MATERNAL AND FETAL OUTCOME IN GRAND MULTIPARA

Asma Qamar, Uzma Asif, Saima Qamar*

Islam Medical College Sialkot, *CMH Lahore Medical College, Lahore

ABSTRACT

Objective: To compare maternal & fetal complications occurring in grand multipara and multipara patients.

Study Design: Case control study.

Place and Duration of Study: Gynecology and Obstetric Unit-I of the Jinnah Post Graduate and Medical Centre Karachi, from February 2009 to January 2010.

Patients and Methods: One hundred (100) patients of grand multipara (GMP), (parity ≥ 5) and 100 patients of multipara (MP) (parity 2-4) were included in the study. Pregnant women with known medical conditions including essential hypertension, diabetes mellitus, epilepsy, primigravidas, women with previous caesarean section and twin pregnancies were excluded. Patients were admitted through antenatal clinic and emergency. A detailed history was taken and a physical examination was done with special emphasis on obstetrical examination. Investigations like blood CP, Urine D/R, blood grouping and sonogram were done. During labour, mother and neonates were managed according to ward protocols. Maternal and fetal outcomes were compared among GMPs and MPs.

Results: A high frequency of anaemia (81% vs 20%), pregnancy induced hypertension (45%, vs. 26%) and gestational diabetes (9%, vs1%) were seen in GMP as compared to MP group. Frequency of malpresentations (26% vs 15%), postpartum hemorrhage (15%, vs 10%) and intrauterine deaths (26%, vs 13%) were higher in GMP group along with a high caesarean delivery rate (GMP 21%, MP 14%). A higher maternal mortality (GMP 4%, MP 1%) and low APGAR score (GMP 12%, MP 4%) were observed among babies born to grand multipara group.

Conclusion: Grand multiparity is associated with adverse outcome for both mother and fetus. Effort should be directed to reduce high parity in the community through effective family planning initiatives. Specialized antenatal and obstetrical care facilities should be available.

Keywords: Antepartum hemorrhage, Grand multipara, Maternal mortality, Multiparty, Obstetric complications, Postpartum hemorrhage.

INTRODUCTION

Parity is defined as the number of births, both live born neonates and stillbirths, of at least 20 weeks of gestation. Multiparty increases the risk of pregnancy related complications. It was Solomon who coined the phrases "grand multipara" and "dangerous multipara" in his study in 1934.[1] He concluded that grand multiparty was dangerous as maternal mortality increased steadily from the 5th to the 10th pregnancy. On the basis of results from subsequent studies, the clinically accepted definition of grand multiparity became as "parity equal to or greater than five."[2] Since then grand multiparity has been considered a risk factor for both mother and fetus.

Associated with pregnancy in a grand multipara, there is an increased risk of abortion, malnutrition, anemia, multiple pregnancy, Rhesus isoimmunisation, antepartum haemorrhage and preterm labour.[3] Complications like diabetes, hypertension, malpresentations, cephalopelvic disproportions, uterine rupture, postpartum hemorrhage and puerperal complications are also more frequently encountered.[4,5,6] The fetus/neonate of the grand multipara is also at a higher risk of low birth weight, preterm birth and congenital malformations.[7,8] Studies done in a developed

Correspondence: Dr Uzma Asif, House # 24-B, Askari II, B Sialkot Cantt.
Email: druzma830@yahoo.com
Received: 20 Jun 2014; Accepted: 29 Oct 2014

country with satisfactory healthcare services, suggest that grand multi-parity should not be considered dangerous as such, instead risk assessment should be based on the past and present history and not on the basis of parity only[9].

The use of contraceptives and small family size has made grand multiparas a lost tribe in the Western World. However it is still commonly seen in Pakistan especially among women of low socio-economic group and in those getting married at an earlier age[10]. The overall incidence of grandmultiparity in the world is between 10-30% with higher rates in Muslim countries[3]. In the history of subcontinent, the well known example of grand multipara is Mumtaz Mahal, who died of post partum haemorrhage after the birth of her fourteenth child.[11]

Besides the obstetric complications, grand multiparity is also an indicator of poverty, deprivation and social inequalities that a woman faces in a developing world. It also reflects the poor literacy rate, unemployment and lack of family planning prevalent in a country.

