

Research Article

Grandmultiparity: is it Still a Challenge?

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Abstract

Objective

Grandmultiparity has long been considered an obstetric challenge posing serious threats to maternal and fetal well-being. The objective of our study is to analyze pregnancy and labour outcomes in multipara, grand and great grand multiparous women.

Study Design

A retrospective hospital -based study was conducted for 4 years from January 2010 to December 2013. Parturient were classified into three groups: multiparous; 1-4 prior deliveries, grand multiparous; 5-9 prior deliveries and great grand multiparous with ≥ 10 deliveries. Stratified analyses included multiple logistic regression models and χ^2 - test (2 degrees of freedom), Fisher's F test (2 tailed tests).

Result

Out of 2528 multiparas, 2004 were multiparas (P1-P4), 340 were Grand multiparas (P5-P9) and 184 were Great Grand multiparas ($\geq P10$). A significant linear association was found for socioeconomic status and antenatal care in women with increased parity. There was linear association of prevalence of anaemia (Hb, $<7\text{gm}\%$), preterm labour and post dated pregnancy with extreme parity, There was a weak evidence of dystocia with increased parity, but significant increase of caesarean delivery with increased parity, Perinatal morbidity and mortality was not increased with extreme parity.

Conclusion

Extreme parity is associated with adverse obstetric outcome, but it does not appear to be an independent risk factor for perinatal outcome in the setting of improved socioeconomic background and good perinatal care.

Keywords: Multiparity; Grandmultiparity; Perinatal Outcome.

Introduction

Grandmultiparity has long been considered an obstetric challenge posing serious threats to maternal and fetal well-being. The fetomaternal hazards of extreme parity have been vigorously debated for the past nearly 150 years in the scientific literature. [1] While some attribute the term to the early French literature,[2] but Bethel Solomons is said to have first introduced the term "grand multipara" in the 1930s, correlating increased parity with pregnancy complications and describing a steady rise in maternal mortality in women with five to ten previous pregnancies. [3] Shortly there after Eastman demonstrated grand multiparity to be a risk factor for

perinatal mortality as well.[2] The term grand multipara is defined variably in the literature as a woman having delivered at least four to eight prior late-term pregnancies. [4][5][6][7] The International Federation of Gynecology and Obstetrics (FIGO) and more recent studies use a definition of parity of at least five. [8][9][10][11][12][13] Another term, "great-grand multipara", commonly refers to a woman who has delivered at least 10 prior term pregnancies. Grand multiparity and great grand multiparity has historically been associated with numerous maternal and perinatal adverse outcomes, including maternal death, [1][14] post-partum infection, [1][14] uterine rupture, [15] post-partum hemorrhage, [8][14][15] placental abnormalities, [8][9][16][17] toxemia, [18] stillbirth, [19] neonatal death, [20] low birth weight or prematurity, [21] and macrosomia. [9] Women with high birth order are at increased risk for adverse obstetric outcomes. The risk is higher for great grand multiparous women compared to grand multiparous women. Grand and great grand multiparity are independent risk factors for labour dystocia and perinatal mortality. [21]

However, researchers from developed countries with uniform prenatal care have challenged the characterization of high multiparity as an independent risk factor, highlighting the potent confounding effects of increased maternal age and differential socioeconomic status and prenatal care. [19][23][24] The primary aim of the present study is to determine whether parity is independently associated with maternal and perinatal mortality, placental abnormalities, obstetric complications and abnormal birth weight.

Materials & Methods

It is a retrospective hospital based study conducted in our hospital from January 2010 to December 2013. Our hospital is a tertiary care centre, an autonomous institute under the Health and Family

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Welfare Department of Government of India situated in the remote North Eastern part of India. The current Total Fertility Rate of the state of Meghalaya where our institute is located is 3.8, which is highest in India. Analyzing the birth records and case sheets of the many multiparas we get, parturients were classified into three groups: multiparas with 1–4 prior deliveries, grand multiparas with 5–9 prior deliveries and great grand multiparas with ≥ 10 prior deliveries. First we analyzed maternal age (both as a simple continuous variable and as number of years over age 30), socioeconomic status (Kuppuswamy classification) and prenatal care utilization (Booked versus unbooked). We have analyzed high risk pregnancy like prolonged pregnancy, Preterm labour, hypertensive disorder of pregnancy, Placenta praevia, Gestational diabetes mellitus, Twin Pregnancies in each group. Intrapartum outcome like mode of delivery, dystocia, abruptio placentae were analyzed in those three groups. Perinatal outcome like Apgar score in 5 minutes less than 7, Neonatal Intensive Care Unit Admissions and neonatal death were analyzed. Analysis was performed using SPS software version 13 [tests used are χ^2 test (2 degrees of freedom), Fisher's F test (2 tailed test) and logistic regression analysis].

