RISK FACTORS FOR CAESAREAN SECTIONS RELATED BLOOD TRANSFUSIONS IN A TERTIARY CARE HOSPITAL OF PESHAWAR

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ABSTRACT

Background: Blood transfusions are often needed in the field of obstetrics for correction of anemia, which can occur as a result of antepartum or postpartum haemmorhage, DIC, bleeding in the first trimester (miscarriage, ectopic, molar pregnancy), etc.

Objective: The aim of this study was to evaluate risk factors for Blood transfusions in patients who had Caesarean deliveries in the Gynae department of Khyber Teaching Hospital, Peshawar.

Materials and Methods: This retrospective cross-sectional research was conducted at the Gynae department of Khyber teaching hospital, Peshawar from 1st June 2022 to 31st December 2022. The consecutive non probability sampling approach was utilized; however all women who underwent CS were eligible to participate. Ethical approval was taken from ethical committee. Inclusion criteria was all women of any age or parity who underwent emergency or elective caesarean section and whose haemoglobin was less than 8g/dl. Exclusion criteria were patients who had vaginal deliveries, those with caesarean sections and more than 8g/dl haemoglobin, and women with haemotological disorders such as aplastic anemia, thalassemia, thrombocytopenia, blood or bone marrow related malignancies. The dependent variable was the patient's Haemoglobin status requiring blood transfusions. The kind of cesarean delivery, anesthesia, and preoperative packed cell volume were the independent factors. Utilizing the SPSS 22 data, analysis was performed.

Results: During the course of the study, 2850 births took place, of which 689 required a caesarean section and 97 required blood transfusions. The rate of cesarean sections was 25%, while the incidence of blood transfusions was 14%.The patients' mean age was 30.43$\pm$1.21 years, and the most prevalent age group was 31-40 years (8%).41% of the patients underwent elective LSCS while 404 (58.6%) had emergency LSCS. In terms of the kind of cesarean birth, transfusion was required in 3% and 11% of patients who underwent elective and emergency LSCS, respectively. Only 52 (7.5%) of the approximately 96 (14%) patients with Packed cell volume less than 26% prior to surgery received transfusions. Blood transfusion status was substantially correlated ($p<0.05$) with age, type of cesarean birth, and preoperative PCV, according to the results of the chi-square analysis.

Conclusion: Age, cesarean type, and preoperative PCV were shown to be significantly linked with blood transfusion. Understanding the risk factors for prenatal hemorrhage and making arrangements for bleeding are essential for managing obstetric hemorrhage properly.

Keywords: Caesarean Section, Blood Transfusion, Packed Cell Volume, Placenta Accreta, Malposition, Multiparous

INTRODUCTION

One of the leading causes of illness and death for women in the reproductive age group is still obstetric hemorrhage. [1]Pregnancy-related problems are the main reason why blood transfusions are needed in underdeveloped nations.

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A vital component of patient care in obstetrics and gynecology is blood transfusions. The main hub for this area of medicine is the blood transfusion facility.[2] Of the most prevalent indications include obstetric hemorrhage and severe anemia, and it continues to save the lives of millions of women each year as an adjuvant to quality obstetric care. Obstetric situations with a vital requirement for blood might deteriorate if not managed appropriately.[3] The primary cause of maternal death in underdeveloped nations, responsible for 127,000 maternal fatalities annually worldwide, is obstetric hemorrhage.[4] Obstetric hemorrhages can happen both before and after birth, although postpartum hemorrhages are responsible for about 80% of cases and 25% of the estimated 3,58,000 maternal fatalities that occur annually.[5] Anemia is another common

issue that contributes to women's requirement for blood transfusions. One of the most prevalent nutritional deficits affecting pregnant women is anemia, which has a prevalence of 14% in industrialized nations and 51% in underdeveloped ones.In Ibadan, a frequency of 25%–30% was noted.[6] Anemia is a known risk factor for intrauterine growth anomaly, and it can have a severe impact on neonatal outcomes and perinatal death.[7]