In Pakistan, being a developing country along with limited resources for health care, illiteracy, poverty, religious and social taboos, and the problem of grand multiparity is highly prevalent. Many of the grand multipara remain unbooked till the time of delivery. Mostly these patients are complicated by Traditional Birth Attendants (TBA) and then referred to a specialist center as emergency cases.

This study was conducted with an aim to assess the various aspects of maternal and fetal complications associated with grand multiparity in our setting.

PATIENTS AND METHODS

It was a case control study carried out at department of Obstetrics and Gynaecology Unit-I, Jinnah Postgraduate Medical Centre, Karachi from February 2009 to January 2010. One hundred patients of grand multipara (parity equal to or more than 5) and 100 patients of multipara (parity 2-4) were included in this study through non-probability convenient sampling. Pregnant women with known medical conditions including essential hypertension, diabetes mellitus, epilepsy and other chronic and malignant diseases were excluded. Primigravida and women with previous caesarean section were also excluded.

Patients presenting to the out patient department (antenatal clinic) were included in the study after the inclusion criteria had been met and informed consent taken. A detailed history was taken and a physical examination was done with special emphasis on obstetrical examination including fundal height and fetal presentation. Weight and blood pressure were recoded. Investigations including blood CP, urine D/R, blood grouping and sonograms were done. On follow up visits a short history was taken and a physical examination with a weight and blood pressure were recorded. Those unbooked patients were also included in the studies, who were referred from other hospitals or who presented directly to the emergency department without any prior investigations.

Anaemia was taken as hemoglobin less than 11 g/dl. Pregnancy induced hypertension was defined as blood pressure of greater than 140/90 mmHg after 20 weeks of gestation on two occasions. Bleeding from genital tract after 24 weeks of gestation was taken as antepartum hemorrhage (APH). At 28th week of gestation, screening for gestational diabetes was done by giving glucose challenge test of 50 grams. A blood glucose level of more than 140 mg/dl (after 02 hours of glucose ingestion) warranted a glucose tolerance test.

On admission in labour room, a detailed history was taken and previous antenatal record, if available, was reviewed to detect any antenatal complications or issues. Ultrasonography was done in cases where there was a suspicion of malpresentation, which was defined as

presenting part of fetus other than cephalic in relation to maternal pelvis. During labor, patients were managed according to ward protocols and were followed up fortnightly in OPD after discharge from hospital till one month.

Table–1: Comparison of different variables in the two groups.

Variables	Grand Multigravida (n=100)	Multigravida (n=100)	*p*- value
Age (Years)	34.50 + 4.57	29.54 + 4.53	< 0.01
Haemoglobin %	8.16 + 2.00	9.51 + 2.19	< 0.01
Systolic Blood Pressure mmHg	127.9 + 23.58	122.3 + 22.74	0.089
Diastolic Blood Pressure mmHg	83.6 + 18.45	77.9 + 16.09	0.021

Data is presented as mean± SD

Table–2: Comparison of mode of delivery between the two groups.

Mode of Delivery	Grand Multigravida (n=100)	Multigravida (n = 100)	*p*- value
Vaginal	66%	86%	<0.001
Instrumental	13 %	0%	<0.001
Caesarean Section	21%	14%	0.19

Chi-Square test = 17.03 df = 1 *p*-value = 0.0001

Table–3: Comparison of maternal complications.

Complication	GMP (n=100)	MP (N=100)	*p*-Value	Odds Ratio (95% CI)
Anaemia	81%	60%	0.001*	2.84(1.49 to 5.39)
Pregnancy Induced Hypertension	45%	26%	0.005*	2.33(1.28 to 4.22)
Malpresentation	26%	15%	0.054*	1.98(0.98 to 4.04)
Ante partum Hemorrhage	37%	15%	0.0001*	3.33(1.68 to 6.59)
• Placenta Previa	08	04	0.23	2.08 (0.61 to 7.16)
• Abruption Placenta	26	10	0.003*	3.16 (1.43 to 6.98)
• Rupture Uterus	04	02	1.000	2.04 (0.36 to 11.41)
• Vasa Praevia	00	00	-	-
Postpartum Hemorrhage	15%	10%	0.28	1.59 (0.68 to 3.73)
• Uterine Atony	07	02	0.08	3.68 (0.74 to 18.21)
• Retained Placenta	04	04	1.00	1.00 (0.24 to 4.11)
• Local Laceration	01	02	0.56	0.49 (0.04 to 5.55)
• DIC	04	03	0.70	1.34 (0.29 to 6.18)
Gestational Diabetes Mellitus	9%	1%	0.009*	9.79 (1.22 to 78.8)
Pre-eclampsia / Eclampsia	8%	5%	0.39	1.65 (0.52 to 5.24)
Death	4%	1%	0.17	4.13 (0.45 to 37.6)

