



## RISK FACTORS AND FETOMATERNAL OUTCOME IN PREGNANT WOMEN WITH PERIPARTUM CARDIOMYOPATHY

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### Abstract

**Objective:** The aim of the study was to determine the Risk factors and Fetomaternal Outcome in Pregnant Women with Peripartum Cardiomyopathy

**Methodology:** The current cross sectional study was carried out from December 2022 to May 2023 at the Department of Cardiology Khalifa Gul Nawaz Teaching Hospital MTI Bannu and Peshawar institute of cardiology Peshawar after taking approval from the ethical committee of the institute. After obtaining informed permission, women with peripartum cardiomyopathy diagnoses, regardless of age or parity, were included. Women having a history of anemia or valvular heart disease were excluded from the study. SPSS version 20 was used for the data analysis. For quantitative variables mean and standard deviation were computed. For qualitative variables percentages and frequency were evaluated.

**Results:** In the current study a total of 66 pregnant women diagnosed with peripartum cardiomyopathy were enrolled. The most prevalent age group of the study participants were from 31 to 35 years (45.45%). Majority of the individuals 41(62.12%) offered at <37 weeks (preterm) gestation. the frequency of primigravida were (18.18%). Almost 1/3 of the participants 24(36.36%) had two to four children. A parity of greater than 4 was evaluated in 30(45.45%) women. 49(74.2%) individuals had Pre-eclampsia while (27.27%) had chronic hypertension. (93.93%) individuals had singleton pregnancy and twin pregnancy was detected in 4(6.0%) participants. A total of (75.7%) women had done cesarean section due to heart failure and pulmonary edema and 16(24.2%) had spontaneous vaginal delivery. 54(81.8%) babies were born alive and 12(18.18%) were intrauterine death. Due to various factors there were 16(24.24%) maternal death occurred.

**Conclusion:** Peripartum cardiomyopathy is a sporadic but severe disorder of unidentified origin that affects women of childbearing age. Risk factors evaluated were advanced age, Pre-eclampsia and chronic hypertension. 24% maternal and 18.18 % fetus death explored in the current study.

**Key words:** Risk factors; Fetomaternal Outcome; Pregnant Women; Peripartum Cardiomyopathy

## Introduction

Systolic dysfunction is an essential feature of peripartum cardiomyopathy (PPCM), an uncommon, idiopathic, and frequently dilated cardiomyopathy that occurs in late pregnancy or the early postpartum period.(1) In this syndrome, heart failure (HF) happens in the last twelve weeks of pregnancy or in the first five months after giving birth without any detectable cardiac disease. To diagnose this syndrome, further echocardiographic criteria are required to be performed.(2) Peripartum cardiomyopathy, as recently defined by the European Society of Cardiology, is a type of dilated cardiomyopathy with a reduced ejection fraction, typically less than 45%, that manifests as heart failure in a woman who does not have a history of structural heart disease and reveals symptoms of heart failure towards the end of her pregnancy or in the first few months following delivery.(3)

The mortality rate for PPCM, which could be fatal cardiac condition, ranges from 18% to 56%, with half of the deaths occurs within three months after the delivery.(4,5) The majority of effected women regain systolic function, while a small percentage develop chronic cardiomyopathy and need mechanical assistance or heart transplantation. Moreover, it elevates the risk of thrombosis, atrial and ventricular dysrhythmias, and untimely death.(6) A number of risk factors, such as advanced maternal age, multiparity, multiple pregnancies, obesity, pregnancies complicated by chronic hypertension, pre-eclampsia, prenatal hypertension, and black race, are known to predispose a woman to developing peripartum cardiomyopathy.(4,5) Treatment for acute scenarios may include intravenous vasodilators, inotropic drugs, and intraaortic balloon pumps.(7) There are not numerous studies on this topic in the national and international literature. Therefore the current study was conducted to find out the Risk factors and Fetomaternal Outcome in Pregnant Women with Peripartum Cardiomyopathy.