Results And Observations

In the four year study period we had 2528 number of multiparas

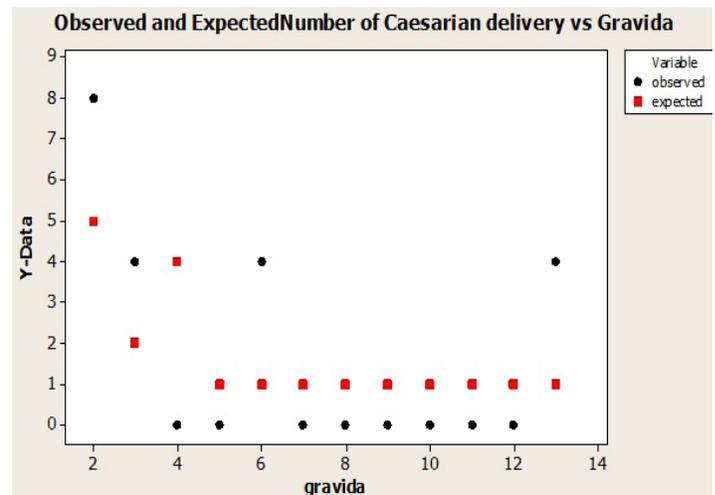
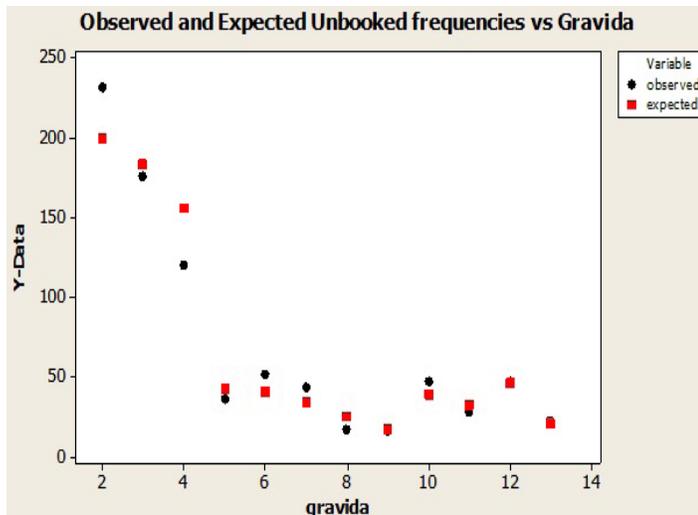
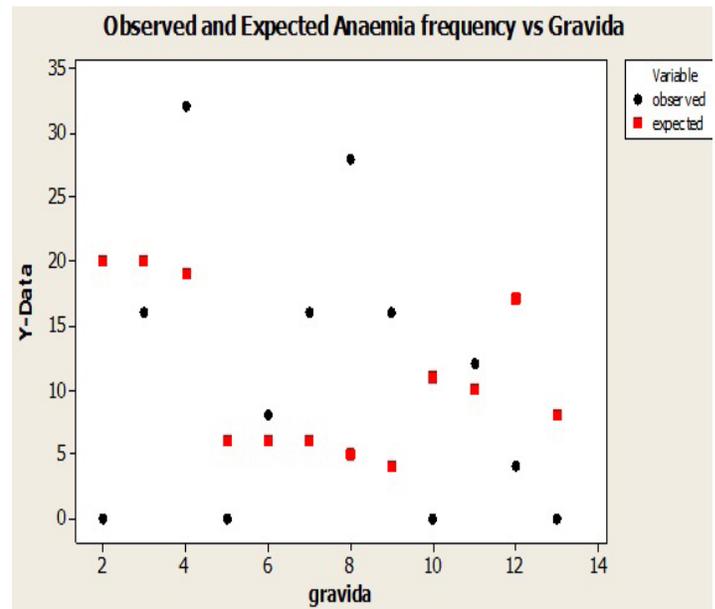
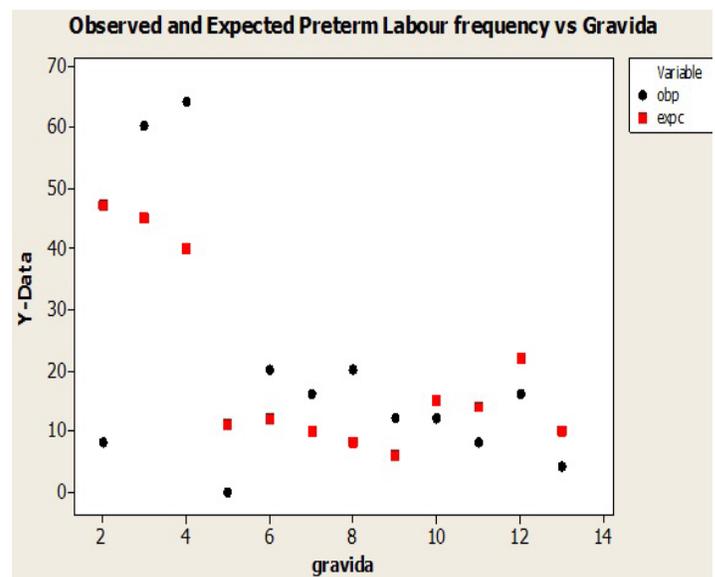
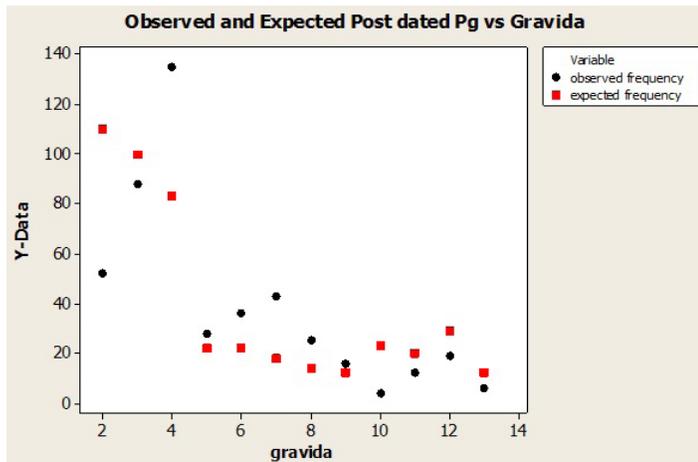