*shows significant *p*- value

partograms were strictly maintained. The mode of delivery, duration of labor and any complications encountered were recorded. After delivery, patients were monitored for the first 24 hours for postpartum haemorrhage which was taken as blood loss more than 500 ml. Patients

After birth, the neonates were thoroughly examined, APGAR recorded at one and five minutes' interval and birth weight noted. Birth weight of less than 2.5 kgs was taken as low birth weight and weight more than 4.2 kg was considered macrosomia. The neonates were

observed in nursery and neonatal intensive care unit for any complications. Mothers and neonates were regularly followed up until discharged, and were subsequently followed up as out patients. Maternal and neonatal deaths, if any were recorded in detail with its cause.

The data had been recorded in specially designed proforma duly approved by institutional review board. Data had been analyzed using SPSS 15 (statistical package for social sciences). Mean and standard deviation were computed for quantative variables including age, blood pressure and weight. Frequency and percentage were computed for qualitative variables including all maternal and fetal complications. Chi square test was used to compare categorical variables and "t" test was used for comparison of continuous or quantitative variables. A *p*-value of less than or equal to 0.05 was considered significant.

RESULTS

Among 200 pregnant women included in this study, 100 were selected with grand multiparty (GMP) and other 100 women were selected with multiparty (MP). The average age of women in the GMP was 34.50 ± 4.53 years and in MP it was 29.54 ± 4.53 years ($p < 0.001$). Similarly mean hemoglobin level was significantly higher in MP group than GMP group ($p < 0.01$), table-1.

Mode of delivery of the women is presented in table-2. Rate of caesarian section was significantly higher in GMP group than MP group (21% vs. 14%). Similarly rate of instrument delivery was significantly higher in grand multiparas. The rate of spontaneous vaginal delivery was lower (66% vs. 86%) in GMPs than MP group. Indication of caesarian section among patients in GMP and MP groups were mainly fetal distress, failure of progression of labour, placenta previa, transverse lie and breech presentation. There were no significant differences noted between the two groups as far as indications for caesarian section were concerned.

Comparing the maternal complications between GMP and MP group, it was seen that anemia was the commonest complication in GMP (81%) as compared to MP group (60%). Significant difference was observed ($p = 0.001$) and odds ratio indicated that anemia was three time more likely in the GMP than MP group (table-4). Similarly GMP group had pregnancy induced hypertension, malpresentation, gestational diabetes, antepartum hemorrhage and placental abruption significantly higher as compared to MP group (p value was less than 0.05 in all parameters, table-3). Postpartum hemorrhage occurred in 15% of GMP group and in 10% of the MP group, which was not significant ($p = 0.28$). Pre eclampsia / eclampsia occurred in 8% of the GMP group and in 5% of the MP group and 4% mortality occurred in GMP and only 1% morality occured in MP group ($p = 0.17$).

Comparison of fetal complications between GMP and MP group is presented in table-5. The GMP group had a three times higher risk for lower APGAR score at 1 and 5 minutes after delivery as compared to MP group ($p = 0.037$). The still birth (IUD) rate was significantly higher in GMP as compared to MP group ($p = 0.018$). Preterm delivery, post-term delivery, low birth weight, birth injury, congenital anomaly and neonatal deaths were not significantly different between GMP and MP groups. The mean weight of the babies was almost similar in both groups (3.06 vs 3.09, $p = 0.79$).

DISCUSSION

Grand multiparity is an important cause of maternal mortality and morbidity in developing countries. The most frequently reported complications of grandmultiparity are maternal hypertension, diabetes mellitus, anaemia, PPH, macrosomia and preterm delivery[12].