## Methodology

The current cross sectional study was carried out from December 2022 to May 2023 at the Department of Cardiology Khalifa Gul Nawaz Teaching Hospital MTI Bannu and Peshawar institute of cardiology Peshawar after taking approval from the ethical committee of the institute. After obtaining informed permission, women with peripartum cardiomyopathy diagnoses, regardless of age or parity, were included. Women having a history of anemia or valvular heart disease were excluded from the study. SPSS version 20 was uses for the data analysis. For quantitative variables including age and pregnancy duration, BMI, and ejection fraction, mean and standard deviation were computed. For qualitative variables such as the technique used for delivery, persistent hypertension, preeclampsia, fetal and maternal outcome, and parity, percentages and frequency were evaluated.

## Results

In the current study a total of 66 pregnant women diagnosed with peripartum cardiomyopathy were enrolled and  $31.75 \pm 3.90$  year was the mean age of the women. The most prevalent age group of the study participants were from 31 to 35 years 30(45.45%) followed by 20 to 30 years 23 (34.84%) and above 36 years 13(19.6%) as presented in **figure 1**.  $35.46 \pm 3.10$  weeks was the mean gestational age of PPCM pregnant women .Majority of the individuals 41(62.12%) offered at <37 weeks (preterm) gestation and  $26.27 \pm 4.12 \text{ kg/m}^2$  was the mean body mass index .The mean ejection fraction was  $36.27 \pm 7.07\%$ . in this study the frequency of primigravidain were 12(18.18%). Almost 1/3 of the participants 24(36.36) had two to four children. A parity of greater than 4 was evaluated in 30(45.45%) women. 49(74.2%) individuals had Pre-eclampsia while 18(27.27%) had chronic hypertension. 62(93.93%) individuals had singleton pregnancy and twin pregnancy was detected in 4(6.0%) participants. a total of 50(75.7%) women had done cesarean section due to heart failure and pulmonary edema and 16(24.2%) had spontaneous vaginal delivery. 54(81.8%) babies were born alive and 12(18.18% were intrauterine death. Due to various factors there were 16(24.24%) maternal death occurred .As described in **table 1**.

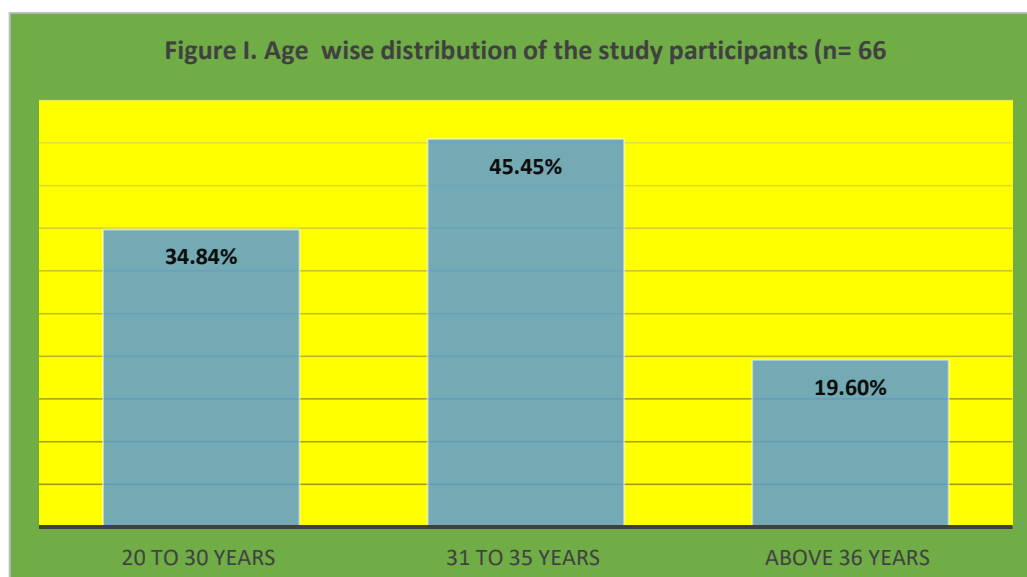


Table 1. Features and Fetomaternal Outcome of individuals With Peripartum Cardiomyopathy (N=66)		
Variables	N (%)	
Parity		
Primigravida	12(18.18)	
Gravida 2 to 4	24(36.36)	
Multiparous greater than 4	30(45.45)	
Gestational age		
Less than 37 weeks	41(62.12)	
Greater than 37 weeks	25(37.87)	
Basic metabolic rate (Kg/m2)		
Normal	20(30.30)	
Obesity	46(69.96)	
Pre eclampsia		
YES	49(74.2)	
NO	17(25.75)	
Persistent hypertension		
Yes	18(27.27)	
No	48(72.72)	
Number of fetus		
One	62(93.93)	
Twin	4(6.0)	
Mode of delivery		
Cesarean Section	50(75.75)	
Spontaneous Vaginal Delivery	16(24.24)	
Fetal Outcome		
Live	54(81.8)	
Intrauterine Death	12(18.18)	
Maternal Outcome		
Live	50(75.75)	
Died	16(24.2)	

