Original Article

COMPARISON OF INTRAPARTUM AND NEONATAL OUTCOME AMONG GRAND MULTIPARA AND MULTIPARA

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ABSTRACT

Objective: To compare the frequency of intrapartum and neonatal complications among grand multipara with age matched multipara.

Study Design: Case-Control Study.

Place and duration of Study: Department of Obstetrics and Gynaecology, Military Hospital, Rawalpindi, from June 2008 to December 2008.

Patients and methods: Sixty five grand multipara (Para>5) and 65 multipara (Para 2-4) aged between 20 to 40 years, with singleton pregnancy of up to 40 weeks and presenting in spontaneous labour were selected. Grand multipara (group A) were analysed during labour for Intrapartum complications and neonatal complications. These were then compared with multipara (group B).

Results: The mean age of women in group A was 36.40 ± 3.320 years and in group B was 32.60 ± 4.650 years. The mode of delivery in both groups was not significantly different (*p*-value >0.05). The rate of postpartum haemorrhage was however significantly higher in grand multipara (13.83% vs. 3.07%, *p*-value <0.05) as compared with multipara. Malpresentation was more commonly seen among grand multipara in which 10 (15.38%) women presented with malpresentation as compared with multipara group in which 3 (4.61%) had malpresentation (*p*-value <0.05). Macrosomia (wt. of baby≥ 4 kg) was significantly (p-value <0.05) more commonly seen in grand multipara as compared with multipara group i.e. 10 vs. 4 babies.

Conclusion: Postpartum haemorrhage, malpresentation and macrosomia are seen significantly and specifically more commonly in grand multiparas. Grand multiparity should be considered as high risk pregnancy and should be treated with extra care.

Keywords: Grand Multipara, Intrapartum complications, Multipara, Neonatal complications.

INTRODUCTION

Grand multiparity is defined as parity equal to or greater than five previous life births[1]. The term "Grand Multipara" was introduced in 1934 by Solomon, who called the grand multipara the "Dangerous Multipara"[1]. Since then grand multipara has been recognized as high risk case. In 1997–99 in UK the maternal mortality rate was 35% among women of parity 4 or more[2].

Currently in developed countries, grand multiparity is becoming rare (3-4% of all births)[3]. However, the religious and social dynamics of society in our country have led to continuing high incidence of grand multiparity. The average number of children in any family is 7. This tendency towards bigger families is not only restricted to Pakistani nation but it also happens in some other communities like Saudi, Qatari and Palastenian[4].

The grand multipara is often considered a clinical entity as certain complications during pregnancy; delivery and puerperium are thought to occur with increased risk in these women[1,5,6]. They are at particular risk of intrapartum and neonatal complications[1] such as abruptio placentae[7], malpresentation[1,8], abnormalities of third stage of labour[1,9], instrumental delivery, obstetric hemorrhage[1,6], preterm birth[5], shoulder dystocia[1], macrosomia[1,8] and fetal distress[6, 10].

Many studies have explored the relationship between grand multiparity and obstetric complications, but the results remain uncertain[5,9,10]. Some studies have reported increased risk[3,10] whereas other have reported only minor risks or even lower frequencies of certain complications among grand

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multipara[1,9,10]. In Pakistan the incidence of grand multiparity along with its complications remains high[6].

The main aim of our study was to determine first hand whether grand multipara were really at high risk for intrapartum and neonatal complications or not and also to provide information that can be used by clinicians to treat grand multipara with adequate care for selective complications while avoiding unnecessary procedures and cost.

PATIENTS AND METHODS

This case-control study was conducted in patients admitted to labour ward of the Department of Obstetrics and Gynaecology, Military Hospital (MH) Rawalpindi from 6th June 2008 to 6th December 2008. Sixty five grand multipara and 65 multipara women in spontaneous active labour with singleton pregnancy were selected by non - probability purposive sampling. Age of patients included was between 15 to 45 years (WHO criteria for CBA). Patients with history of gestational diabetes mellitus, pregnancy induced hypertension, parity > 10, previous history of caesarean delivery, postdate pregnancy and those who required induction of labour were excluded from the study.

Demographic data was collected regarding age and educational status of the patient. Confounding variables were controlled by taking information about socioeconomic status, number of antenatal visits and by having a strict inclusion/ exclusion criteria. Informed written consent was taken from the patient.

A detailed history was taken from each patient and relevant clinical examination was done. Initial investigations included haemoglobin estimation, blood group, urine analysis, plasma glucose levels and recording of fetal heart rate pattern on CTG.

