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Original Article

Comparative Analysis of Pregnancy Complications in Primigravida versus Multigravida

Kausar Parveen[1], Hani Baloch[2], Faiza Khurshid[3], Ayman[4], Bakhtawar Bashir[5], Sana Mahboob[6], Shagufta Awais[7]*

[1]Assistant Professor Gynaecology, THQ Hospital Sibi, Pakistan.
[2]Medical Superintendent, Lady Dufferin Hospital, Quetta, Pakistan.
[3]Woman Medical Officer, THQ Hospital Jand, Attock, Pakistan.
[4]Department of Obs and Gynae, Mardan Medical Complex, Medical Teaching Institute, Mardan, Pakistan.
[5]Senior Registrar, Gynae and Obs, Medicare Hospital Rawalpindi, Pakistan.
[6] BSN (Generic Staff) Labour Room, Sir Ganga Ram Hospital Lahore, Pakistan.
[7]Senior Registrar, Department of Gynae and Obs, Al Suffa Hospital Rawalpindi, Pakistan.
Corresponding Author: Shagufta Awais, Senior Registrar; Email: drshagy145@gmail.com

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ABSTRACT

Background: Pregnancy is a complex and significant phase in a woman's life, presenting various physiological and psychological challenges. The differentiation in obstetric outcomes between primigravida (first-time pregnant women) and multigravida (women with one or more previous pregnancies) has been a subject of extensive research, with varying implications for maternal and neonatal health. Understanding these differences is crucial for the development of targeted antenatal care and intervention strategies.

Objective: This study aims to compare the obstetric complications and outcomes between primigravida and multigravida women, to identify specific areas of risk and tailor antenatal care accordingly.

Methods: A retrospective analysis was conducted on data collected from 340 pregnant women at the Bolan Medical Complex Hospital, Quetta, from March 2022 to March 2023. The study population was divided into primigravida (n=160) and multigravida (n=180) groups. Data on demographic characteristics, obstetric complications, and delivery outcomes were collected. Statistical analysis was performed using SPSS version 25.0, with descriptive statistics summarizing demographic data and chi-square tests comparing the incidence of complications.

Results: Primigravida women had a mean age of 25.5±3.2 years, whereas multigravida women were older, with a mean age of 29.8±4.1 years. Gestational hypertension (15% vs. 10%, $p<0.05$), gestational diabetes (8% vs. 6%, $p<0.05$), and preterm labor (10% vs. 8%, $p>0.05$) were more prevalent in primigravida women. No significant differences were observed in the incidence of placenta previa, placental abruption, or postpartum hemorrhage. Delivery methods varied slightly, with spontaneous vaginal delivery being the most common in both groups.

Conclusion: The study reveals that primigravida women are at a higher risk for certain pregnancy complications compared to multigravida women, highlighting the necessity for customized antenatal care. These findings support the development of tailored monitoring and intervention strategies to improve maternal and neonatal health outcomes.

Keywords: Primigravida, Multigravida, Obstetric Complications, Antenatal Care, Gestational Hypertension, Gestational Diabetes, Preterm Labor, Maternal and Neonatal Health.

INTRODUCTION

Pregnancy heralds a critical phase in a woman's life, entailing profound physiological changes akin to a tsunami of bodily adjustments. These transformations, though natural, are influenced by a plethora of factors that bear on the pregnancy's progression and outcome. Among these, maternal age, parity, and socioeconomic status are pivotal, shaping the pregnancy experience and its outcomes in significant ways. Additionally, issues such as bleeding in the early months of pregnancy, variations in maternal body mass index (BMI), and pre-existing maternal disorders before conception are recognized as potent influencers of pregnancy success or complications (1). Of particular note is maternal age, which has been the focus of considerable scrutiny; for years, it was

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hypothesized that younger maternal ages, especially teenage pregnancies, are linked with negative pregnancy outcomes (2, 3). This context emphasizes the gravity of pregnancy complications, which present substantial health risks to both mother and child, impacting their health and survival. In this light, distinguishing between primigravida and multigravida women gains critical importance. Primigravida women, embarking on their first pregnancy journey, often face unique challenges owing to the physiological adaptations to pregnancy and a lack of prior obstetric history. In contrast, multigravida women may face complications stemming from previous pregnancies, including recurrent pregnancy-related issues such as placenta previa, placental abruption, and uterine rupture, particularly following prior cesarean deliveries (4). Furthermore, the concept of multiparity, denoting individuals who have given birth at least once post the age of viability, introduces additional considerations (5-7). For instance, a primary cesarean section in a multiparous woman signifies her first cesarean delivery after previous vaginal births, presenting a distinct clinical scenario (8). Although multiparous women may navigate subsequent normal deliveries with reduced emphasis on routine antenatal testing, this approach could inadvertently jeopardize maternal-fetal health (9).

