

Maternal Antepartum and Intrapartum Complications Among Grand Multiparous Women in a Tertiary Hospital

Sadia Kader¹, Quazi Nazmul Hoque^{2*}, Naznin Akter Zahan³, Trisha Sarker⁴, Nupur Paul⁵, Tasnim Enam⁶, Mahmuda Acter Eva⁷

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*Corresponding author



ABSTRACT

Background: Grand multiparity, defined as five or more previous viable pregnancies, is associated with an increased burden of antepartum and intrapartum complications, including anaemia, hypertensive disorders, malpresentation and obstructed or prolonged labour, which together contribute substantially to maternal morbidity in resource-limited settings. **Objective:** To determine the pattern and frequency of antepartum and intrapartum complications, together with the resulting mode of delivery and postpartum course, among grand multiparous women managed at a tertiary care hospital. **Methods & Materials:** This cross-sectional observational study was conducted in the Department of Obstetrics and Gynaecology, Kushtia Medical College Hospital, Kushtia, over six months from December 2019 to May 2020. Fifty grand multiparous women meeting predefined inclusion and exclusion criteria were enrolled by purposive sampling and assessed through a structured interview and hospital record review. Data were analyzed using SPSS version 22.0, with $p < 0.05$ considered statistically significant. **Results:** Anaemia was the commonest antepartum complication (90.0%), followed by pre-eclampsia and gestational diabetes mellitus (14.0% each), oligohydramnios (10.0%) and preterm labour (8.0%). Prolonged labour was the leading intrapartum complication (20.0%), followed by malpresentation (10.0%) and obstructed labour and cord prolapse (8.0% each); ruptured uterus occurred in 4.0% of women. Caesarean section was performed in 40.0% of deliveries and assisted vaginal delivery in 6.0%. Postpartum haemorrhage was the leading postpartum complication (8.0%) and maternal mortality occurred in 4.0% of

women. **Conclusion:** Grand multiparous women in this setting carried a substantial burden of antepartum and intrapartum complications, translating into an elevated caesarean section rate and measurable postpartum morbidity and mortality. These findings support intensified antepartum and intrapartum monitoring for this high-risk group.

Keywords: Grand multiparity, antepartum complications, intrapartum complications, maternal morbidity.

1. Assistant Surgeon, 250 Bedded General Hospital, Kushtia Sadar, Kushtia, Bangladesh (ORCID: 0009-0002-1400-9244)
2. Assistant Professor, Medicine, 250 Bedded General Hospital, Kushtia Sadar, Kushtia, Bangladesh (ORCID: 0009-0001-2664-8265)
3. Assistant Professor, Department of Obstetrics and Gynaecology, Shaheed Suhrawardy Medical College, Dhaka, Bangladesh (ORCID: 0009-0009-9608-8572)
4. Assistant Registrar, Department of Obstetrics and Gynaecology, General Hospital, Faridpur, Bangladesh (ORCID: 0009-0009-2174-7959)
5. Medical Officer, Civil Surgeon Office, Faridpur, Bangladesh (ORCID: 0009-0002-7540-7019)
6. Medical Officer, Rajshahi Medical College Hospital, Rajshahi, Bangladesh (ORCID: 0009-0001-5710-9854)
7. Registrar, LabAid Specialized Hospital, Dhaka, Bangladesh (ORCID: 0009-0000-9571-568X)

INTRODUCTION

Grand multiparity, generally defined as five or more previous viable pregnancies beyond fetal viability, continues to be regarded as a distinct high-risk obstetric category, particularly with respect to the antepartum and intrapartum complications that accompany repeated pregnancy and delivery^[1,2]. Since Solomon first described the dangerous multipara in 1934, a substantial body of literature has examined how repeated uterine distension, cumulative nutritional depletion and advancing maternal age combine to raise the likelihood of complications during the antenatal period and during labour itself^[1,3]. Anaemia, hypertensive disorders of pregnancy, gestational diabetes and antepartum haemorrhage are among the antepartum complications most consistently reported in grand multiparous cohorts, while prolonged labour, obstructed labour, malpresentation, cord prolapse and uterine rupture dominate the intrapartum complication profile^[4,5]. The pathophysiological basis for this elevated risk is reasonably well

