.7)
Malignancy	1 (10.0)	0	0	1 (4.3)
Total	10 (100.0)	7 (100.0)	6 (100.0)	23 (100.0)

Table 5 shows the relationship between the recipients' blood group and the donor blood type received. Patients with other blood groups received O+ donor blood but were less likely to receive O+ blood than other group donor blood (odds ratio [95% confidence interval CI] =0.448, $P = 0.0001$).

Table 6 shows the distribution of the number of blood pints transfused in obstetrics and gynaecology patients. A total of 200 pints of blood were transfused during the study period, obstetric patients 131 pints and gynaecological patients 59 pints. Overall, majority of the patients, 36 (42.9%), received two pints of blood, a quarter of the patients, 21 (25%), received only one pint of blood and a few, 10 (11.9%), of the patients received ≥4 pints of blood. Among the two groups of patients, majority of obstetric patients, 30 (49.2%), received two pints of blood each, while majority of gynaecological patients, 7 (30.4%), received three pints of blood each.

Discussion

There is a need to periodically evaluate blood transfusion practices in obstetrics and gynaecology to ensure the appropriate use of blood and blood products. At our centre, no prior evaluation had been conducted, necessitating this prospective observational study to determine the incidence and indications for blood transfusion, examine the blood use pattern, the demographic characteristics of blood recipients, and the variability of blood type transfused.

The frequency of blood transfusion in obstetrics was reported to be 0.2%–3.2% in high-resource countries,[8] while a rate of 2.2% has been reported by a study in a resource-poor country like Nigeria.[9] The overall rate of blood transfusion in obstetrics and gynaecology in this study was 8.4%, which is lower than a rate of 12.1% reported among obstetric patients in Lagos Nigeria,[22] and 9.23% reported among obstetric and gynaecological patients from Bangladesh.[23] The transfusion rate in obstetrics was 7.4%, which is higher than the figures of 2.52% reported among obstetric patients in Turkey,[24] and 4.6% reported from a Japanese obstetric centre.[25] The transfusion rate among gynaecological patients of 13% was higher than that for obstetric patients, a finding corroborated by the Bangladesh study,[23] which reported a rate of 6.02% in their obstetric patients and 23.37% in their gynaecological patients. The lower rates in obstetrics than in gynaecology may be explained by better pharmacological methods for treating obstetric haemorrhage.

The most common indication for blood transfusion in obstetrics was haemorrhage, accounting for 65.6% of patients, of which PPH accounted for 44.3% and APH for 21.3%. The two major causes of PPH in our study were uterine atony (70.4%) and birth lacerations (14.8%), which might be suggestive of poor anticipation and use of uterotonics in cases of uterine atony, and possibly poor management of the second stage of labor resulting in birth trauma. There is a need for better

Table 4: Distribution of blood components used against indications for blood transfusion among the obstetric and gynaecological patients

Indications for blood transfusion	Blood components	
	Whole blood, *n* (%)	Sedimented blood, *n* (%)
Obstetric patients (*n*=61)		
Anaemia	4 (23.5)	13 (76.5)
APH	13 (100.0)	0
PPH	26 (96.3)	1 (3.7)
Anaemia + sepsis	0	3 (100.0)
Anaemia + bleeding	1 (100.0)	0
Total	44 (72.1)	17 (27.9)
Gynaecological patients (*n*=23)		
Anaemia	0	10 (100.0)
Haemorrhage	7 (100.0)	0
Operative	5 (83.3)	1 (16.7)
Total	12 (52.2)	11 (47.8)

APH: Antepartum haemorrhage, PPH: Postpartum haemorrhage

Table 5: Relationship between recipient's blood group and donor's blood group among the patients

Blood group of recipient	Blood group received from donor		Total, *n* (%)
	O+only, *n* (%)	Others(O−/A+/B+), *n* (%)	
Others (O−/A+/B+/B)	13 (15.5)	16 (19.0)	29 (34.5)
Only O+	55 (65.5)	0	55 (65.5)
Total	68 (81.0)	16 (19.0)	84 (100.0)

Chi Square = 37.485; p-value = 0.0001*; OR (95% CI) = 0.448 (0.30 – 0.67)

Table 6: Distribution of the number of blood pints transfused per patient in obstetrics and gynaecology