Blood transfusions are often needed in the field of obstetrics for a number of conditions, including severe anemia, PIH, thrombocytopenia, and DIC; bleeding in the first trimester (abortion, ectopic, and molar pregnancy); and postpartum hemorrhage. However, prevention is not always possible, which calls for blood transfusions. Transfusion requirements can be decreased by treating and preventing anemia and by putting policies in place that will limit blood loss during delivery.[8] When the benefits are most likely to exceed the hazards, blood transfusions should be performed.A significant issue in nations with low resources, such as Pakistan, is the availability of blood and blood products for transfusion. Blood transfusion delays have been related to both economical and religious factors, as well as restrictions on banking and blood donation.[9] A research was carried out to determine the risk variables for blood transfusion in patients who underwent Caesarean births at Khyber Teaching Hospital in Peshawar,Khyber Pakhtunkhwa.

MATERIALS AND METHODS

This retrospective cross-sectional research was conducted at the Gynae department of Khyber teaching hospital,Peshawar from 1st June 2022 to 31st December 2022. A total of 2850 deliveries took place in this study period.The sample size was 97 and it was calculated by OpenEpi.The consecutive non probability sampling approach was utilized ,however all women who underwent CS were eligible to participate. Ethical approval was taken from ethical committee.Inclusion criteria was all women of any age or parity who underwent emergency or elective caesarean section and whose haemoglobin was less than 8g/dl.Exclusion criteria was patients who had vaginal deliveries,those with caesarean sections and more than 8g/dl haemoglobin,and women with haemotological disorders such as aplastic anemia,thalassemias,thrombocytopenia,blood or bone marrow related malignancies. The dependent variable was the patient's Haemoglobin status requiring blood transfusions. Ethical approval was taken from ethical committee(39/EC/KTH dated 15/06/22).Written informed permission was acquired from the participant.

The consultant obstetrician involved made the decision on which patients need blood transfusions. The kind of cesarean delivery, anesthesia, and preoperative packed cell volume (hematocrit level) were the independent factors.Utilizing the Statistical Package for the Social Sciences for Windows version 22 , the collected data was analysed. The association between the independent factors and the status of blood transfusion was assessed using the Chi-square test, and the results were displayed using descriptive statistics.

RESULTS

During the course of the trial, 2850 births took place, of which 689 required a caesarean section and 97 required blood transfusions.

Thus, among women who had caesarean birth, the rate of cesarean sections was 25%, while the incidence of blood transfusions was 14%.The research patients' mean age was 30.43$\pm$1.21 years, and the most prevalent age group was 31-40 years (8%).Table 1 shows that 41% of the patients underwent elective LSCS while the bulk of patients 404 (58.6%) had emergency LSCS. In terms of the kind of cesarean birth, transfusion was required in 3% and 11% of patients who underwent elective and emergency LSCS, respectively. Only 52 (7.5%) of the approximately 96 (14%) patients with Packed cell volume less than 26% prior to surgery received transfusions (Table 1).Blood transfusion status was substantially correlated ($p<0.05$) with age, type of cesarean birth, and preoperative PCV, according to the results of the Chi square analysis.

TABLE 1. ASSOCIATION BETWEEN VARIABLES AND BLOOD TRANSFUSION RISK(N=689)

VARIABLE	TOTAL	RECEIVED BLOOD	NOT RECEIVED BLOOD	P-VALUE
AGE				0.03
< 20 years	21(3%)	4(o.6%)	17(2.4%)	
21-30 years	352(51%)	39(5.6%)	313(45.4%)	
31-40 years	316(46%)	54(8%)	262(38%)	
Mean age	30.43+1.21			
C/SECTION				0.000
Elective	285(41%)	21(3%)	264(38%)	
Emergency	404(58.6%)	76(11%)	328(47.6%)	
ANESTHESIA				0.154
General	28(8.4%)	15(2%)	13(2%)	
Spinal	661(96%)	82(12%)	579(84%)	
CO-MORBID CONDITIONS				0.751
Chronic Hypertension	5(0.72%)	1(0.2%)	4(0.6%)	
PIH	9(1.3%)	2(0.3%)	7(1.1%)	
Asthma	4(0.6%)	1(0.2%)	3(0.4%)	
Ecclampsia	2(0.3%)	1(0.2%)	1(0.2%)	
Epilepsy	2(0.3%)	0	2(0.3%)	
Hepatitis B	2(0.3%)	0	2(0.3%)	
Hepatitis C	1(0.2%)	0	1(0.2%)	
Cardiac disease	1(0.2%)	0	1(0.2%)	
PACKED CELL VOLUME				0.042
Less than 26	96(14%)	52(7.5%)	44(6.3%)	
More than 26	593(86%)	45(6.5%)	548(79.5%)	