## Discussion

A challenging disease to treat, peripartum cardiomyopathy is an idiopathic syndrome that affects women in the latter months of pregnancy or early puerperium and manifests as heart failure due to left ventricular systolic dysfunction. It appears to be an important factor contributing to death among mothers and morbidity.(8) The prevalence of PPCM varies around the globe. Non-African nations

have PPCM prevalence rates ranging from 1:3,000 to 1: 15,000 live births.(2,9,10)1 out of a total of 837 deliveries were found to have it in a Pakistan) study results. (3) Hunger and obesity are two of the many risk factors. Various studies have identified poor prenatal care, consumption of alcohol and tobacco, low socioeconomic circumstances, and long-term tocolysis as risk factors (10-12). Our study revealed that advanced maternal age, multiparity, obesity, pre-eclampsia, and chronic hypertension were prevalent factors.

The average age of the patients in our research was  $31.75 \pm 3.90$  years, which is comparable to previous findings that indicate a higher risk of developing peripartum cardiomyopathy in those older than 30.(3,13,15) Multiparity is an important risk factor that is similar to previous results.(14) In our research, all multiparous patients had never experienced PPCM before. A possible cause might be the existence of heart involvement in prior subclinical pregnancies. The mean gestational age of the women we examined, who were all antepartum, was  $35.46 \pm 10$  weeks, indicating a tendency towards preterm. Despite the fact that none of the patients we treated had tocolysis, preterm deliveries are typical among PPCM patients. Individuals with peripartum cardiomyopathy had an increased risk of premature birth, according to a study by Bakhta et al.(9) With a mean BMI of  $26.6 \pm 4.5$  kg/m, the majority of our patients (71%) were overweight, indicating that obesity and overweight are risk factors, as shown in prior research.(16)

The most crucial method for identifying PPCM and determining the severity of heart failure is echocardiography.(4) Our study's mean ejection fraction noted is similar to that of Memon et al.'s investigation.(17) The majority of patients in the Sharieff et al. investigation had an ejection fraction of less than 30%.(15) In PPCM, there is not enough of data that can guide the timings and delivery method. A 2010 working group statement from the European Society of Cardiology states that if the circumstances of the mother and the woman are stable, then an early delivery is not necessary. According to our research, more caesarean sections were carried out. The majority of the individuals participating in our research had significant pulmonary edema and heart failure at the time of their initial hospital visit and were not scheduled. This is one of the factors contributing to the rise in C-sections. Higher rates of spontaneous vaginal delivery were seen in other studies.(3) According to a Philippine General Hospital research, heart failure accounts for 44% of caesarean sections performed.(19) In earlier times, reports of these individuals' poor prognoses were common, but as critical care has advanced, the survival rate has increased. The majority of the research indicated that maternal mortality ranged from 18% to 56 %.( 20) the primary cause of the 16 maternal deaths in our research was heart failure. All of the individuals we treated required intensive care unit treatment, overseen by a cardiologist and anesthesiologist.

The fetus suffers by cardiomyopathy as well. The onset with PPCM in the woman who is pregnant might indicate a high risk pregnancy for the child. (15) Premature or low birth weights of newborns were more common, according to a research by Bakhta et al. (9) In terms of the neonatal outcome, there were twelve intrauterine deaths in this investigation. Prematurity and worsening maternal conditions were the primary causes of perinatal mortality. Our study's findings is very similar to Hassan et al. (3) Future pregnancies should be adequately cancelled for the woman with PPCM and the family. The increased risk of maternal death and the potential for cardiomyopathy to return should be communicated to the family.

## Conclusion

Peripartum cardiomyopathy is a sporadic but severe disorder of unidentified origin that affects women of childbearing age. Risk factors evaluated were advanced age, Pre-eclampsia and chronic hypertension. 24% maternal and 18.18 % fetus death explored in the current study.

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