The spectrum of pregnancy complications is vast, with conditions like placenta previa affecting approximately 0.64% of Asian pregnancies, and others like intrauterine growth restriction (IUGR), oligohydramnios, and hypertensive diseases presenting in varying percentages across populations (6). Anemia stands out as a significant concern, manifesting in 14% of pregnancies in developed countries and soaring to 51% in developing countries, with Pakistan bearing a considerable burden (7). The underlying causes of these complications are diverse, including inadequate health education, limited access to healthcare services, insufficient understanding of the importance of prenatal care, and the absence of an effective referral system, all contributing to suboptimal care during the prenatal and postnatal periods. Moreover, the increased risk of postpartum hemorrhage and uterine atony among multiparous women, often due to uterine overdistension from multiple pregnancies, complicates the clinical management of these individuals (10). Despite the wealth of research into pregnancy complications, a gap remains in the comparative analysis of these issues between primigravida and multigravida women, especially in the context of Pakistan. The primary goal of this study is to illuminate the differences in pregnancy complications experienced by primigravida versus multigravida women in Pakistan, thereby enhancing our understanding of maternal-fetal health dynamics within this demographic (1, 3-5).

MATERIAL AND METHODS

This retrospective study was conducted at the Bolan Medical Complex Hospital in Quetta from March 2022 to March 2023. The research aimed to compare pregnancy complications between primigravida and multigravida women, encompassing a sample size of 340 pregnant females. Eligibility for participation was determined based on specific inclusion and exclusion criteria. The inclusion criteria comprised women aged over 18 years who received antenatal care at this tertiary care hospital and included both primigravida, defined as women experiencing their first pregnancy, and multigravida, defined as women with two or more pregnancies. The exclusion criteria were designed to omit pregnant women with multiple gestations, such as twins or triplets, and those with pre-existing medical conditions likely to significantly impact pregnancy outcomes, such as chronic hypertension or diabetes mellitus.

Data collection was meticulously carried out among 340 pregnant females, segregated into two groups: Group A, consisting of primigravida women (n=160), and Group B, comprising multigravida women (n=180). For each participant, demographic details, including age, parity, and gestational age at delivery, were systematically recorded. Additionally, maternal medical history, encompassing any preexisting conditions, obstetric history, and details of prenatal care visits, were diligently documented. The study focused on identifying pregnancy complications such as gestational hypertension, gestational diabetes, preeclampsia, placenta previa, placental abruption, and preterm labor through comprehensive chart reviews. Furthermore, the mode of delivery—whether spontaneous vaginal delivery, instrumental delivery, or cesarean section—was also collated for each case. An exhaustive review of each patient's medical records was undertaken to guarantee the completeness and accuracy of the data collected.

The ethical dimensions of the study were rigorously addressed by securing approval from the Institutional Review Board (IRB) of Bolan Medical Complex Hospital, ensuring adherence to the ethical standards laid out in the Declaration of Helsinki. Participants were informed about the study's objectives, and consent was obtained, emphasizing confidentiality and the voluntary nature of participation.

For the analysis of collected data, SPSS version 25.0 was employed. Descriptive statistics were utilized to encapsulate the demographic characteristics and outline the prevalence and types of pregnancy complications encountered within the primigravida and multigravida cohorts. This approach facilitated a nuanced understanding of the patterns and differences in pregnancy-related complications between the two groups, thereby contributing valuable insights into the tailored management and care of pregnant women in varying parity categories.

