

# Frequency Of Post-Partum Haemorrhage In Obese Patients

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## Abstract

**Objective:** This study will help to establish a true frequency of PPH in obesity, which will allow us to serve as a basis for future research, as well as the possibility for the requirement of intervention or at least increased vigilance in obese patients which will help to reduce morbidity, mortality, and financial costs. This study aims to determine the frequency of post-partum haemorrhage in patients who are obese.

**Methods:** This study is conducted in the Department of Gynaecology and Obstetrics, at PAF Hospital, Islamabad. The duration of this study was 6 months, from Dec 2022 to June 2023. It is a descriptive cross-sectional study; the sample size was 100 patients. All participants were evaluated with a thorough medical history and clinical examination on enrolment. Their BMI was calculated by using a standard measuring tape and Medica plus DT-916 weighing scale. Blood loss after delivery was measured as per operational definition.

**Results:** The mean age of the participants was 27 years with SD  $\pm$  8.81. 9% of the patients had post-partum haemorrhage while 91% of patients didn't have post-partum haemorrhage (PPH).

**Conclusion:** Our study concludes that the frequency of post-partum haemorrhage was 9% in patients who are obese, so it is not considered a key factor for PPH.

**Keywords:** post-partum haemorrhage, obese, BMI., risk assessment, uterine haemorrhage.

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**Cite this Article:** Aslam R, Shahid A, Tahir N, Nadeem A, Nasreen T, Saleem A. Frequency Of Post-Partum Haemorrhage In Obese Patients. JRMCM. 2025 Jan. 1;28(4). 688-691. <https://doi.org/10.37939/jrmc.v28i4.2670>.

Received January 19, 2023; accepted July 31, 2023; published online December 10, 2024

## 1. Introduction

Obesity is increasing in incidence globally, and Pakistan is no exception. PPH is a common occurrence in Pakistan's obstetric setups, and it is feared that a rising prevalence of obesity will translate into an increased incidence of PPH. However, the literature on the subject is conflicted with different studies arriving at different conclusions: some demonstrate a positive association between the presence of obesity and an increased incidence of PPH<sup>1</sup>, while others show that obesity and PPH have no relationship with each other. This study will help to establish a true frequency of PPH in obesity, which will help serve as a basis for future research, as well as the possibility for the requirement of intervention or at least increased vigilance in obese patients which will help reduce morbidity, mortality, and financial costs.

Maternal death secondary to haemorrhage is one of the principal causes of mortality resulting in 27% of obstetric deaths, of which post-partum haemorrhage (PPH) accounts for 72% of cases.<sup>1</sup> Maternal risk factors for developing the disorder include multiple gestation, surgical or instrumental delivery, placenta previa, pre-eclampsia and placenta accreta.<sup>2</sup> Other less

known risk factors include elderly pregnancy, nulliparity, history of PPH and presence of obesity.<sup>3</sup>

Obesity has reached epidemic proportions in Pakistan, with recent studies reporting a country-wide prevalence of obesity of 57.9%.<sup>4</sup> It is feared that the rise of this risk factor may be associated with a further increase in maternal morbidity and mortality due to an increase in the frequency of PPH.<sup>5</sup> However, the relationship between obesity and the increased risk of developing PPH is tenuous at best. Amongst studies specifically investigating a risk factor for PPH, BMI of pregnant patients is not considered as a risk factor for PPH<sup>7,8,9</sup>. A few studies have shown no association between BMI and PPH but others showed a positive association<sup>10,11</sup>

## 2. Materials & Methods

This descriptive cross-sectional study was conducted in the Department of Obstetrics and Gynaecology at PAF Hospital, Islamabad. It was conducted over six months i.e. from December 2022 to June 2023, this study was approved by the ethical review board of PAF Hospital. The sample size was 100 and is descriptive non-probability sampling. Patient's delivery before 37 weeks or greater than 42 weeks of gestational was excluded and patients with placenta Previa, polyhydramnios, fibroid

uterus, and multiple pregnancies were also in our exclusion criteria. All patients between 18 to 35 years of age, with a BMI more than 30kg/m<sup>2</sup>, delivery between 37- 42 weeks of gestational and who gave informed consent were included in our study. All patients were asked to submit an informed written consent.

All participants were evaluated with a thorough medical history and clinical examination on enrolment. Patients' height and weight were recorded using a standard measuring tape and a Medica Plus DT-916 Weighing Scale, respectively. All patients underwent their respective procedures, was documented, and blood loss during the procedure was measured as per operational definitions Patients were documented for age, height, weight, body mass index, gravida, parity, mode of delivery, total estimated blood volume loss, and whether post-partum haemorrhage occurred or not. All information was collected by the researcher personally to reduce selection bias and to maintain the quality of data.

SPSS Version 26 was used for data analysis. Descriptive statistics was calculated for all variables. Data was presented as tables. Quantitative variables specifically age, body mass index, height, weight, gravidity, parity, and total estimated volume of blood loss were measured by mean and standard deviation. Qualitative variables specifically mode of delivery, and whether post-partum haemorrhage occurred or not were measured as frequency and percentage. Effect modifiers specifically age, body mass index, gravidity and parity were controlled by stratification. Post-stratification Chi-square test was applied for comparison with whether post-partum haemorrhage developed or not and p-value  $\leq 0.05$  was considered significant.