The mean age of the GMP group was significantly higher than that of MP group.

Similarly a higher prevalence of anaemia was observed among women in the GMP group. Other authors have also reported higher rate of anemia among grand multipara in their studies from Pakistan[13-15].

Regarding the mode of delivery, rate of caesarean section was significantly higher in GMP group than MP group. This was due to higher incidences of obstructed labour, transverse lie and placenta praevia. Similar results were found in studies conducted by other authors[6,9].

A statistically significant increase was found in prevalence of pregnancy induced hypertension and gestational diabetes. The higher prevalence of these complications may be explained by the increased age of these women. It would have been preferable if the study had been controlled for age, for in part, it may have explained the different occurrence rate of complications like hypertension. Placental abruption was almost three times more common in GMP group as compared to MP group and in the majority of these cases, hypertension was the causative factor.

Table–4: Comparison of foetal complications.

Complication	GMP n=100	MP n=100	*p*-value	Odd Ratio (95% CI)
Low Apgar Score				
At 1 min <6(Low Apgar) >6(High Apgar)	12% 88%	4% 96%	0.037*	3.27 (1.02 to 10.52)
At 5 min <7(Low Apgar) >7(HighApgar)	12% 88%	4% 96%	0.037*	3.27 (1.02 to 10.52)
Preterm Delivery (<37Weeks)	35%	24%	0.08	1.71 (0.92 to 3.16)
Post-term Delivery (>42Weeks)	2%	2%	1.00	1.00 (0.18 to 7.24)
Low birth Weight (< 2.5 kgs)	24%	24%	0.96*	1.01 (0.53 to 1.94)
Birth Injury	8%	5%	0.38	1.67 (0.53 to 5.29)
Congenital Anomaly	4%	7%	0.36	0.59 (0.15 to 1.98)
Still Birth (IUD)	26%	13%	0.018*	2.38 (1.14 to 4.97)
Neonatal Death	7%	6%	0.76	1.19 (0.38 to 3.68)

*shows significance of *p* -value

Lack of antenatal care and mismanagement by TBA during labour are responsible for increased caesarean section rate. Rate of instrumental delivery was also higher in GMP than MP group. Our finding is consistent with another study done by Seoud et al[16] in which the rate of spontaneous vaginal delivery was lower in GMP, compared to MP group. Similar results were obtained in the study conducted by Rayamajhi et al[7].

Postpartum hemorrhage (PPH) was higher in GMP group but it was not statistically significant. A study by Page did not report any direct association between GMP and postpartum hemorrhage[17]. Toohey et al in his study found no significant difference in the rate of postpartum hemorrhage in GMP group[18]. The same observation was made by Saadia et al in her study, where although PPH was significantly

higher in GMP, it was deduced that PPH may be related to the hospital policy regarding use of oxytocin[19,20]. Similar findings were reported in a study by Rizwan et al and another local study by Shahid and Mushtaq[21,22].

The maternal mortality rate was 4% in GMP as compared to 1% in MP group. All the cases who died were referred to JPMC from remote peripheral areas in serious condition. All the patients died due to PPH. Two patients among the GMP group had uterine rupture.

Regarding the fetal complications, it was observed that the GMP group had a three times higher risk for low APGAR score. Munims et al had the same result in her study[10]. Stillbirth rate was again statistically higher in GMP group, results being similar to a study conducted by Begum et al and Yasir et al[13,23]. In terms of neonatal complications, this study indicated no statistical difference in the two groups as regards the preterm delivery, post term delivery, low birth weight, birth injury, congenital anomalies and neonatal deaths. The average weight of babies was almost similar in both groups as well.

CONCLUSION

The grand multiparty is still a major obstetric hazard in our set up with higher incidence of complications. Lack of contraceptive measures, closely spaced pregnancies, poor diet, poverty and inadequate health care facilities all predispose to increased maternal complications. A multidisciplinary approach involving efforts from social circles, NGOs and most importantly trained birth attendants can bring about a miraculous change for those women at risk.

Conflict of Interest: This study has no conflict of interest to declare by any author.