Grand multipara (parity > 5) and multipara (parity of 2-4) were analysed during active labour for intrapartum complications inclusive of postpartum haemorrhage (PPH), placental abruption, malpresentation, cord prolapse, macrosomia, caesarean delivery, instrumental delivery and for neonatal complications inclusive of preterm birth (delivery at < 37 weeks of gestation), neonatal outcome (one minute APGAR score < 3 or five minute APGAR score < 5) and new born transfer to neonatal intensive care unit. Clinical evaluation of patients was verified by a senior colleague. Patient was observed for up to 24 hours after delivery.

Neonatal complication was defined as complication in a newly born infant, usually the first four weeks of life. Intrapartum complication was defined as complication occurring during labour. Multipara were defined as any woman who has given birth two or more times and grand multipara as woman who has given birth five or more times.

All the data was entered in SPSS version 12 for analysis. Frequencies (as percentages) were calculated for socioeconomic status, complications during labour and neonatal outcome. A chi square test was used to compare mode of delivery, degree of postpartum haemorrhage and APGAR score of baby between two groups. A t-test was used to compare the gestational age, duration of labour and weight of baby. A *p*-value of < 0.05 was considered statistically significant.

RESULTS

This study included two groups of patients i.e. 65 in multipara group and 65 in grand multipara group. The age of patients in multipara group ranged from 20 to 44 years while in grand multipara group it ranged from 20 to 45 years (Table-1).

Majority of the participants of both groups were illiterate and belonged to lower income class. Since the study was conducted in Military Hospital most of the women were booked, 55 in multipara and 52 in grand multipara group were booked with the hospital. The mean gestational age of patients at time of delivery was almost the same in the two groups (p-value >0.05) (Table-1).

Among the intrapartum complications, the rate of postpartum haemorrhage was significantly higher in grand multipara (*p*-value<0.05) as compared with multipara group. Similarly the rate of malpresentation was also significantly higher in grand multipara in

which 10 (*p*-value<0.05) presented with malpresentation and in multipara it was in only 3 (Table-2). Insignificant difference was seen in the rate of other intrapartum complications like placental abruption (*p*-value>0.05), cord prolapse (*p*-value>0.05), shoulder dystocia (*p*-value>0.05) and retained placenta (*p*-value>0.05, Fig 1).

There was insignificant difference in duration of labour (*p*-value >0.05) among the two groups (Table-2). The comparison of mode of delivery in both groups also did not show any statistically significant difference (*p*-value >0.05, Table 2). However, the most common mode of delivery was normal vaginal delivery in 37 (56.92%) and 40 (61.53%) in multipara and grand multipara group respectively. The caesarean section rate was almost same but the other modes of delivery like vacuum and forceps were comparatively high in multipara group.

The comparison of birth weight showed that there was significant difference in birth weights of babies in the two groups. In grand multipara group the rate of macrosomic (wt. ≥ 4 kg) babies was significantly (*p*-value< 0.05) higher as compared to multipara group. There was no significant difference in the number of low birth weight (wt. ≤ 2.5 kg) babies and also in the rate of normal birth weight babies in the two groups. The bad APGAR score at 1 minute and at 5 minutes (*p*-value> 0.05) was not significantly different in both multipara and grand multipara groups. The rate of admission

Table-1: Patients Demographic Data.

Demographic Variables		**Group**	
		Multipara (n=65)	**Grand Multipara (n=65)**
Maternal age	Mean ± SD	32.6 ± 4.65	36.4 ± 3.32
Educational Status	Illiterate	39 (65%)	49 (75.39%)
	Under matric	17 (26.15%)	10 (15.38%)
	Matric and above	9 (13.84%)	6 (9.23%)
Socioeconomic status	Low income	47 (72.3%)	52 (80%)
	Low middle	18 (27.69%)	13 (20%)
Antenatal booking status	Booked	55 (84.61%)	52 (80%)
	Un booked	10 (15.38%)	14 (21.53%)
Gestational age	Mean ± SD	38.5 ± 2.45	37.7 ± 2.05

Table-2: Comparison of intrapartum and neonatal complications among grand multipara and multipara.