### 3. Results

In the current study age distribution among 100 patients was analysed. 39(39%) patients were in age range 18-27 years and 61(61%) patients were in age range 28-35 years. The mean age was 27 years with SD  $\pm 8.81$ . 35(35%) patients were primi para and 65(65%) patients were multi para. 33(33%) patients were primi gravida and 67(67%) patients were multi gravida. 55(55%) patients had BMI  $\leq 32$  Kg/m<sup>2</sup> and 45(45%) patients had BMI  $> 32$  Kg/m<sup>2</sup> (table 1). 41(41%) patients had normal vaginal delivery and 59(59%) patients had caesarean section. 9(9%) patients had post-partum haemorrhage and 91(91%) patients didn't have post-partum

haemorrhage. Stratification of post-partum haemorrhage concerning body mass index is mentioned in (table 2) which shows a p-value of 0.5 which is statistically not significant.

Table No. 1 explains the BMI of our patients, in 55 patients it is less than 32kg/m<sup>2</sup> and in 45 patients it is more than 32kg/m<sup>2</sup>. Table no 2 explains the stratification of post-partum haemorrhage with BMI which showed 5 patients with a BMI of more than 32kg/m<sup>2</sup> had PPH and 4 patients with a BMI of less than 32kg/m<sup>2</sup> had PPH.

**Table 1: Body Mass Index (N=100)**

BMI	Frequency	Percentage
$\leq 32$ Kg/m <sup>2</sup>	55	55%
$> 32$ Kg/m <sup>2</sup>	45	45%
<b>Total</b>	100	100%

**Table 2: Stratification of post-partum haemorrhage concerning body mass index (n=100)**

Post-Partum Haemorrhage	$\leq 32$ Kg/m <sup>2</sup>	$> 32$ Kg/m <sup>2</sup>	Total	P value
<b>Yes</b>	4(7%)	5(11%)	9(9%)	0.505
<b>No</b>	51(93%)	40(89%)	91(91%)	
<b>Total</b>	55(100%)	45(100%)	100(100%)	

### 4. Discussion

When risk assessment for morbidity and mortality is done at the antenatal visit, it has positive clinical implications like deciding on tertiary care setup for delivery, adequate resources and infrastructure and specialist care. Some of the risk factors have positive correlations like twin gestation, morbidly adherent placenta and instrumental vaginal delivery and some don't show significant associations like increased maternal age and increased BMI.

A critical review looking for a link between obesity and postpartum haemorrhage (PPH), conducted by Han CA et al identified that obesity increases the risk of PPH primarily due to uterine atony and labour complications, however certain preexisting comorbid influence the results<sup>6,7</sup>.

Enomoto et al<sup>8</sup>, in a study conducted in 2016 showed that obese patients with vaginal delivery and Caesarean-Section had a frequency of PPH of 22.07% and 13.80%, respectively, versus 19.57% and 4.74%, respectively in underweight women, (p<0.001) showing a positive

relationship between obesity and PPH. This finding was supported by a Kim et al study that concluded that overall, PPH rates were increased in overweight and obese compared with normal-weight women (n=255 [9.7%], n=233 [15.6%]), n=524 [7.2%], p <.001) respectively.<sup>9</sup>

However, in a study by Huma Z et al, the incidence of postpartum haemorrhage among two groups was analysed. It was found that in experimental group 23(30%) patients had PPH and 54(70%) patients didn't have

PPH. In the control group, PPH was reported in 8% of patients while 92% didn't have PPH<sup>10</sup>. This study supports our result.

Butwick AJ et al<sup>11-14</sup> examined the relationship between maternal BMI and the incidence of postpartum haemorrhage according to a class of obesity. When compared to normal body mass index, the risk of haemorrhage was increased for overweight women. It also proved that as BMI increases, the likelihood of experiencing PPH also increases.

Julia Whitley conducted a retrospective cohort study and found that increased BMI was associated with increased blood loss during caesarean but did not increase the need for blood transfusion<sup>15,16</sup>.

There is not much clear association between PPH and BMI reported in different studies, Several population-based studies were done in different countries comparing the association between obesity and post-partum haemorrhage and the result showed no significant association between the two<sup>17</sup>.

## 5. Conclusion

Our study concludes that the frequency of post-partum haemorrhage was 9% in patients who are obese.

**CONFLICTS OF INTEREST-** None

**Financial support:** None to report.

**Potential competing interests:** None to report

**Contributions:**

R.A, A.S, N.T, A.N, T.N, A.S - Conception of study

R.A, A.S, N.T, A.N, T.N, A.S - Experimentation/Study Conduction

R.A, A.S, N.T, A.N, T.N, A.S -

Analysis/Interpretation/Discussion

R.A, A.S, N.T, A.N, T.N, A.S - Manuscript Writing

R.A, A.S, N.T, A.N, T.N, A.S - Critical Review

R.A, A.S, N.T, A.N, T.N, A.S - Facilitation and Material analysis

All authors approved the final version to be published & agreed to be accountable for all aspects of the work.

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