

Grand Multiparity: A Reappraisal of Obstetric Outcome

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Abstract

Objective: To determine the obstetric outcome in terms of maternal and fetal complications related to grand multiparity.

Methodology: This prospective cross-sectional study was conducted at the Obstetrics and Gynecology Department of Jinnah Hospital, Lahore, over a six-month period. The study included all unbooked referred cases of grand multiparous women, with their obstetric outcomes documented. Primiparous and multiparous women with parity < 5 were excluded from the study. Frequencies and percentages were calculated, and the chi-square test was applied. A p-value of < 0.05 was considered statistically significant.

Results: A total of 127 women were included in the study. Of these, 9 were fifth gravidas, and 118 had a parity > 5. The mean age was 34.33±4.11 years. Out of the subjects, 57 delivered prematurely, while 70 delivered at term. Vaginal delivery occurred in 54.3% of cases, while 33.9% required a cesarean section. Maternal complications were dominated by anemia (57.5%), followed by medical disorders (31.5%) and the need for massive blood transfusion (25.2%).

Seventy percent (70.87%) of the babies were delivered alive and healthy, while 14.17% of pregnancies resulted in miscarriages, 7.8% experienced intrauterine fetal deaths (IUD), and 7.09% of fetuses suffered from early neonatal deaths (ENND).

70.87% babies were delivered alive and healthy, 14.17% pregnancies ended up in miscarriages, 7.8% had intrauterine fetal deaths (IUD) and 7.09% fetuses had (ENND) early neonatal deaths.

Conclusion: Grand multiparity is associated with maternal and fetal complications but with provision of effective antenatal care, early referrals without delays, identification of risk factors and early intervention promotes better outcomes.

Keywords: Grand multiparity, Risk factors, maternal outcome, fetal outcome.

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Introduction

The term "Grand multiparity" was initially referred to as "dangerous multiparas" by Solomon in 1934.¹ Recent reports now define grand multiparity as parity ≥ 5.² The prevalence of grand multiparity is relatively low, around 3-4% of all births, in developed countries where easy access to contraceptives and awareness about family planning contribute to limited family sizes.³ However, low-income countries bear a substantial burden of grand multiparity.⁴ In Pakistan, the unmet need for contraception exceeds 30%, further contributing to higher parity rates. Various factors contribute to multiparity, including reduced inter-pregnancy intervals and social pressures favoring male offspring, resulting in complications associated with high parity such as

anemia, hypertension, diabetes, malpresentation, placental abruption, placenta previa, postpartum hemorrhage, and uterine rupture.^{5,6}

On a global scale, grand multiparity has been significantly linked to a higher risk of gestational diabetes, gestational hypertension, anemia, congenital anomalies, postpartum hemorrhage, and poor fetal outcomes.⁷ Furthermore, advanced maternal age adds another layer of risk in the context of grand multiparity, thus necessitating careful consideration of this confounding factor when interpreting outcomes related to multiparity.⁸

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In Pakistan, societal pressures related to early marriages and gender preferences contribute to the widespread acceptance of grand multiparity, particularly in rural areas marked by regional and cultural variations. The present study aims to ascertain the maternal and fetal outcomes associated with different parity levels and to determine whether a tangible relationship indeed exists, while also comparing our findings to local and international research. Interestingly, in teenage pregnancies within our setup, outcomes were relatively favorable compared to international studies.⁹

This study aims to explore whether grand multiparity is associated with adverse fetomaternal outcomes, as limited local data are available to conclusively label it as a risk factor for complicated pregnancies.

Methodology

A prospective cross sectional study was conducted at Jinnah hospital Lahore for a period of 6 months. A total of 127 grand multiparous un-booked and referred pregnant women were selected by non-probability consecutive sampling, who presented with any complaint in labor ward with obstetric or non-obstetric cause irrespective of her gestation. All previous record was reviewed, detailed history and examination done and were followed till delivery to evaluate fetal and maternal outcome till discharge. Emergency intervention done whenever and where required involving multidisciplinary approach. The data recorded was entered in excel sheet and statistical analysis was done by SPSS version 23. Frequency, percentages were calculated and chi square test was applied. P-value of < 0.05 was considered significant.

Results

Mean age of women was 34.33± years. Majority of subjects were below the age of 35 years (67.7%).55.1% patients were at term and 44.9% were preterm. (Table I)

Table I: Demographic and clinical profile of subjects (n = 127)

Variables	N	%
Age of subjects Mean= 34.33 ± 4.11 Min=25 --- Max=46	< 35 years	86 67.7%
	> 35 years	41 32.3%
Parity	G 5	9 7.1%
	G > 5	118 92.9%
Gestational Age	Preterm	57 44.9%
	Term	70 55.1%
Previous Scar	Yes	39 30.7%
	No	88 69.3%
Mode of Delivery	SVD	69 54.3%
	C Section	43 33.9%
	Laparotomy	1 0.8%
	D & C	14 11.0%

Table II: Maternal outcomes among subjects

Maternal Outcome	N	%
Anemia	73	57.5%
APH/PPH	14	11.0%
Sepsis	14	11.0%
Eclampsia	6	4.8%
Obstructed Labor	5	3.9%
Ruptures Uterus	4	3.1%
Mal presentation / position	2	1.6%
Molar Pregnancy	8	6.3%
Medical disorders (PIH, DM, HTN, Epilepsy, Cardiac)	40	31.5%
Massive blood transfusion	32	25.2%
AKI	1	0.8%
Bladder Injury	5	3.9%
Infected wound	4	3.1%
Obstetrical Hysterectomy	3	2.4%
Maternal Death	0	0.0%

Table III: Maternal complications and age of subjects cross tabulation.