Complications		Group		*p*- value
		Multipara (n=65)	Grand Multipara(n=65)	
Postpartum haemorrhage		2 (3.07%)	9 (13.65%)	0.027
Malpresentation		3 (4.6%)	10 (15.38%)	0.041
Duration of Labour	<12 hrs.	47 (72.30%)	54 (83.07%)	0.309
	12 – 23 hrs.	10 (15.38%)	7 (10.76%)	
	≥24 hrs.	8 (12.30%)	4 (6.15%)	
Mode of delivery	Normal vaginal	37 (56.92%)	40 (61.53%)	0.172
	Vacuum	5 (7.69%)	3 (4.6%)	
	Forceps	4 (6.15%)	2 (3.07%)	
	Caesarean section	19 (29.30%)	20 (30.76%)	
Birth weight of babies	<2.5 kg (low)	5 (7.69%)	11 (16.92%)	0.044
	2.5- 3.9 kg(normal)	56 (86.15%)	44 (67.6%)	
	≥4 kg(macrosomic)	4 (6.15%)	10 (15.38%)	
APGAR score at 1 min	<6	4 (6.15%)	7 (10.76%)	0.344
	≥6	61(93.8%)	58 (89.23%)	
APGAR score at 5 min	<6	4 (6.15%)	6 (9.23%)	0.510
	≥6	61(93.8%)	59 (90.7%)	
NICU admission		3 (4.6%)	4 (6.15%)	0.698

of babies in NICU (*p*-value >0.05) was also almost same in both groups (Table-2).

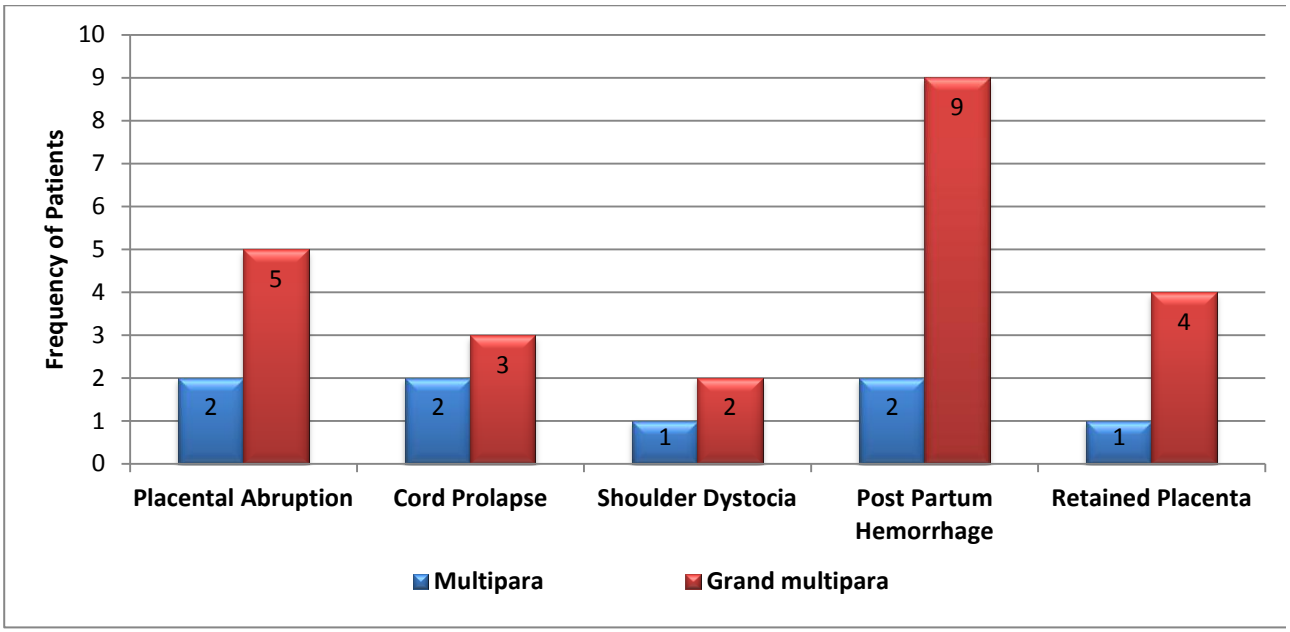

Figure: Distribution of intrapartum complications in both groups.

DISCUSSION

Grand multiparas are considered at high risk for certain intrapartum and neonatal complications for many decades. In developed countries grand multiparity is becoming rare (3-4% of all pregnancies)[11], however in developing countries grand multiparity is still common because of cultural and religious beliefs and lack of effective family planning program[12]. The incidence of grand multiparity is high in our country. Begum[6] reported an incidence of 26% and Yasir et al[13] 33.6% which is alarmingly high as compared to developed countries.