Number of blood pints transfused	Obstetrics patients, *n* (%)	Gynaecology patients, *n* (%)	Total, *n* (%)
One pint	15 (24.6)	6 (26.1)	21 (25.0)
Two pints	30 (49.2)	6 (26.1)	36 (42.9)
Three pints	10 (16.4)	7 (30.4)	17 (20.2)
Four pints	4 (6.6)	1 (4.3)	5 (5.9)
Five pints	2 (3.2)	2 (8.7)	4 (4.8)
Six pints	0	1 (4.3)	1 (1.2)
Total	61 (100)	23 (100)	84 (100)

pharmacological and surgical techniques in containing PPH in our centre. Antepartum haemorrhage in our study was mainly as a result of uterine rupture (53.8%) occurring in women referred to our centre, with a contribution from abruptio placenta in 15.4% of patients. However, the occurrence of uterine rupture, in women laboring outside our hospital, and abruptio placenta are factors not within our control. The figures for APH from our study were higher than the 6.2% reported by Singh *et al*.[16] who attributed their low incidence to early diagnosis of abruptio placenta and timely intervention, which decreased the requirement for blood transfusion. Operative causes requiring blood transfusion in obstetrics, mainly caesarean section, accounted for 34.4% of all patients. Some other studies have reported the commonest indication for blood transfusion in obstetrics to be caesarean section. Chowdhury *et al*.[23] reported 63.92% in a Bangladesh study, which was similar to the 68.8% found in a study done in Lagos.[22]

The 13% transfusion rate among gynaecological patients was mainly to correct chronic compensated anaemia, which was found in 43.5% of transfused patients, followed by acute gynaecological haemorrhage, which occurred in 30.4% and intraoperatively in 26.1%. The most common cause of chronic anaemia was menorrhagia, the most common cause for acute haemorrhage was ectopic pregnancies and the most common cause of intraoperative transfusions was fibroid surgery. Chowdhury *et al*. reported that more than 50% of their transfused patients in gynaecology were transfused due to miscarriage and ectopic pregnancy. They also reported a transfusion rate of 14.49% in hysterectomy cases.[23] A study conducted by Gupte and Patel,[26] reported a transfusion rate of 17.2% for cases of abnormal uterine bleeding, which was similar to the 17.05% reported by Chowdhury *et al*.[23]

Despite the threshold for blood transfusion being PCV ≤18%, majority of the patients in our study who were transfused, had moderate anaemia (PCV 19–24), only 14.8% in obstetrics and 13% in gynaecology, had pretransfusion PCV ≤18%. This was due to the haemodynamic instability of the patients at presentation since majority of the transfused patients had acute haemorrhage. Singh *et al*.,[16] in their study, reported transfusion in patients with massive haemorrhage despite adequate pretransfusion haemoglobin due to haemodynamic instability for ruptured ectopic pregnancy, incomplete abortion, APH, PPH, and massive intraoperative blood loss, similar to findings in our study.

However, the finding in this study that about a quarter of the patients who were given blood had pretransfusion PCV ≥25%, and the finding that 25% of blood recipients had only one pint of blood, might be suggestive of inappropriate use of blood as their anaemia could have been managed effectively by other means,[5] or may be the result of under-transfusion in women who required more. One pint of blood may not have caused a significant change in the PCV but would have been enough to cause complications of blood transfusion, especially where one unit of crystalloid or colloid would have achieved the same effect. Some other studies have found that most transfusions for anaemia in pregnancy were unnecessary.[13,22,23]

In this study, the blood components used for transfusion were whole blood and sedimented blood only. Ideally, blood is effectively used by processing it into components such as red cell concentrates, platelet concentrates, plasma (FFP), and cryoprecipitate,[27] but the facility for component separation in our institution was not available, making such difficult. According to the WHO, the preparation of blood components allows a single blood donation to provide treatment for two or

three patients and also avoids the transfusion of elements of the whole blood that the patient may not require.[5]

Our study comprised mainly of a younger age group; a combined 48.8% were aged between 30–39 years. This observation is similar to a report from the neighboring city of Calabar[28] and Zimbabwe.[29] This low age of recipients reflects the age trend of the Nigerian population, which comprises mainly of young people, and the fact that our study was among women of reproductive age. Most of our transfused patients (57.4%) did not book in our hospital, and hence, we cannot ascertain if they received adequate haematinics, bringing into focus the need for adequate care of patients during the antenatal period. Our study found that blood transfusion was higher in patients who had vaginal delivery, similar to the finding by Gulucu and Uzun,[24] but some studies have found a higher rate in patients who gave birth by caesarean section compared to those who delivered vaginally.[30,31] This may be explained by the fact that majority of our obstetric patients had PPH caused by uterine atony following vaginal delivery.