Maternal complications n=127	Age of subjects				P value
	< 35 years		> 35 years		
	N	%	N	%	
Anemia	51	69.9%	22	30.1%	.547
APH/PPH	8	57.1%	6	42.9%	.370
Sepsis	9	64.3%	5	35.7%	.771
Eclampsia	1	16.7%	5	83.3%	.007*
Obstructed Labor	3	60.0%	2	40.0%	.701
Ruptures Uterus	2	50.0%	2	50.0%	.441
Mal presentation / position	2	100.0%	0	0.0%	.325
Molar Pregnancy	2	25.0%	6	75.0%	.008*
Massive blood transfusion	19	59.4%	13	40.6%	.243
Medical conditions (PIH, DM, HTN, Epilepsy, Cardiac)	31	77.5%	9	22.5%	.110
AKI	0	0.0%	1	100.0%	.146
Bladder Injury	2	40.0%	3	60.0%	.16
Infected wound	4	100.0%	0	0.0%	.161
Obstetrical Hysterectomy	1	33.3%	2	66.7%	.197
Maternal Death	0	0.0%	0	0.0%

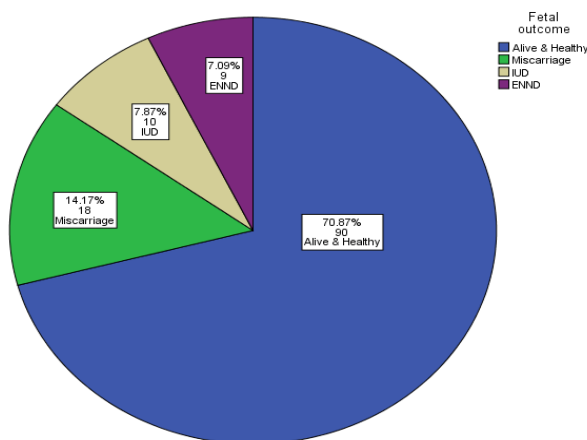
Table IV: Maternal complications*Parity Cross tabulation.

Maternal complications	Parity				P value
	G 5		G > 5		
	N	%	N	%	
Anemia	9	100.0%	73	57.4%	.007*
APH/PPH	4	44.4%	14	11%	.001*
Sepsis	3	33.3%	14	11%	.027*
Eclampsia	3	33.3%	6	4.7%	.000*
Obstructed Labor	0	0.0%	5	4.2%	.529
Ruptures Uterus	0	0.0%	4	3.4%	.575
Mal-presentation / position	0	0.0%	2	1.7%	.694
Molar Pregnancy	0	0.0%	8	6.8%	.420
Medical conditions (PIH, DM, HTN, Epilepsy, Cardiac)	0	0.0%	40	33.8%	.006*
Massive blood transfusion	2	22.2%	32	25.1%	.007*
AKI	0	0.0%	1	.84%	----
Bladder Injury	1	11.1%	5	3.9%	.251
Infected wound	0	0.0%	4	3.4%	.575
Obstetrical Hysterectomy	0	0.0%	3	2.5%	.628
Maternal Death	0	0.0%	0	0.0%	----

The most frequent maternal complication noted was anemia (n=73) followed by medical disorders in pregnancy including PIH, Diabetes and Chronic hypertension n=40 (31.5%) P-value 0.006. Massive blood transfusion of >6 units of blood was required in 25.2% patients. (Table II, IV)

Obstetric hemorrhage and Sepsis was seen in 11% cases each. No maternal death was noted in our study. Molar pregnancy was seen in total 8 cases out of which 6 (75%) were >35year old with a P-value of .008 which is statistically significant. (Table III)

Majority of fetuses (70.8%) were delivered alive and healthy. 14% pregnancies ended up in miscarriages (Figure 1). 57 fetuses delivered premature P-value .000 which is statistically significant. (Table IV)

**Figure 1. Fetal outcome**

Anemia, obstetrical hemorrhage, sepsis and eclampsia were found in grand multiparas with P-value of 0.007, 0.001. (Table IV)

Anemia, obstetrical hemorrhage, sepsis, eclampsia, medical disorders and massive blood transfusion were the main complications seen with grandmultiparity with P-value of .007, .001, .027, .000, .006 and .0007 respectively. (Table IV) Long term complications i.e acute kidney injury was seen in 1 patient and no single maternal death was noted in our study.

