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## FETAL OUTCOMES AMONG GRAND MULTIPAROUS AND MULTIPAROUS WOMEN IN MULAGO HOSPITAL, UGANDA

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### ABSTRACT

**Objective:** To compare fetal outcomes among grand multiparous (para 5-9) and multiparous (para 2-4) delivering in Mulago hospital, Uganda.

**Design:** Prospective cohort study.

**Setting:** Mulago hospital, Uganda.

**Subjects:** One hundred and fifty six grand multiparous and multiparous women were recruited on admission in labour ward and followed up through labour and immediate post partum period. Fetal outcomes among the two groups were collected and analyzed.

**Results:** The admissions to SCU were similar in the two groups i.e. 11(7%) GMP vs. 11(7%) MP, the number of fresh still births was higher among the grandmultiparas 13(8.3%) GMP vs. 7(4.5%) MP though this was not statistically significant. The fetal weight did not significantly differ in the two groups.

**Conclusion:** There was no difference in fetal outcomes among GMPs when compared to MPs.

**Key words:** Grand multiparous (GMP), Multiparous (MP), Birth weight, Special Care Unit (SCU), Apgar score, Fresh Still Birth (FSB).

### INTRODUCTION

For several decades, grand multiparity has been viewed as a high risk pregnancy. The International Federation of Gynaecologists and Obstetricians (1993) defines grandmultiparity as delivery of the 5<sup>th</sup> to the 9<sup>th</sup> infant whereas delivery of ten or more babies would be considered great grand multiparity(1). Grand multiparity is often considered a high risk group because certain complications during pregnancy, delivery and puerperium are thought to occur with increased incidence in these women (2-10). In the past, the problems associated with high parity in relation to mortality and morbidity led to grandmultiparity being viewed as a high risk group. However, recent studies have shown that with the recent advances in the practice of obstetrics, maternal and fetal mortality and morbidity is not increased among the grandmultiparous as compared to lower parity groups(11-15).

Studies done in Britain, Israel and Australia found that women with grand multiparity did not have an increased likelihood of poor pregnancy outcomes when compared to lower parity groups (11, 12, 14). However, studies done in Finland, Pakistan, Saudi Arabia and Croatia found that GMP had more

poor fetal outcomes as compared to MP (5, 8-10).

In Africa, studies have been done comparing pregnancy outcomes of grand multiparous women to those of lower parity groups. One study in South Africa found that GMP was not associated with poor pregnancy outcomes as compared to MP(13). However, another study in South Africa found that GMP was associated with poorer pregnancy outcomes than the MP (6).

In Uganda, grandmultiparity is prevalent possibly due to the young age at first pregnancy and relatively low utilisation of birth control services. Childbearing starts early in Uganda. Ugandan women have an average of 3.5 children by their late twenties and more than six children by their late thirties(16). The median age at first birth in Uganda is 19.1 years and contraceptive use is only 24%(16).

There are limited studies assessing the outcomes of GMP pregnancies as compared to other parity groups in Uganda. This study aims at assessing this in Mulago hospital, Uganda.

*Grandmultiparity and birth weight:* Conclusions on fetal birth weight from deliveries by GMP as compared to other parity groups have been contradicting. Some studies found no significant birth weight difference

in infants born of GMP as compared to other parity groups (6, 7, 14). In fact, one study concluded that increasing parity was a risk factor for low birth weight and very low birth weight (17-19). Contrary to these findings, one study found an increased number of low birth weight deliveries from the MP as opposed to GMP (9). Some studies have on the other hand found that GMP was associated with increased risk of fetal macrosomia (12, 20-23). One study found that macrosomic babies were commonly born to mothers who were either 35 years of age or more or were more than para 5 whereas 59% of low birth weight was associated with primiparity and grandmultiparity (24). In Uganda there are limited studies that compare fetal outcomes of GMP to other parity groups.

*Grandmultiparity and Apgar score:* Several studies have found contradicting results in the Apgar scores of the infants delivered by GMP as compared to those delivered by MP. The Apgar scores at 5 minutes have been greatly used since it is a better predictor of long term complications in the baby as compared to the Apgar score at one minute. Several studies found no significant difference in the Apgar score at five minutes among the GMP when compared to lower parity groups (6, 14, 25). Severenski in Croatia and Babinszki in New York found that the Apgar score at five minutes was significantly lower in the GMP group when compared to the MP (1, 10). In Uganda however, there are limited studies that have compared the Apgar score of the two parity groups.