The distribution of ABO blood groups among blood recipients in our study was consistent with those reported in the donor population in Nigeria.[28,32] Acute shortage of some specific blood groups is a common event in Nigerian hospitals.[28] An understanding of the distribution of blood groups among transfusion recipients is essential in planning for blood donor drive and ensuring that patients receive blood matching their group.[29]

Limitations

The limitation of the study was that it was based on a single blood bank, and the sample size was small, and as such, a multicentre study with a greater sample size will be needed to reaffirm the findings. Furthermore, component therapy was not accessible at this hospital, with whole blood used in all cases (sedimented in some), and hence blood component utilisation assessment was not robust.

Conclusion

The rate of blood transfusion in our setting was relatively high, with gynaecological transfusion rates higher than obstetric. The indications for blood transfusion in obstetrics were mainly to combat acute haemorrhage, while in gynaecology, it was mostly to correct chronic compensated anaemia. It was observed that blood transfusion might not have been appropriate in all cases, especially in cases where a single pint of blood was transfused. There is need for regular education and training of healthcare providers to be more stringent and prudent in recommending blood for transfusion. Furthermore, whole blood was the major blood component recorded in this study, which was an unnecessary waste of blood and shows a lag in our health care that needs improvement. The use of blood components should be encouraged.

Evaluating blood transfusion practices in obstetrics and gynaecology at certain time intervals will be beneficial in reducing the blood transfusion rate. Early diagnosis and treatment of anaemia, as well as staying up to date on pharmacological and surgical interventions needed to combat sudden, unpredictable obstetric causes of bleeding, will reduce the need for blood transfusion.

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Conflicts of interest

There are no conflicts of interest.

References

1. Schantz-Dunn J, Nawal M. The use of blood in obstetrics and gynaecology in the developing world. Rev Obstet Gynecol 2011;4:86-91.
2. Begum M. Emergency blood transfusion in obstetric patients. Int J Gynecol Obstet 2012;119:S295.
3. Haeri S, Dildy GA 3rd. Maternal mortality from haemorrhage. Semin Perinatol 2012;36:48-55.
4. Say L, Chou D, Gemmill A, Tunçalp Ö, Moller AB, Daniels J, *et al.* Global causes of maternal death: A WHO systematic analysis. Lancet Glob Health 2014;2:e323-33.
5. WHO, Blood Transfusion Safety. The Clinical Use of Blood: Hand Book. Geneva: World Health Organisation; 2001 (Reprinted 2014). p. 3.
6. Ekeroma AJ, Ansari A, Stirrat GM. Blood transfusion in obstetrics and gynaecology. Br J Obstet Gynaecol 1997;104:278-84.
7. Chawla S, Bal MH, Vardhan BS, Jose CT, Sahoo I. Blood transfusion practices in obstetrics: Our experience. J Obstet Gynaecol India 2018;68:204-7.
8. Thurn L, Wikman A, Westgren M, Lindqvist PG. Massive blood transfusion in relation to delivery: Incidence, trends and risk factors: A population-based cohort study. BJOG 2019;126:1577-86.
9. Akingbola TS. Obstetric emergencies and transfusion needs in a Nigerian hospital. Hematol Transfus Int J 2016;2:107-10.
10. Eyelade OR, Adesina OA, Adewole IF, Adebowale SA. Blood transfusion requirement during caesarean delivery: Risk factors. Ann Ib Postgrad Med 2015;13:29-35.
11. Napolitano LM, Kurek S, Luchette FA, Corwin HL, Barie PS, Tisherman SA, *et al.* Clinical practice guideline: Red blood cell transfusion in adult trauma and critical care. Crit Care Med 2009;37:3124-57.
12. Bose P, Regan F, Paterson-Brown S. Improving the accuracy of estimated blood loss at obstetric haemorrhage using clinical reconstructions. BJOG 2006;113:919-24.
13. Dildy GA 3rd, Paine AR, George NC, Velasco C. Estimating blood loss: Can teaching significantly improve visual estimation? Obstet Gynecol 2004;104:601-6.
14. Duthie SJ, Ven D, Yung GL, Guang DZ, Chan SY, Ma HK. Discrepancy between laboratory determination and visual estimation of blood loss during normal delivery. Eur J Obstet Gynecol Reprod Biol 1991;38:119-24.
15. Patterson JA, Roberts CL, Bowen JR, Irving DO, Isbister JP, Morris JM, *et al.* Blood transfusion during pregnancy, birth, and the postnatal period. Obstet Gynecol 2014;123:126-33.
16. Singh RK, Anne S, Ravindran SP. Changing trends of blood requirements in obstetrics and gynaecology. Int J Reprod Contracept Obstet Gynecol 2018;7:2018-22.
17. Reshma L, Sreelatha S. Role of blood transfusion in obstetrics. Trop J Obstet Gynaecol 2019;36:330-7.
18. Biggin K, Warner P, Prescott R, McClelland B. A review of methods used in comprehensive, descriptive studies that relate red blood cell transfusion to clinical data. Transfusion 2010;50:711-8.
19. Borkent-Raven BA, Janssen MP, van der Poel CL, Schaasberg WP, Bonsel GJ, van Hout BA. The PROTON study: Profiles of blood product transfusion recipients in the Netherlands. Vox Sang 2010;99:54-64.
20. Musa AU, Ndakotsu MA, Hassan A, Klish A, Kwaifa IK. Pattern of blood transfusion request and utilisation at a Nigerian University

