

Indications and Outcomes of Blood Transfusion among Pregnant Ladies

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Abstract

Background: While the transfusion of blood products does come with inherent risks, it should only be considered if it has the potential to improve the patient's outcome. The aim of this study was to evaluate the reasons for blood transfusion and the results in a group of pregnant women from Sudan. **Methodology:** This study was a retrospective descriptive analysis of 138 pregnant women residing in El-Obeid, a city located in the northern Kordofan province of Sudan. **Results:** Most patients underwent blood transfusions primarily due to anemia, accounting for 59% of cases. Antepartum hemorrhage (APH), miscarriage, and ectopic pregnancy accounted for 21%, 10%, and 7% of the cases, respectively. Out of the 138 women, 33% were primigravida, 53% were multipara, and 14% were grand multipara. Grandmultipara women predominantly showed anemia, with a prevalence rate of 68%. Primigravida women, with a prevalence rate of 61%, and multipara women, with a prevalence rate of 55%, came next. Miscarriage is most common among women who are pregnant for the first time, with a rate of 15%. Out of the 138 patients, a mere 1.4% of them died, while 5.7% encountered various problems. However, the remaining 92.7% of patients have demonstrated improvement and received their release. **Conclusion:** Anemia is a crucial factor in determining the need for blood transfusion in pregnant women, particularly after childbirth when postpartum hemorrhage may occur. Despite the ongoing conflict in Sudan posing challenges, the health system can still achieve positive results.

Keywords: Pregnancy, Blood Transfusion, Anemia, Postpartum, Hemorrhage, Sudan.

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INTRODUCTION

Patient blood management (PBM) has been recognized and effectively implemented in various medical conditions where blood transfusions play a significant role. Despite the acknowledgment of pregnancy and obstetrics as a significant area for probable bleeding and the need for blood transfusions, there remains a lack of understanding among obstetricians regarding the need for patient blood management (PBM) in this sector [1]. Post-partum hemorrhage (PPH) is characterized by an estimated excessive blood loss of more than 500 ml after vaginal delivery and 1000 ml after a cesarean delivery. The indications for blood transfusion were as follows: (1) ongoing hemorrhage that was clinically severe and uncontrollable; (2) symptomatic anemia, characterized by maternal tachycardia exceeding 110 beats per minute, dizziness, syncope, or presyncope, with a hemoglobin level between 7-8 g/dL; or (3) a postpartum hemoglobin level below 7 g/dL, regardless of maternal symptoms or signs of anemia [2, 3].

Anemia is indicated by low hemoglobin, hematocrit, or red blood cells. Anemia is a hemoglobin concentration below 11.0 g/dL in the first trimester and 10.5 or 11.0 in the second or third trimesters, depending on the guideline. Anemia rules pregnancy hematology. The cause-and-effect relationship between maternal anemia and fetal, infant, and child injury is uncertain. Anemia in women increases the risk of blood transfusion during delivery. Iron deficiency and hemodilution cause pregnancy anemia [4]. Approximately 7.7% of pregnant women with anemia experienced serious postpartum hemorrhage during delivery. Maternal obesity, antepartum bleeding during the present pregnancy, the presence of uterine fibroids during pregnancy, delivery occurring after 38 weeks of gestation, and undergoing a cesarean birth during the current pregnancy were identified as significant variables related to severe postpartum hemorrhage in pregnant women with anemia [5].

Antenatal care significantly impacts important health indices, such as maternal and neonatal mortality rates, by effectively diagnosing and treating issues connected to pregnancy. Political instability and armed war have significantly impacted the health system, leading to dire consequences for the health of pregnant women. During a period of political instability and war in Sudan, the health system across the entire country faced numerous obstacles, particularly in the western

region of Sudan. The political instability and violent conflicts exacerbated the situation, leading to a terrible outcome [6]. Thus, the objective of this study was to evaluate the indications and problems associated with blood transfusion in pregnant women.

MATERIALS AND METHODS

This retrospective descriptive study involved 138 pregnant ladies who were admitted to the Obstetrics and Gynecology Hospital at El-Obeid, Northern Kordofan State, Sudan. We randomly selected the participants from August 2023 to July 2024, regardless of any specific inclusion or exclusion criteria. We deliberately designed and employed an online survey to collect data on the indications and outcomes of blood transfusion. Aside from the participants' demographic parameters, the survey also incorporates additional information, including inquiries about clinical measures.