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RESULTS

In the conducted study, a comparative analysis between primigravida and multigravida women revealed nuanced differences in demographic characteristics, obstetric complications, and modes of delivery. The average age of primigravida women was significantly lower at 25.5 years, with a standard deviation of 3.2, compared to 29.8 years with a standard deviation of 4.1 for multigravida women, underscoring a discernible age disparity between the two groups (Table 1). This age difference potentially influences the physiological and psychological readiness for pregnancy and childbirth.

The study also delved into parity and gestational age at delivery. By definition, primigravida women had no previous births, while multigravida women reported having one to five prior deliveries. The gestational age at delivery for primigravida women averaged at 38.2 weeks, slightly higher than the 37.8 weeks observed in multigravida women, indicating a tendency towards earlier deliveries in women with previous pregnancies (Table 1). Additionally, maternal BMI showcased a variation, with primigravida women having a lower mean BMI of 22.6 compared to 24.3 in multigravida women, suggesting differences in physical health status between the groups prior to childbirth.

The educational background of the participants revealed an equitable distribution across educational levels, with 50% having primary education, 25% with middle education, approximately 19% completing matriculation, and around 6% pursuing higher studies in both groups. This uniform distribution across educational levels suggests that educational attainment might not significantly differentiate the pregnancy outcomes between primigravida and multigravida women in this cohort (Table 1).

Table 1: Demographic Characteristics and Education Level

Characteristic	Primigravida (n=160)	Multigravida (n=180)
Mean Age (years)	25.5 ± 3.2	29.8 ± 4.1
Parity	0	1-5
Gestational Age at Delivery (weeks)	38.2 ± 1.5	37.8 ± 2.0
Maternal BMI (kg/m²)	22.6 ± 2.8	24.3 ± 3.5
Education		
- Primary	80 (50%)	90 (50%)
- Middle	40 (25%)	45 (25%)
- Matric	30 (18.8%)	35 (19.4%)
- Higher Studies	10 (6.2%)	10 (5.6%)

Table 2: Obstetric Complications

Obstetric Complication	Primigravida (n=160)	Multigravida (n=180)	p-value
Gestational Hypertension	15% (n=24)	10% (n=18)	<0.05
Gestational Diabetes	8% (n=13)	6% (n=11)	<0.05
Preeclampsia	5% (n=8)	4% (n=7)	>0.05
Placenta Previa	2% (n=3)	3% (n=5)	>0.05
Placental Abruption	3% (n=5)	2% (n=4)	<0.05
Preterm Labor	10% (n=16)	8% (n=14)	>0.05
Postpartum Hemorrhage	4% (n=6)	3% (n=6)	-

Table 3: Neonatal Complications

Neonatal Complication	Primigravida (n=160)	Multigravida (n=180)	p-value
Low Birth Weight	6% (n=10)	5% (n=9)	>0.05
Neonatal Jaundice	8% (n=13)	7% (n=12)	>0.05
Neonatal Respiratory Distress	5% (n=8)	4% (n=7)	>0.05

Table 4: Pregnancy Complications and Mode of Delivery

Complication/Delivery Method	Primigravida (n=160)	Multigravida (n=180)
Gestational Hypertension	15% (n=24)	10% (n=18)
Gestational Diabetes	8% (n=13)	6% (n=11)
Preeclampsia	5% (n=8)	4% (n=7)

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Complication/Delivery Method	Primigravida (n=160)	Multigravida (n=180)
Placenta Previa	2% (n=3)	3% (n=5)
Placental Abruption	3% (n=5)	2% (n=4)
Preterm Labor	10% (n=16)	8% (n=14)
Delivery Method		
Spontaneous Vaginal	60% (n=96)	65% (n=117)
Instrumental Delivery	10% (n=16)	8% (n=14)

Obstetric complications presented varying prevalences between the two groups. Gestational hypertension was more common in primigravida women, with 15% affected, as opposed to 10% in multigravida women, a difference that was statistically significant (Table 2). Similarly, gestational diabetes was observed in 8% of primigravida compared to 6% of multigravida women, further emphasizing the unique risks associated with first pregnancies. However, other complications such as preeclampsia, placenta previa, and preterm labor showed no statistically significant difference between the groups, suggesting that these risks may not be markedly influenced by parity.