teaching hospital. Sahel Med J 2014;171:19-22.
21. Wells AW, Llewelyn CA, Casbard A, Johnson AJ, Amin M, Ballard S, *et al.* The EASTR Study: Indications for transfusion and estimates of transfusion recipient numbers in hospitals supplied by the National Blood Service. Transfus Med 2009;19:315-28.
22. Anorlu RI, Orakwe CO, Abudu OO, Akanmu AS. Uses and misuse of blood transfusion in obstetrics in Lagos, Nigeria. West Afr J Med 2003;22:124-7.
23. Chowdhury F, Akhter S, Islam A, Rayen J, Begum N, Begun F. Evaluation of blood transfusion practices in obstetrics and gynaecology in a tertiary hospital in Bangladesh. J Bangladesh Coll Phys Surg 2016;34:9-14.
24. Gulucu S, Uzun KE. Evaluation of blood transfusion rate in obstetric patients. Ginekol Pol 2022;93:637-42.
25. Matsunaga S, Seki H, Ono Y, Matsumura H, Murayama Y, Takai Y, *et al*. A retrospective analysis of transfusion management for obstetric haemorrhage in a Japanese obstetric centre. ISRN Obstet Gynecol 2012;2012:854064.
26. Gupte SC, Patel PN. Blood transfusion practice in obstetric and gynaecology: Impact of educational programs to create awareness for judicious use of blood components. Indian J Hematol Blood Transfus 2014;30:175-9.
27. World Health Organisation (WHO). Blood Safety and Availability; 2017. Available from: http://www.who.int/news-room/fact-sheets/detail/blood-safety-and-availability. [Last accessed on 2018 Jun 25].
28. Okoroiwu HU, Okafor IM. Demographic characteristics of blood and blood components transfusion recipients and pattern of blood utilisation in a tertiary health institution in southern Nigeria. BMC Hematol 2018;18:16.
29. Mafirakureva N, Khoza S, Hassall O, Faragher BE, Kajja I, Mvere DA, *et al.* Profiles of blood and blood component transfusion recipients in Zimbabwe. Blood Transfus 2015;13:600-9.
30. Balki M, Dhumne S, Kasodekar S, Carvalho JC, Seaward G. Blood transfusion for primary postpartum haemorrhage: A tertiary care hospital review. J Obstet Gynaecol Can 2008;30:1002-7.
31. Butwick AJ, Aleshi P, Fontaine M, Riley ET, Goodnough LT. Retrospective analysis of transfusion outcomes in pregnant patients at a tertiary obstetric centre. Int J Obstet Anesth 2009;18:302-8.
32. Enosolease ME, Bazuaye GN. Distribution of ABO and Rh-D blood groups in the Benin area of Niger-Delta: Implication for regional blood transfusion. Asian J Transfus Sci 2008;2:3-5.