Grand multiparity in this study increased with increasing maternal age. This trend is also seen in other studies which reveal that grand multiparity is significantly associated with advanced maternal age[3,11,12]. Majority of the grand multiparas belonged to low socioeconomic class and were illiterate as seen in previous studies[6,13]. However as this study was conducted in Military Hospital, majority of the patients were booked with regular antenatal check-ups. Despite this, certain intrapartum complications like malpresentation, postpartum haemorrhage and neonatal complications like macrosomia were seen more commonly among grand multipara. Hoque *et al* also demonstrated that in modern health care setting, where majority of the patients are well booked, grand multiparity is associated with a significantly increased risk of complications and poor pregnancy outcome compared to lower parity[11]. In contrast, studies conducted in Jewish population revealed that grand multiparity is not a risk factor for mothers who have access to modern health care facilities and relatively stable socioeconomic status[13].

In this study, pregnant women with known medical disorders like Pregancy Including Hypertension (PIH), Gestational Diabetes Mellitus (GDM), and anaemia were excluded so that complications associated with grand multiparity alone in low risk women could be evaluated. The mean gestational age at time of delivery was almost same among two groups. This demonstrates that grand multipara are not at an increased risk for preterm delivery as also suggested by other studies[3,12]. Grand multipara had significantly higher rate of malpresentation as compared to multipara. Abro et al[14] and Jacquemyn et al[15] in their studies also concluded that grand multipara are high risk obstetric patients and that intrapartum and neonatal complications like malpresentation and macrosomia are seen more commonly in them.

Primary postpartum haemorrhage (PPH) has many potential causes but the commonest is uterine atony, responsible for 80% of cases. When uterus fails to contract, it leads to continuous blood loss from placental site. Grand multiparity is one of the important and common risk factors that promote uterine atony. Grand multiparas are therefore considered to be at higher risk for PPH.

In this study, PPH was seen significantly more frequently among grand multipara as compared to multipara. This correlation could be due to the fact that most of the grand multiparas belonged to low socioeconomic class. Bibi *et al*[16] also found that grand multiparity was a strong risk factor for primary PPH. Yasir *et al*[13] and Humphrey[5] also found higher rate of PPH among grand multiparas. On the other hand there are a few studies which suggest that the risk is no greater than for women of low parity[1,4,11].

The duration of labour among majority of grand multiparas was less than 12 hours and was not significantly different than that for multiparas. Frequency of prolonged labour and dystocia was also the same among the two groups. This is in conformity with data of Horace who did not find an increased risk of dystocia[3].

Though there was a higher rate of normal vaginal and lower rate of assisted/instrumental (vacuum, forceps) deliveries in grand multipara compared to multipara, the difference was statistically insignificant. This was likely as grand multipara women had well developed birth canal and better obstetric mechanisms at delivery[3]. The rate of caesarean section was also not significantly different among the two groups. This finding is contrary to that of Hiasat whose study suggested that rate of caesarean section increases with increasing maternal age and parity[17]. This could be due to the fact that his study included patients with certain antenatal complications like placenta previa, pre-eclampsia, anaemia etc. which were excluded from present study.

The rate of other intrapartum complications like abruptio placentae, cord prolapse, shoulder dystocia and retained placenta were not significantly different among the two groups as also confirmed by Roman *et al*[3] and Humphrey[5] in their studies. This was however in contrast to other studies which demonstrated an increased risk of these complications in grand multipara[6,7,13].

The neonates of the grand multiparas are at a higher risk of macrosomia, preterm birth, congenital malformation and neonatal intensive care unit stay. Macrosomia is responsible for intrapartum complications like birth trauma, shoulder dystocia , birth asphyxia, obstructed labour and increased rate of instrumental delivery[13]. Among the neonatal complications; macrosomia was significantly more commonly seen in grand multipara group as compared to multipara. Increased incidence of macrosomia in grand multipara has also been confirmed in other studies[6,12-15]. However, there was no difference in APGAR Score and NICU admission among the two groups as also shown in other studies[12].

Majority of the patients included in this study were booked and were provided with adequate antenatal, intrapartum and neonatal care. Despite this, there were certain intrapartum and neonatal complications like PPH, malpresentation and macrosomia which are specifically associated with grand multiparity. Therefore, grand multipara should be considered as high risk pregnancies and treated vigilantly to avoid these complications.

CONCLUSION

Postpartum haemorrhage, malpresentation and macrosomia are seen significantly and specifically more commonly in grand multiparas. Grand multiparity should be considered as high risk pregnancy and should be treated with extra care. As the incidence of grand multiparity in our country is high due to cultural, religious and social reasons, strategies are needed to guide the women to seek and adopt effective family planning methods in order to avoid grand multiparity.

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