*Grandmultiparity and perinatal death:* Studies have differed on whether perinatal deaths among the GMP are higher than those in the MP group. A Croatian study found a higher perinatal mortality among the grand multiparous women (10). This however was not the case in studies done in Australia and Israel where they found no statistical difference in the incidence of perinatal deaths among the GMP and the MP (11, 12). In Uganda, there are limited studies that have compared the perinatal mortality in the grand multiparous and the multiparous.

## MATERIALS AND METHODS

This was a comparative prospective cohort study of 312 grandmultiparous and multiparous women in Mulago hospital, Uganda over a period of three months, January to March 2011. Mulago hospital is the national referral hospital for Uganda and serves both as primary health facility for its environs and a referral centre for other hospitals. It is also a teaching hospital for Makerere University, Kampala. The study included all term grandmultiparae and

multiparae women admitted in labour for delivery in the labour ward, however, only persons who signed the consent form were enrolled into the study. Consenting persons were consecutively enrolled to reach the targeted sample size. The first MP following a recruited GMP was recruited. The principal investigator and research assistants then followed them through labour, delivery and immediate post partum period. All grandmultiparae and multiparae women with multiple gestations, a previous history of caesarian section, previous history of PPH/ APH, chronic medical conditions, intrauterine fetal death before admission and referred GMP and MP with complications admitted for delivery were excluded.

Permission was sought from the department of Obstetrics and Gynaecology of Makerere University and Faculty of Medicine Ethics and Research Committee. Grandmultiparae and multiparae satisfying the selection criteria were explained to about the study and asked to consent. They were then observed through labour, delivery and the immediate post partum period and data on fetal outcomes filled in the questionnaires and data sheets.

The data collected included social demographic characteristics like age, level of education, marital status and religion, Obstetric factors like number of ANC visits, fetal outcome variables like birth weight (in grams), Apgar score at five minutes, admissions to special care unit and fetal death.

The sample size was 156 participants using the formula for comparison of two rates (sample size of each group)(26)

$$n = (U + V)^2 (U_1 + U_2) + (U_1 - U_2)^2$$

$$n = (0.84 + 1.96)^2 (0.12 + 0.03) + (0.12 - 0.03)^2 = 156$$

The sample size (n) was obtained to be 156 participants in each arm of the study, making a total of 312 participants.

Data collected was filled into a database designed using Epi- data version 2.1b. The data base was then edited; corrections and clarifications of the raw data were done before the final data base was created. This was then exported and analysed using STATA version 11.0. Univariate analysis was done to describe the sample for both GMP and MP. Birth weight, admission to NBU, Apgar score at five minutes and any fetal death was considered in calculation of incidence out of the total respective group. To compare risk, bivariate analysis was used against any mother who got an event. In order to reduce confounding, all variable that was significant at bivariate analysis and those found in literature to be a risk in GMP and MP were fed in logistic regression models to identify which other factors were independently associated with risk of getting poor fetal outcomes in GMP and M P.

**RESULTS**

We followed up a total of 312 mothers through labour and 24 hours after delivery between the months of

January 2011 and March 2011 and recorded fetal outcomes. There was an equal distribution of mothers in each group i.e. 156 grandmultiparous and 156 multiparous.

**Table 1**

*Descriptive analysis of some variables of 312 women delivering in Mulago high risk labour ward*

| Variable         | GMP n (%) | MP n (%)   | X <sup>2</sup> | p-value |
|------------------|-----------|------------|----------------|---------|
| <b>Mean age</b>  | 33.7      | 27.8       | 98.4           | 0.0001  |
| <b>Marital</b>   |           |            |                |         |
| Single           | 2 (1.3)   | 3 (1.9)    | 2.05300.358    |         |
| Married          | 153 (98)  | 149 (95.5) |                |         |
| Cohabiting       | 1 (0.6)   | 4 (2.6)    |                |         |
| <b>Education</b> |           |            |                |         |
| None             | 50 (32.1) | 43 (27.6)  | 9.2207         | 0.026   |
| Primary          | 83 (53.2) | 68 (43.6)  |                |         |
| S1-4             | 21 (13.5) | 40 (25.6)  |                |         |
| S5-6             | 2 (1.3)   | 5 (3.2)    |                |         |
| <b>Religion</b>  |           |            |                |         |
| Catholic         | 46 (29.5) | 61 (39.1)  | 4.7645         | 0.190   |
| Protestant       | 69 (44.2) | 60 (38.5)  |                |         |
| Muslim           | 28 (18)   | 19 (12.2)  |                |         |
| Other            | 13 (8.3)  | 16 (10.3)  |                |         |

The mean ages between the groups were significantly different. The grandmultiparous were significantly older than the multiparous. Grandmultiparous were associated with a significantly lower secondary education profile than multiparous.