TABLE 2. CESAREAN SECTION RATE AND BLOOD TRANSFUSION RATES IN CAESAREAN SECTIONS.

TOTAL DELIVERIES	2850
CAESAREAN SECTIONS	689
VAGINAL DELIVERIES	2161
CAESAREAN SECTION RATE	24%
BLOOD TRANSFUSION IN C/SECTIONS	97
BLOOD TRANSFUSION RATE IN C/SECTIONS	14%

DISCUSSION

Although pregnancy is a natural condition, there are situations in which, if ignored, it can suddenly and unpredictably turn pathological. Problems such as ruptured ectopic pregnancies, molar pregnancies, and abortions can cause acute blood loss during the early half of pregnancy. One of the main causes of maternal morbidity and mortality, obstetric hemorrhage ranks second in terms of frequency of transfusions, after anemia.[10] Correcting blood loss, supplying erythrocytes, boosting blood oxygen-carrying capacity, improving microcirculation, supplementing blood colloidal components and blood coagulation factors, and preserving regular coagulation functions are among the goals of intraoperative blood transfusion.[11]8% of patients were older than thirty years old. On the other hand, other research revealed a reduced transfusion rate. According to Sunda A, 5.9% of the women in their survey who underwent transfusions were between the ages of 21 and 30.[12] Research from Finland and Australia revealed a significantly lower transfusion rate of 2.9% and 2.27 %, respectively.[13] Similar findings were seen in a study of blood transfusion in obstetric practice at Lagos University Teaching Hospital, by Ren W et al,

where the total transfusion rate was 12.1%.Another research found a 20.8% transfusion rate.[14] In contrast to this study, the rate of blood transfusion was 12.5% in another study conducted by Lee SW et al., which is a considerable increase. Furthermore, we observed that the transfusion rate was greater in individuals who underwent emergency Caesarean sections.[15]

Frequent causes for emergency surgery, such as placenta previa accreta, malposition, and previous cesarean sections, might be the cause of this. These circumstances could also increase the chance of an intraoperative delivery.The cesarean section rate of 25% in this research is high when compared to studies from south-west Nigeria, the US, and Sub-Saharan Africa.[16] Nonetheless, the World Health Organization recommends that every hospital have a caesarean section rate of five to fifteen percent.[17] Even though the majority of the cases in this research were actual emergency surgery, high caesarean delivery rates have raised concerns around the world. Age, cesarean type, preoperative Packed cell volume, and blood transfusion status all showed significant relationships with each other. Kang J et al. found that age and preoperative anemia were independent risk factors for blood transfusion (OR=11.24, 95% CI=3.02-35.31,p=0.001).[18]This was anticipated since a woman who is anemic will often be less able to handle blood loss and may experience hemodynamic instability, which can lead to cardiovascular damage. Prenatal care has been demonstrated to positively impact hematocrit readings in antenatal women.[19]

With this type of care, prenatal problems may be found and labor and delivery could be planned to meet specific objectives. The fact that the study was planned retrospectively is one of its benefits. Because of the facility's unique geographic location and large patient volume, this study was restricted to a single institution; yet, the findings may still be significant in the region.

CONCLUSION

Cesarean type, and preoperative PCV were shown to be significantly linked with increased rate of blood transfusions.Emergency cesarean sections have an association with the increased rate of blood transfusions,keeping in mind the short timing in which the procedure needs to be done and the unprepared patient. Understanding the risk factors for prenatal hemorrhage and making arrangements for transfusion are essential for managing obstetric hemorrhage properly.

DECLARATIONS

Conflicts of Interest: There is no conflict of interest.

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