REFERENCES

1. Solomons B. The dangerous multipara. Lancet 1934; 2:8.
2. Rizk DE, Khalfan M, Ezimokhai M. Obstetric outcome is grandmultipara in UAE. A case control study. Arch Gynecol Obstet 2001; 264(4): 194-8.
3. Bibinski A, Kerenyki T, Toroko Grazi V, Lapinski RH, Berkowitz RL. Perinatal outcome in grand and great grand multiparity; effects of parity on obstetrics risk factors. Am J Obstet Gynaecol 1999; 181:669-674.
4. Bayoumev F, Subiran-Buisset C, Baka NF, Legagneut H, Monnier-Barbarino P, Laxenaire MC. Iron therapy in iron deficiency anaemia in pregnancy: Intravenous versus oral route. Am J Obstet Gynaecol 2002; 186: 518-22.
5. Arroya Z, Yochai T, Silberskin M, Friger M, Hallak M, Katz M, et al. Oxytocin use in multi parous patients . Safety and complications. J Marteen Fetal Med 2001 ;10: 328-31.
6. Sablock U, Lindow SW, Arnott PE, mason EA. Pre-pregnancy counseling for women with medical disorders. J Obstet Gynecol 2002; 22(6): 637-8.
7. Rayamajhi JR, Thapa M, Pane S. The challenge of grandmultiparity in Obstetric patients Kathmandu Med J 2006; 4(1): 70-74
8. Abuheisa T, Jalled MF, Abukteish F. Perinatal outcome of pregnancies above age of 45. Acta J Obstet Gynecol 1999; 19 (5): 486-8.
9. Bugg GJ, Atwal GS, Naesh M. Grandmultiparae in a modern setting. Br J Obstet 2002 / 109(3) : 249-53
10. Munim S, Rahbar MH, Rizvi M, Mushtaque N. The effect if grandmultiparity on pregnancy related complications: The Aga Khan Experience. J Pak Med Assoc 2000; 50: 54-9.
11. Mumtaz Mahal. [Online].Avaialble at http: / / en.wikipedia.org / wiki / Mumtaz_Mahal
12. Loud E, Agudeelo A, Belizen S. Maternal morbidity and mortality associated with interpregnancy interval. Br Med J 2000; 88: 1255-9.
13. Begum S . Age and parity related problems affecting outcome of labour in grandmultipara. J Pak Med Assoc 2003; 42: 170-83.
14. Karim SA, Memon MA, Qadri N. Grandmultiparity: A continuing problem in developing countries. Asia Oceania J Obstet Gynecol 1989; 15: 155-60.
15. Asaf KH. Grandmultiparity: still an obstetric risk factor. Pak J Obstet Gynecol 1997; 10(1&2): 24- 8.
16. Seoud MN, Basser Z, Melhem K, Betar I, Usta A. Pregnancies over 40: pregnancy outcome and maternal morbidity in relation to parity. Int J Obstet Gynecol 2000; 30: 80-2.
17. Page L, and McCandish R. (eds). The New Midwifery. (2nd ed.). Edinburgh: Churchill Livingstone. 2006.
18. Toohay JS, Keegan KA, Morgan MA, Francis J, Task S, deVeciana M. The dangerous multipara fact or fiction? Am J Obstet Gynecol 1995; 172: 683-6.
19. Saadia Z, Farrukh R, Naheed N. Maternal outcome in grandmultiparas. Ann King Edward Med Uni 2002; 8(3): 207-210.
20. Talpur NN, Memon SR, Jamro B, Korejo R. Maternal and fetal morbidity with abruptio placentae Rawal Med J 2011; 36(4): 297-300.
21. Rizwan N, Parveen G, Abbasi RM. Frequency of grand multiparity and its fetomaternal outcome at Liaquat University Hospital, Hyderabad. Isra Med J 2009; 1(2): 49-53.
22. Shahid R, Mushtaq M. Complications of Grand Multiparity Pak Armed Forces Med J 2009; 59 (3): 310-314.
23. Yasir R, Perveen F, Ali L, Perveen S, Tayyab S. Grandmultiparity – still an obstetric risk for developing countries. Med Channel Apr - Jun 2010; 16(2): 264-7.