Discussion

There is a lack of consensus in the existing medical research regarding the obstetric outcomes in grand multiparous women, as these outcomes tend to vary across different regions. While it is commonly believed that grand multiparity is associated with poorer fetal and maternal outcomes, it's important to recognize that several contributing risk factors, such as maternal age, the presence of anemia, medical conditions, and complications during antenatal pregnancy, also play a role in influencing adverse results. Consequently, while an overly negative obstetric outcome is often attributed to grand multiparity, our study aims to provide valuable insights into its correlation by taking into account these various contributing factors.

Advancing maternal age is associated with co morbidities i.e. hypertension and diabetes with associated poor outcome as in study by Bai J and Munim S^{10, 11} which is contrary to our study showing most of the patients (77%) were of less than 35 years, this may be because of the reason that our most of the patients are un booked from rural areas with social pressures of early completion of family and gender preferences i.e. male child.

Most common complications observed were anemia, hypertensive disorders which is very much consistent

with study done by Yasmeen L at Holy family Rawalpindi.^{12, 13}

Majority of our patients' delivered vaginally 54% and 33% required caesarean delivery which is contrary to Eze JN study done at Nigeria¹³ showing 74.3% delivered vaginally, the reason could be our cases were previous scarred pregnancy requiring repeat caesarean section, so it is recommended to exclude previous scar pregnancy to see the real outcome related to mode of delivery. Like Nigerian and Indian study, we also noted no maternal death.^{13, 14}

In our study 14.17% of pregnancies ended up in miscarriages which is not matching the study by AL sheikh Gk at Egypt showing 27% miscarriages.¹⁵

Anemia emerged as a significant risk factor in our study (Table II), similar to findings reported by Yasmeen.¹² This association could be attributed to the fact that the subjects were unbooked referrals, lacking proper access to iron supplements and adequate birth spacing, which subsequently led to a cascade of complications, including obstetric hemorrhage necessitating massive transfusion. Many of these complications can be traced back to a single underlying risk factor; for instance, obstetric hemorrhage might escalate to the point of requiring peripartum hysterectomy, and can even result in bladder injuries, sepsis, or acute kidney injury. Consequently, it becomes imperative to promptly identify all high-risk cases and undertake preoperative interventions to mitigate the occurrence of such complications and mitigate long-term morbidity.

Prematurity is a great challenge in our country and it is still a major cause of perinatal morbidity & mortality. It was observed that 44.9% fetuses delivered preterm. Although preterm labor has a known association with increasing parity, but as our setup is tertiary care with referrals from a large area of Punjab and most of these cases were referred for in utero transfer with planned emergency preterm delivery due to some obstetrical complication.

Need of blood transfusion was in 25% (n=32), which is a high figure than other studies because our patients were un-booked without antenatal correction of anemia and presented in emergency with other major risk factors requiring massive transfusion before delivery. Placenta accrete syndrome was the major cause found in our study requiring multiple intraoperative transfusions due to PPH. (Table II)

In a study conducted in Saudi Arabia by Alsammani A and Roshdy A, no instances of maternal death were recorded within our own study sample.¹⁵ It is important to note that our patients presented with multiple additional risk factors in addition to grand multiparity. Our department operates under consultant-led care, ensuring access to skilled professionals for prompt diagnoses and immediate obstetric interventions. Particularly, we observed cases of malpresentation, malposition, ruptured uterus, and obstructed labor; however, our study did not uncover a significant relationship between these complications and grand multiparity, which contrasts findings from other studies.

The occurrence of malpresentation was observed in 1.6% of cases, a rate similar to the results from the study by Talat & Iqbal in Bahawalpur.¹⁶ No cases of severe fetal morbidity were identified, and 70% of fetuses were delivered alive and in good health, aligning with findings from studies conducted in Saudi Arabia.¹⁷ In cases of intrauterine fetal deaths, nearly all instances were associated with placental abruption or uncontrolled medical disorders, often upon admission.

It's crucial to recognize that grand multiparity tends to coincide with other risk factors and is not solely responsible for causing maternal and fetal morbidity. Our study underscores the complexity of interactions among various factors that contribute to adverse outcomes in pregnancy.

Conclusion

Anemia, obstetric haemorrhage followed by hypertensive disorders and sepsis were the major complications seen in our grand multiparous women. Although grand multiparity is associated with poor fetomaternal outcome but with provision of effective antenatal care, early referrals without delays, identification of risk factors and early intervention promotes better outcomes.

RECOMMENDATIONS: Grand multiparity should be dealt by senior skilled obstetrician for prompt intervention whenever is required. Early referrals to tertiary care for all grand multi paras with immediate emergency management at local levels. Unmet need of contraception should be addressed by the government on priority basis. Repeated obstetric drills for PPH, Eclampsia and infection control should be organized to deal these three majors maternal killers.

LIMITATIONS: This study does not reflect the true picture being a single centered study, so a multicenter study may be required with no other associated risk factors so that true picture of only grandmultiparity related morbidity can be evaluated.

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