characterized. Repeated pregnancies without adequate inter-pregnancy interval deplete maternal iron stores, predisposing to anaemia that may not be fully corrected before the next conception^[6]. Uterine musculature and supporting ligaments undergo progressive laxity with each successive pregnancy, increasing the likelihood of malpresentation and, during labour, contributing to poor uterine contractility and an elevated risk of postpartum haemorrhage from atony^[7,8]. Cephalopelvic disproportion may also become more likely with successive pregnancies as fetal size tends to increase with rising birth order, while pelvic anatomical changes over time can subtly reduce the effective pelvic diameter, together raising the risk of obstructed labour if unrecognised^[9,10]. Uterine rupture, though uncommon, remains one of the most serious intrapartum emergencies associated with grand multiparity and is frequently linked to poorly supervised oxytocin use in the context of undiagnosed disproportion^[11].

Regional studies have documented considerable variation in the frequency of these complications, likely reflecting differences in antenatal care coverage, facility readiness and population risk profile. Reported antepartum anaemia prevalence among grand multiparous women has ranged from as low as 22% to as high as 90% across different settings, while caesarean section rates attributable to intrapartum complications have varied from roughly 20% to almost 50%^[12,13]. Such variation makes locally generated data essential, since findings from one setting cannot reliably be extrapolated to guide clinical practice in another, particularly in a resource-limited tertiary hospital where staffing, blood bank capacity and access to emergency obstetric care differ substantially from the well-resourced settings in which much of the international literature originates^[14,15]. In Bangladesh, postpartum haemorrhage remains a leading cause of maternal death and national survey data have specifically implicated high parity as a contributing factor in a substantial proportion of

haemorrhage-related maternal deaths [16]. Despite this, detailed, hospital-based documentation of the antepartum and intrapartum complication profile specific to grand multiparous women remains limited in the Bangladeshi literature, constraining the ability of clinicians and administrators to anticipate resource needs, such as blood products, operating theatre capacity and neonatal intensive care, for this group. This study was therefore undertaken to determine the pattern and frequency of antepartum and intrapartum complications among grand multiparous women admitted to a tertiary care hospital in Bangladesh and to describe the resulting mode of delivery and postpartum course, with the aim of generating locally relevant evidence to guide clinical preparedness and resource allocation for this high-risk obstetric population.

METHODS & MATERIALS

This cross-sectional observational study was conducted in the Department of

Obstetrics and Gynaecology, Kushtia Medical College Hospital, Kushtia, Bangladesh, over a six-month period from 1 December 2019 to 30 May 2020, among women admitted to the labour ward. Fifty grand multiparous women, defined as those with a history of five or more previous viable births presenting at a gestational age beyond 28 weeks, were enrolled by purposive sampling after providing informed consent; women presenting before 28 weeks of gestation, those with previously diagnosed chronic renal or cardiac disease and those unwilling to participate were excluded. Data on antepartum complications, intrapartum course, mode of delivery and postpartum complications were collected through structured face-to-face interview using a pretested questionnaire, cross-checked against hospital case records, discharge summaries and documented investigation results, to ensure completeness and internal consistency. The study was conducted in accordance with the Declaration of

Helsinki; informed consent was obtained from all participants, confidentiality was maintained throughout and the study protocol was approved by the ethical review committee of Kushtia Medical College, Kushtia, prior to commencement. Data were checked, coded and analyzed using SPSS for Windows version 22.0; qualitative variables were expressed as frequencies and percentages, quantitative variables as mean, standard deviation and range and a p value of less than 0.05 was taken as the threshold for statistical significance.

RESULTS

Table I presents the baseline age and educational profile of the study participants. Almost half of the women, 46.0%, were aged between 36 and 40 years, with a mean age of 32.60 ± 4.82 years and more than half, 54.0%, had received no formal education.

Table I

Baseline characteristics of the study participants ($n = 50$).

Variable	Category	Number of patients	Percentage
Age group (years)	26-30	5	10.0%
	31-35	19	38.0%
	36-40	23	46.0%
	41-45	3	6.0%
	Mean $\pm$ SD	32.60 ± 4.82 years	
Educational status	No formal education	27	54.0%
	Primary	18	36.0%
	Secondary and above	5	10.0%

Table II shows that anaemia was by far the most common antepartum complication, present in 90.0% of women, followed by pre-eclampsia and gestational diabetes

mellitus, each occurring in 14.0% of cases. Oligohydramnios and preterm labour affected 10.0% and 8.0% of women respectively, while eclampsia and

premature rupture of membrane each occurred in 4.0% of cases.

