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.

**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

**Introduction**

Grandmultiparity has long been considered an obstetric challenge posing serious threats to maternal and fetal well-being. The feto-maternal 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 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.
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 placenta 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 SPSS software version 13 [tests used are χ² 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
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 multiparas (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 inceasing risk of unfavorable pregnancy outcome [1],[14],[15],[17],[18],[19],[20]. But, in another study in 2010, Grand

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### Table 1: Socio-demographic characteristics and parity.

| Socio-demographic characteristics | Parity       | X² test (2 degrees of freedom) | Fisher’s F test (2 tailed test) | Conclusion |
|----------------------------------|--------------|-------------------------------|---------------------------------|------------|
|                                  | P1-P4 (2004) | P5-P9 (340) | >P10 (184) | Value | P value |                            |                          | Highly significant |
| Unbooked                         |              |                  |           |       |         |                            |                          |            |
|                                  | 528 (26.35%) | 164 (48.23%) | 144 (78.26%) | 66.6276 | 3.404 x 10⁻¹⁵ | 1.023 x 10⁻¹⁴ |                |
| Mean maternal age                | 29.279       | 34.16471        | 38.61413  |       |         |                            |                          |            |
| Kuppuswamy class III&IV          | 526 (162)    | 147 (2.2 x 10⁻¹⁵) | 2.2 x 10⁻¹⁶ |                |

### Table 2: High risk pregnancy and parity

| High risk pregnancy               | Parity       | X² test (2 degrees of freedom) | Fisher’s F test (2 tailed test) | Conclusion |
|-----------------------------------|--------------|-------------------------------|---------------------------------|------------|
|                                   | P1-P4 (276)  | P5-P9 (132) | >P10 (32) | Value | P value |                            |                          | Highly significant |
| Prolonged pregnancy               |              |                  |           |       |         |                            |                          |            |
|                                   | 13.77%       | 43.53%           | 21.74%  | 43.3193 | 3.92 x 10⁻¹⁰ | 7.145 x 10⁻⁹ |                |
| Preterm labour                    | 132 (6.59%)  | 68 (20%)         | 40 (21.74%) |       |         |                            |                          | Highly significant |
| Hypertensive disorder of pregnancy| 116 (5.79%)  | 36 (10.59%) | 12 (6.52%) |       |         |                            |                          | Non significant    |
| Gestational diabetes              | 16 (0.8%)    | 8 (2.35%) | 4 (2.17%)  |       |         |                            |                          | Non significant    |
| Placenta praevia                  | 32 (1.6%)    | 12 (3.53%) | 4 (2.17%) |       |         |                            |                          | Non significant |
| Twin pregnancy                    | 16 (0.8%)    | 12 (3.53%) | 2 (1.085%) |       |         |                            |                          | Non significant    |
| Anaemia                           | 48 (2.39%)   | 68 (20%) | 16 (8.7%)  |       |         |                            |                          | Highly significant |
| Abnormal presentation             | 32 (1.6%)    | 12 (3.53%) | 4 (2.17%)  |       |         |                            |                          | Non significant |

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Table 3: Labour outcome and parity

| Labour outcome         | Parity          | X² test (2 degrees of freedom) | Fisher’s F test (2 tailed test) | Conclusion     |
|------------------------|-----------------|-------------------------------|--------------------------------|----------------|
| Placental abruption    | 4 (0.2%)        | 0.2073                        | Non significant                |
| Dystocia/Obstructed labour | 28 (1.4%)      | 0.01623                       | Weakly significant             |
| Prolonged labour       | 24 (1.2%)       | 0.6337                        | Non significant                |
| Caesarean delivery     | 328 (16.76%)    | 0.2677                        | Highly significant             |
| Instrumental delivery  | 92 (4.6%)       | 0.2593                        | Non significant                |
| Postpartum Haemorrhage | 16 (0.8%)       | 0.2452                        | Non significant                |

Table 4: Perinatal outcome and parity

| Perinatal outcome          | Parity          | X² test (2 degrees of freedom) | Fisher’s F test (2 tailed test) | Conclusion     |
|----------------------------|-----------------|-------------------------------|--------------------------------|----------------|
| APGAR<7 AT 5 minutes       | 12 (0.6%)       | 28.9683                       | 1.264 x 10⁻⁷                   | Non significant |
| NICU admission             | 32 (1.6%)       | 0.07271                       | Non significant                |
| Mean birth weight          | 3.026347        | 2.694293                      |                                |                |
| Perinatal mortality        | 24 (1.2%)       | 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 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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