Ethical Consideration: Permission was obtained from the El-Obeid Teaching Hospital Authority.

Ethical Approval: The Prof. Medical Research Consultancy Center's ethics committee approved the study protocol.

Statistical Analysis

The obtained data was arranged into standardized spreadsheets and entered into computer software (SPSS) version 24, developed by SPSS Inc., based in Chicago, IL, USA. The study involved calculating frequencies, cross-tabulations, relative risk, and performing a Chi-square test, all with a 95% confidence interval.

RESULTS

This study included 138 pregnant women aged 16 to 44, with a mean age and standard deviation of 28.43 ± 6.80 . The majority of patients were between the ages of 26 and 30, followed by 31 to 35 and 21 to 25 years, with 39/138 (28%), 33/138 (23%), and 23/138 (16%), respectively. Of the 138 patients, 83 (60%) were urban, 42 (30%) were rural, and 13 (10%) were nomads. The majority of the participants had a basic education level, followed by secondary education, which represented 57/138 (41%), and 37/138 (26%), respectively. Illiterate and graduated individuals had an equal distribution, with 19/138 (14%) each. Table 1 and Figure 1 show that the vast majority of participants (121/138) were married.

Table 1: Distribution of the study population by demographical characteristics

Variable	Rural	Urban	Nomads	Total
Age/years				
≤20	8	12	2	22
21-25	6	14	3	23
26-30	12	24	3	39
31-35	10	20	3	33

Variable	Rural	Urban	Nomads	Total
≥36	6	13	2	21
Total	42	83	13	138
Education				
Illiterate	9	2	8	19
Basic	21	35	1	57
Secondary	8	26	3	37
Graduate	4	15	0	19
Postgraduate	0	5	1	6
Total	42	83	13	138
Marital status				
Single	3	5	0	8
Married	35	75	11	121
Widow	2	2	1	5
Divorced	2	1	1	4
Total	42	83	13	138