Table II

Antepartum complications among grand multiparous women ($n = 50$).

Antepartum complication	Frequency (n)	Percentage (%)
Anaemia	45	90.0
Pre-eclampsia	7	14.0
Gestational diabetes mellitus	7	14.0
Oligohydramnios	5	10.0
Preterm labour	4	8.0
Polyhydramnios	4	8.0
Antepartum haemorrhage	3	6.0
Eclampsia	2	4.0
Premature rupture of membrane	2	4.0

Table III shows that prolonged labour was the leading intrapartum complication, occurring in 20.0% of women, followed by

malpresentation in 10.0%. Obstructed labour and cord prolapse each occurred in 8.0% of cases, retained placenta in 6.0%,

ruptured uterus in 4.0% and abruptio placentae in 2.0%.

Table III
Intrapartum complications among grand multiparous women (n = 50).

Intrapartum complication	Number of patients (n)	Percentage (%)
Prolonged labour	10	20.0
Malpresentation	5	10.0
Obstructed labour	4	8.0
Cord prolapse	4	8.0
Retained placenta	3	6.0
Ruptured uterus	2	4.0
Abruptio placentae	1	2.0

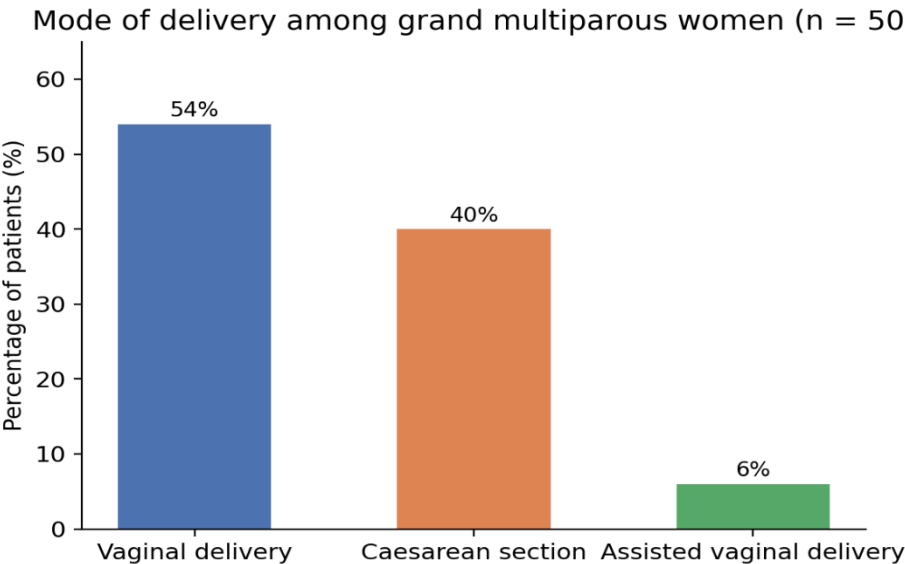


Figure 1 Mode of delivery among grand multiparous women (n = 50)

Figure 1 shows the distribution of mode of delivery. Slightly more than half of the women, 54.0%, delivered vaginally, while 40.0% underwent caesarean section and 6.0% had an assisted vaginal delivery.

Table IV
Postpartum maternal complications among grand multiparous women (n = 50).

Postpartum complication	Frequency (n)	Percentage (%)
Postpartum haemorrhage	4	8.0
Wound infection	3	6.0
Postpartum eclampsia	2	4.0
Maternal mortality	2	4.0
Retention of urine	1	2.0
Psychosis	1	2.0

Table IV shows that postpartum haemorrhage was the commonest postpartum complication, occurring in 8.0% of women, followed by wound infection in 6.0% and postpartum eclampsia in 4.0%. Maternal mortality occurred in two women, 4.0% of the cohort, while retention of urine and psychosis each occurred in a single case, 2.0%.