Table 1: Socio-demographic characteristics and parity.

Socio-demographic characteristics	Parity			X ² test (2 degrees of freedom)		Fisher's F test (2 tailed test)	Conclusion
	P1-P4	P5-P9	>P10	Value	P value		
No. of cases	2004	340	184				
Unbooked	528 26.35%	164 48.23%	144 78.26%	66.6276	3.404 x 10 ⁻¹⁵	1.023 x 10 ⁻¹⁴	Highly significant
Mean maternal age	29.279	34.16471	38.61413				
Kuppuswamy class III&IV	526	162	147			2.2 x 10 ⁻¹⁶	Highly significant

Table 2: High risk pregnancy and parity

High risk pregnancy	Parity			X ² test (2 degrees of freedom)		Fisher's F test (2 tailed test)	Conclusion
	P1-P4	P5-P9	>P10	Value	P value		
Prolonged pregnancy	276 13.77%	148 43.53%	40 21.74%	43.3193	3.92 x 10 ⁻¹⁰	7.145 x 10 ⁻⁹	Highly significant
Preterm labour	132 6.59%	68 20%	40 21.74%			1.626 x 10 ⁻⁵	Highly significant
Hypertensive disorder of pregnancy	116 5.79%	36 10.59%	12 6.52%			0.2258	Non significant
Gestational diabetes	16 0.8%	8 2.35%	4 2.17%			0.2452	Non significant
Placenta praevia	32 1.6%	12 3.53%	4 2.17%			0.2774	Non significant
Twin pregnancy	16 0.8%	12 3.53%	2 1.085%			0.1046	Non significant
Anaemia	48 2.39%	68 20%	16 8.7%			8.366 x 10 ⁻⁹	Highly significant
Abnormal presentation	32 1.6%	12 3.53%	4 2.17%			0.2774	Non significant

delivered in our labour room. Out of those, 2004 were multiparas (P1-P4), 340 were Grand multiparas (P5-P9) and 184 were Great Grand multiparas (≥P10). Patients from lower socioeconomic status and unbooked were more with increasing parity. The incidence of high risk pregnancy like Post dated pregnancy; Preterm labour and anaemia were also more with increasing parity. The incidence of hypertensive disorders were almost equal in multiparas(5.79%) and Great Grand multi paras (6.52%) but with Grand multiparas it was 10.59%, the difference being statistically insignificant. Other high risk parameters like Placenta Praevia, Abruption, Twin Pregnancy, Gestational Diabetes mellitus also increased in cases of Grand multiparas and Great Grand multiparas but the difference is not statistically significant. Again, labour Dystocia increased with parity but has weak evidence. Caesarean section rate also

increased with parity. We found instrumental delivery more in Grand and Great Grand multipara, with no significant difference in postpartum hemorrhage in those three groups. We also found no significant difference in perinatal mortality in the three groups.