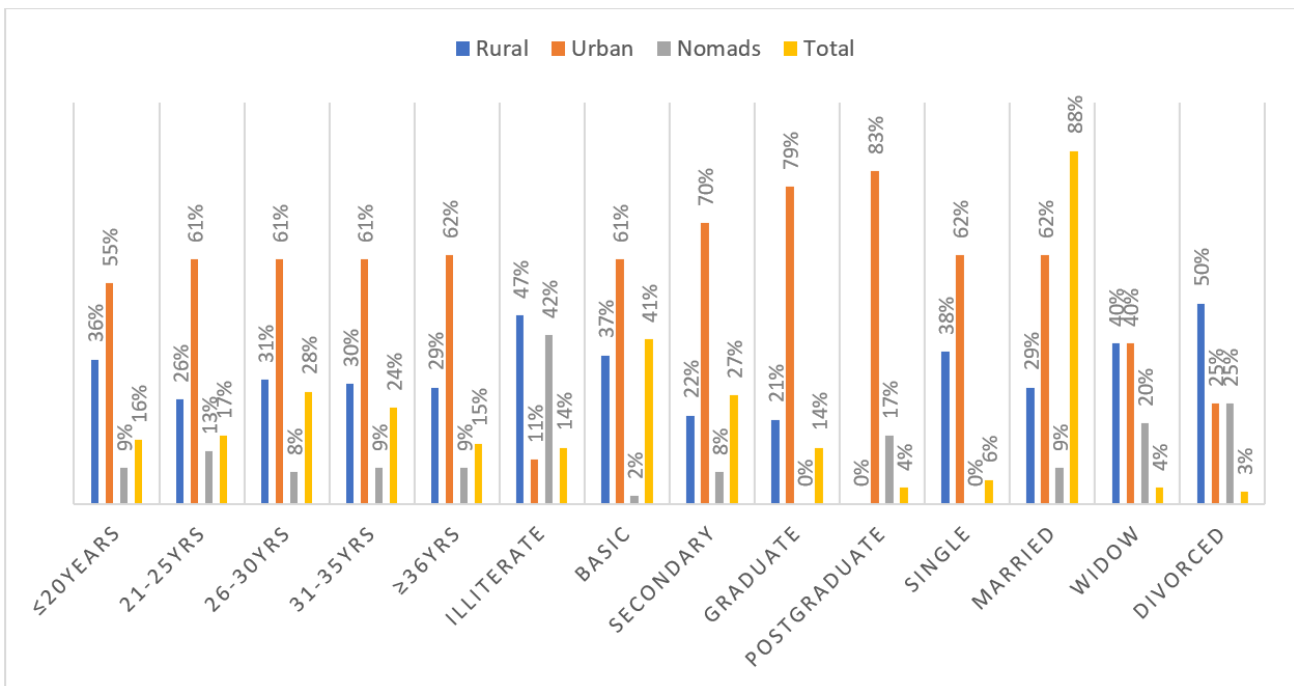


Figure 1: Demographic characteristics of the study subjects

The majority of patients (81/138) received blood transfusions due to anemia, followed by APH, miscarriage, and ectopic pregnancy, which accounted for 29/138 (21%), 10%, and 7%, respectively. Among the 138 women, 46 (33%) were primigravida, 73 (53%) were multipara, and 19 (14%) were grandmultipara. Anemia was most prevalent in grand multipara, accounting for

13/19 (68%), followed by primigravida 28/46 (61%), and multipara 40/73 (55%). Miscarriage is most common with primigravida (7/46, 15%). Only two (1.4%) of the 138 individuals died, while eight (5.7%) developed various problems. However, the remaining 128 (92.7%) individuals have improved and received discharge.

Table 2: Distribution of the patients by parity and indication of blood transfusion and outcomes

Variable	Primigravida	Multipara	Grandmultipara	Total
Indications				
APH	8	19	2	29
Ectopic Prg.	3	5	1	9
Miscarriage	7	7	1	15
Anemia	28	40	13	81
Others	0	2	2	4
Total	46	73	19	138

Variable	Primigravida	Multipara	Grandmultipara	Total
Outcomes				
Improved	42	69	17	128
Complicated	4	4	0	8
Died	0	0	2	2
Total	46	73	19	138