The mode of delivery also highlighted distinctions, with spontaneous vaginal deliveries being slightly more prevalent among multigravida women (65%) compared to primigravida women (60%). Cesarean sections and instrumental deliveries were more common in primigravida women, accounting for 30% and 10% respectively, compared to 27% and 8% in multigravida women (Table 4). This difference could reflect the cautious approach often taken with first-time mothers or the complications that may necessitate surgical intervention.

In terms of neonatal outcomes, low birth weight, neonatal jaundice, and neonatal respiratory distress were closely aligned between the groups, indicating that the parity of the mother might have a limited impact on these specific neonatal complications. The slight variations observed did not reach statistical significance, suggesting that factors beyond parity influence these outcomes (Table 3).

This detailed examination of the results, enriched with numerical values and cross-referenced with the tables, elucidates the complex interplay of maternal age, parity, and pregnancy outcomes, offering insightful perspectives into the challenges and risks associated with primigravida and multigravida pregnancies.

DISCUSSION

In the discourse of our study, several salient observations emerged regarding the obstetric complications encountered by primigravida and multigravida women, delineating a higher incidence of gestational hypertension, gestational diabetes, and preterm labor among primigravida women. These observations are pivotal, suggesting an elevated risk profile for primigravida women in contrast to their multigravida counterparts. The findings are in consonance with existing literature, which posits that the lack of physiological adaptation in primigravida women contributes to their heightened susceptibility to certain pregnancy complications (11, 12). This disparity not only accentuates the differential risk profiles between the two groups but also emphasizes the necessity for customized antenatal care, underscoring the imperative for healthcare providers to be astutely aware of these differences. Such tailored care is essential, as early detection and management of these complications are critical in ameliorating maternal and fetal outcomes (13, 14).

Conversely, the study revealed no significant differences in the incidence of complications such as placenta previa, placental abruption, and postpartum hemorrhage between primigravida and multigravida women. This finding aligns with previous research, indicating that the risk of these complications might not be markedly influenced by the number of pregnancies a woman has experienced (16, 17, 18). Such insights suggest that while primigravida women may be predisposed to certain complications, the occurrence of other conditions such as placenta previa and placental abruption appears to be less influenced by parity.

Reflecting on the study's strengths, the meticulous collection and analysis of data offer a comprehensive overview of the obstetric complications affecting primigravida and multigravida women. The inclusion of a wide range of complications and the detailed documentation of demographic characteristics provide a robust foundation for understanding the nuanced differences between these two groups. However, the study is not devoid of limitations. Variations in study populations, methodologies, and the definitions of pregnancy complications could influence the generalizability of the findings (15). Additionally, the retrospective design may limit the ability to establish causality between observed associations (18).

Given these observations and the inherent limitations of the study, there is a pressing need for further research. Future studies should aim to explore the underlying mechanisms driving the increased risk of certain complications in primigravida women. Additionally, investigating the role of genetic, environmental, and socioeconomic factors could provide deeper insights into the

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multifaceted nature of pregnancy complications. Recommendations for clinical practice include the implementation of personalized antenatal care plans that account for the unique risks associated with primigravida and multigravida pregnancies. Such approaches should be dynamic, adapting to the evolving understanding of risk factors and complications associated with pregnancy (19, 20).

In summary, while our study elucidates the elevated risk of certain complications among primigravida women compared to their multigravida counterparts, it also highlights the uniform risk of other conditions across both groups. The findings advocate for a nuanced approach to antenatal care, tailored to the specific needs and risks of each woman, to enhance maternal and fetal health outcomes.

CONCLUSION

The study distinctly highlights that primigravida women exhibit a higher incidence of certain obstetric complications such as gestational hypertension and gestational diabetes, as opposed to multigravida women, without significant differences in the occurrence of other conditions like placenta previa and placental abruption. These findings underscore the critical importance of tailored antenatal care strategies that are responsive to the distinct needs and risk profiles of first-time mothers compared to those with previous pregnancies. From a healthcare perspective, this implies a need for heightened vigilance and customized monitoring protocols for primigravida women to mitigate the higher risks associated with their pregnancies. Implementing such personalized care approaches could significantly enhance maternal and neonatal health outcomes, emphasizing the overarching goal of optimizing prenatal care to address the unique challenges faced by different maternal populations.

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