**Table 2**

*Comparison of fetal outcomes among grand multiparous and multiparous women in Mulago high risk labour ward*

|                                 | Fetal Outcomes  |                | p-value |
|---------------------------------|-----------------|----------------|---------|
|                                 | GMP<br>n=156(%) | MP<br>n=156(%) |         |
| <b>Birth weight</b>             |                 |                |         |
| < 2500 gms                      | 14(9)           | 16(10.3)       | 0.905   |
| 2500-3999 gms                   | 126(80.8)       | 123(78.9)      |         |
| ≥ 4000 gms                      | 16(10.3)        | 17(10.9)       |         |
| <b>Admission to SCU</b>         | 11(7)           | 11(7)          | 1.000   |
| <b>Apgar score</b>              |                 |                |         |
| < 7 at 5 minutes                | 11(7)           | 15(9.6)        | 0.413   |
| ≥7 at 5 minutes                 | 145(93)         | 141(90.4)      |         |
| <b>FSB</b>                      | 13(8.3)         | 7(4.5)         | 0.165   |
| <b>Aggregated complications</b> | 44(28.2)        | 40(25.6)       | 0.610   |

The fetal outcomes in the two groups were not statistically significant; admissions to SCU were similar in the two groups, i.e., 11(7%) GMP vs. 11(7%) MP, the number of fresh still births was higher among

the grandmultiparas 13(8.3%) GMP vs. 7(4.5%) MP though this was not statistically significant. The fetal weight did not significantly differ in the two groups.

**Table 3**

*Bivariate analysis of factors that may be associated with poor fetal outcomes in GMP*

| Factor                 | X <sup>2</sup> | P-value |
|------------------------|----------------|---------|
| Grandmultiparity       | 0.2607         | 0.610   |
| Marital status         | .0121          | 0.366   |
| Education              | 0.0895         | 0.993   |
| ANC visits             | 0.0330         | 0.856   |
| Maternal complications | 0.5718         | 0.450   |

Grandmultiparity, marital status, education, ANC visits and maternal complications were not significantly associated with poor fetal outcomes.

the two groups did not significantly differ. Whereas Bai et al in a GMP cohort found an increased rate of perinatal deaths, still birth rate in our study was not found to be significantly different(35).

## DISCUSSION

This study is of interest because of the high number of GMPs in our setting. The fertility rate in Uganda stands at 6.7 (16). GMPs have been considered as a high risk group in various studies (2, 7, 8, 14, 18, 20, 28-30). Modern obstetrics has however contributed to improved outcomes of GMPs. The results of this study concur with the findings of other studies that observed that in the modern setting with adequate health care and trained staff, grandmultiparity is not associated with poor outcomes when compared with lower parity groups (11-13, 15, 23, 32, 33). However, most of the studies that showed no difference in the outcomes of the two parity groups were done in developed countries with populations with better nutritional status and better access to health services. The GMPs in our study were significantly older than the MPs. This is perhaps expected and corresponds to findings of other similar studies( 9, 10, 27). The GMPs had a lower educational profile than MPs, however, over half of them had at least primary education which may be explained by the universal primary education in Uganda. Two GMPs and one MP diagnosed with big babies got ruptured uteri while waiting to be taken to theatre. The delay was due to the large numbers of mothers delivering in our institution at any given time.

We did not find any significant difference in the fetal outcomes. This was also found in various studies (6, 11, 14, 33, 34). A Croatian study found that the GMPs had lower Apgar scores than the MPs while Goldman et al found macrosomia (weight  $\geq$  4 kg) was significantly more frequent in the grandmultiparas patients (23.9% as compared to 3.3% and 13.9% in the primiparas and multiparas, respectively)(10, 12). This was not the case in our study as the fetal weight in

## STUDY LIMITATIONS

Mothers may not have revealed their true parity. Health care workers may also have given the grand multiparous women preferential care since they are generally known to be a high risk obstetric group.

## CONCLUSIONS

There was no difference in fetal outcomes among grand multiparous when compared to multiparous women, however this was a hospital based study and therefore the findings cannot be generalised to Uganda. There is a need to conduct a population study considering that only four out of ten women deliver in a health facility in Uganda.

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