DISCUSSION

Antepartum and intrapartum complications remain central to the elevated risk historically attributed to grand multiparity and the pattern observed in this cohort is broadly consistent with that described in earlier work linking high parity to a distinct complication profile [4,5]. Anaemia was overwhelmingly the most frequent antepartum complication in this study, affecting 90.0% of women, a figure closely matching the 90.0% reported by Khatun and considerably higher than the 22.0%

reported by Irvine et al. in a UK-based series, a contrast that most plausibly reflects differences in baseline nutritional status, dietary iron intake and access to antenatal iron supplementation between these settings [12,13]. Grand multiparity and short inter-pregnancy interval are well documented risk factors for anaemia, since successive pregnancies do not allow sufficient time for maternal iron stores to be replenished and it is generally accepted that an interval of two to three years between births is required for full

physiological recovery from a previous delivery [6]. Hypertensive disorders of pregnancy were the second most common antepartum complication in this cohort, affecting 18.0% of women overall, pre-eclampsia 14.0% and eclampsia 4.0%, a figure slightly higher than the 15.4% reported by Munim et al. but comparable to the 19.0% reported by Shahid and Mustaq [17,18]. Gestational diabetes mellitus was recorded in 14.0% of women, lower than the 25.2% reported by Al-Shaikh et al., though the

direct relationship between maternal glycaemic control and the incidence of fetal and maternal complications documented elsewhere underscores the clinical importance of this finding regardless of the exact prevalence observed^[19]. Antepartum haemorrhage, recorded in 6.0% of women in this study, has previously been shown to be significantly associated with parity and the somewhat lower socioeconomic status, nutritional status and antenatal care coverage typical of this population may plausibly contribute to a higher observed incidence of placental abnormalities compared with better-resourced settings^[6,8].

On the intrapartum side, prolonged labour was the leading complication, affecting 20.0% of women, considerably lower than the 22.6% reported by Khatun but still representing the single largest contributor to intrapartum morbidity in this cohort^[13]. Obstructed labour, present in 8.0% of cases, is most often attributable in grand multiparous women to secondary contracted pelvis compounded by unrecognized malpresentation and reduced tone of the abdominal musculature together with a pendulous abdomen and increasing fetal size with rising birth order are frequently implicated as causative factors for malpresentation in this population^[7,9]. Each successive pregnancy tends to be associated with a modest increase in fetal size, which may in turn increase the likelihood of cephalopelvic disproportion, while subtle changes in pelvic inclination over time can further reduce the effective pelvic diameter, reinforcing the importance of careful pelvic and fetal size assessment in grand multiparous women presenting in labour^[10,15].

Uterine rupture, though relatively uncommon, occurred in 4.0% of women in this study, a figure similar to the 2.0% reported in two separate comparative series and remains one of the most serious obstetric emergencies associated with high parity, typically requiring emergency laparotomy^[10,18]. The principal cause of uterine rupture in grand multiparous women is generally considered to be poorly supervised administration of oxytocin in the context of undiagnosed fetopelvic disproportion, underscoring the importance of careful labour monitoring and judicious use of oxytocic agents in this population^[11]. Retained placenta requiring manual removal occurred in 6.0% of cases in this study, a somewhat higher figure than the 2.6% reported by Humphrey and together with the observed caesarean section

rate of 40.0%, driven largely by the combined burden of prolonged labour, obstructed labour, malpresentation and cord prolapse, illustrates how antepartum and intrapartum complications in grand multiparous women translate directly into operative delivery and downstream postpartum risk^[11,13].

Postpartum haemorrhage, recorded in 8.0% of women in this cohort, remains the most important postpartum complication associated with grand multiparity, generally attributed to poor uterine contractility from atonicity following prolonged labour or retained placental tissue and is recognized nationally as a leading cause of maternal death in Bangladesh, with a substantial proportion of haemorrhage-related deaths occurring specifically among women of parity greater than five^[8,16]. Two maternal deaths occurred in this series, both associated with hemorrhagic shock, one following uterine rupture and one following retained placenta, findings that reinforce the continued clinical importance of active management of the third stage of labour, adequate blood bank preparedness and prompt recourse to laparotomy when indicated in the management of grand multiparous women at this level of care^[14,16].

CONCLUSION

Grand multiparous women in this tertiary care setting experienced a substantial burden of antepartum complications, principally anaemia and intrapartum complications, principally prolonged labour, malpresentation and obstructed labour, translating into a raised caesarean section rate and measurable postpartum morbidity and mortality. These findings support systematic antenatal anaemia screening and correction, vigilant intrapartum monitoring and preparedness for operative delivery and postpartum haemorrhage as core elements of care for grand multiparous women in similar resource-limited settings.

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