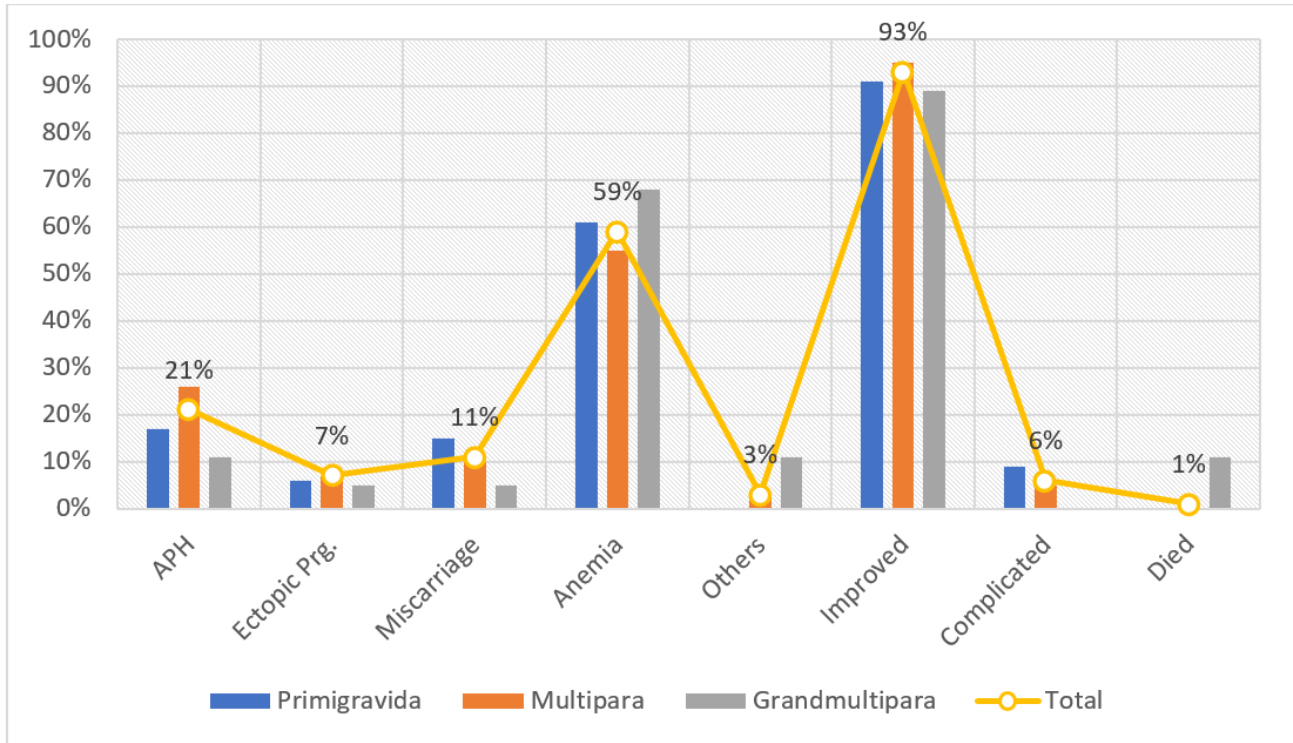


Figure 2: Provides a description of the study subjects based on their blood transfusion indications and patient outcomes

DISCUSSION

Sudan's ongoing conflict has had a catastrophic impact on the country's entire healthcare industry. Western Sudan's antenatal care has been associated with increased mortality and morbidity. The current study sought to evaluate the consequences of poor healthcare services in one of western Sudan's states, specifically Kordofan. The goal of this study is to assess the criteria for blood transfusions as well as the consequences for pregnant women who have undergone the procedure.

In the current study, anemia was the most common signal for blood transfusion (59%). Pregnant women previously showed a prevalence of anemia at 62.3%, particularly in the 21–30-year age group. A high prevalence of anemia in pregnant women appears to raise maternal and fetal risks. To enhance mother and fetal outcomes, it is advised that primary health care be strengthened, with a focus on anemia prevention, early diagnosis, and treatment throughout pregnancy [7]. The current study's findings revealed that 21% of the participants were women with PPH. Delays in detecting or treating postpartum hemorrhage might lead to problems or even death. A blood-collection drape can assist in the objective, accurate, and timely diagnosis of

postpartum hemorrhage, while a therapy package can address the delayed or inconsistent implementation of therapeutic treatments. Early detection of postpartum hemorrhage and bundled treatment lower the risk of the main outcome, which was severe postpartum hemorrhage, laparotomy for bleeding, or death from bleeding, compared to standard care for women who had a vaginal delivery [8]. The overall reported incidence of PPH was 6.3%, which is significantly lower than our findings in this investigation. Previous PPH increases the risk of PPH in subsequent pregnancies by 3.5 times. The risk of recurrent PPH rises with labor induction and falls with a planned caesarean section in the second pregnancy. We recommend individualized counseling based on risk factors, relevant labor history, and maternal preferences to prevent recurrent PPH [9]. In this study, 11% of the women reported miscarriage. People commonly describe miscarriage as the termination of a pregnancy before viability. Every year, an estimated 23 million miscarriages occur around the world, equivalent to 44 pregnancy losses per minute. The risk of miscarriage is 15.3% (95% CI 12.5-18.7%) for all recognized pregnancies. Women with one miscarriage had a population prevalence of 10.8% (10.3-11.4%), two

miscarriages were 1.9% (1.8-2.1%), and three or more losses were 0.7% (0.5-0.8%). [10].

The recent study discovered that approximately 7% of the women had an ectopic pregnancy. Ectopic pregnancies are the primary cause of maternal mortality in the first trimester, accounting for 5%–10% of all pregnancy-related deaths. Ectopic pregnancies are difficult to diagnose because of clinical mimics and nonspecific symptoms such as stomach pain and vaginal hemorrhage [11].

However, the overall outcomes of this trial were positive, with 92.8% of patients improving, 5.8% being complicated, and only 1.4% dying.

In conclusion, anemia is the most significant indicator of blood transfusion in pregnant women, followed by postpartum hemorrhage. Even though Sudan's health-care system is suffering as a result of the prolonged conflict, positive outcomes are possible.

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