Discussion

The problem of extreme parity seems to be non-existent in the developed countries, because of the prevailing small family size. In India, Reproductive and Child Health programme has gone a long way in reducing the burden of extreme parity. But, in some states like Meghalaya extreme parity does exist due to cultural and religious beliefs and matriarchal society. Previously, reports linked multiparity to increasing risk of unfavorable pregnancy outcome [1],[14],[15],[17],[18],[19],[20]. But, in another study in 2010, Grand

Table 3: Labour outcome and parity

Labour outcome	Parity			X ² test (2 degrees of freedom)		Fisher's F test (2 tailed test)	Conclusion
	P1-P4	P5-P9	>P10	Value	P value		
Placental abruption	4 0.2%	4 1.18%	4 2.17%			0.2073	Non significant
Dystocia/ Obstructed labour	28 1.4%	16 4.7%	12 6.8%			0.01623	Weakly significant
Prolonged labour	24 1.2%	4(1.17%)	4 2.17%			0.6337	Non significant
Caesarean delivery	328 16.76%	120 35.29%	72 39.13%			0.2677	Highly significant
Instrumental delivery	92 4.6%	36 10.6%	20 10.8%			0.2593	Non significant
Postpartum Haemorrhage	16 0.8%	8 2.35%	4 2.17%			0.2452	Non significant

Table 4: Perinatal outcome and parity

Perinatal outcome	Parity			X ² test (2 degrees of freedom)		Fisher's F test (2 tailed test)	Conclusion
	P1-P4	P5-P9	>P10	Value	P value		
APGAR<7 AT 5 minutes	12 0.6%	4 1.18%	4 2.17%	28.9683	5.124 x 10 ⁻⁷	1.264 x 10 ⁻⁶	Non significant
NICU admission	32 1.6%	8 2.36%	12 6.52%			0.07271	Non significant
Mean birth weight	3.026347	2.597647059	2.694293				
Perinatal mortality	24 1.2%	4(1.17%)	4 2.17			0.6337	Non significant

Results of Logistic regression with 'Gravida' as independent,.

Table 5

Dependent Variable	Intercept	Slope
Booked	-1.684	0.2426
Post dated Pregnancy	-2.30217	0.8911
Preterm Labour	-3.3175	0.23044
Anaemia	-4.2918	0.27939
Caesarean Delivery	-5.4699	0.14245*

and great grand multiparity were found to be independent risk factors for labour dystocia and perinatal mortality [21]. However, researchers from developed countries with uniform prenatal care have challenged the characterization of high multiparity as an independent risk factor, highlighting the potent confounding effects of increased maternal age, differential socioeconomic status and prenatal care [19][23][24]. In our study also, unbooked cases and lower socio economic status were more with increase in parity. The association of anemia with increased parity may be due to the fact

that those women did not have minimum three antenatal checkups and also that they belonged to low socioeconomic groups. In our study, increased risk of preterm labour with increased parity may be due to more prevalence of anaemia in increased parity and poor hygiene. Another research also found increased risk of preterm labour with grand multipara [26]. In our study caesarean section rate also increased with extreme parity. Likewise, another study also reported significant increase of caesarean section in Grand Grand multipara [25]. A study also found a linear association of parity

with anaemia and increased incidence of caesarean section. [21]. Increased caesarean section may be due to post dated pregnancy, induction failure, fetal distress and meconium staining liquor. In our study there was no increased risk of perinatal morbidity and mortality with increase in parity, which might be due to tertiary care health facility. This fact was also supported by a study, that under satisfactory socioeconomic and health care condition high parity should not be considered dangerous [8]. Some authors concluded that extreme parity does not appear to be an independent risk factor for perinatal outcome in the setting of good perinatal care [24].

Conclusion

Extreme parity is associated with adverse obstetric outcome, but it does not appear to be an independent risk factor for perinatal outcome in the setting of improved socioeconomic background and with good perinatal care.

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