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MATERNAL OUTCOMES AMONG GRAND MULTIPAROUS AND MULTIPAROUS WOMEN IN MULAGO HOSPITAL, UGANDA
J. N. Njeru, MD, MMed (Obs and Gynae), Rift Valley General Hospital P. O. Box 3356-20100, Nakuru, Kenya, C. Biryabarema, MBChB, MMed (Obs and Gynae), MSc, Senior Consultant Obstetrician and Gynaecologist, Mulago Hospital P. O. Box 7052 Kampala, Uganda, M. Kagawa, MBChB, MMed (Obs and Gynae), Lecturer, Department of Obstetres and Gynaecology, Makerere University, P. O. Box 7052, Kampala, Uganda

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J. N. NJERU, C. BIRYABAREMA and M. KAGAWA

ABSTRACT

Objective: **To compare the incidence of intrapartum and immediate post-partum complications among grand multiparous (para 5-9) and multiparous (para 2-4) delivering at 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. Maternal complications among the two groups were collected and analysed.**
Results: **Women with grandmultiparity were significantly older and had a lower educational profile than multiparous women. The overall incidence of intrapartum and immediate post-partum complications for grandmultiparous women was 13.5% compared with 9.6% in the multiparous group RR 1.19 (0.88-1.61). Grand multiparous (GMP) women were more likely to have PPH than the multiparous (MP) women 6.4% vs. 1.9% RR l.61 (1.20-2.17).**
Conclusion: **Post-partum haemorrhage (PPH) was higher among the GMPs when compared to MPs.**

INTRODUCTION

For several decades, grand multiparity GMP has been viewed as a high risk pregnancy. The International Federation of Gynaecologists and Obstetricians (1993) defines (GMP) as delivery of the 5th to the 9th infant whereas delivery of ten or more babies would be considered great GMP (1). GMP 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 GMP being viewed as a high risk group. However, recent studies have shown that with the recent advances in the practice of obstetrics, maternal and foetal 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 GMP did not have an increased likelihood of poor pregnancy outcomes when compared to lower parity groups (1l, 12, 14). However, studies done in Finland, Pakistan, Saudi Arabia and Croatia found that GMP had more maternal complications and poor foetal outcomes as compare to MP (5, 8-10). In Africa, studies have been done comparing pregnancy outcomes of (GMP) 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, GMP 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 aimed at assessing this in Mulago hospital, Uganda.

MATERIALS AND METHODS

This was a comparative prospective cohort study of 312 GMP and MP 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 GMP and MP 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 GMP and MP women with multiple gestations, a previous history of Caesarian section, previous history of PPH/ APH, chronic medical conditions, intrauterine foetal 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. GMP and MP 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 maternal complications 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 antenatal to clinic visits, maternal outcome variables like mode of delivery and maternal complications like antepartum and immediate post-partum haemorrhage and blood transfusion.

The sample size was 156 participants using the formula for comparison of two rates (sample size of each group) (17). Data were analysed using the Epi data version 2.1b.
(18)

RESULTS

We followed up a total of 312 mothers through labour and 24 hours after delivery between the months of January and March 2011 and recorded maternal complications. There was an equal distribution of mothers in each group, that is 156 GMP and 156 MP.

Table 1
Descriptive analysis of some variables of 312 women delivering in Mulago high risk labour ward

Variable	GMP n (%)	MP n (%)	X^2	p-value
Mean age	33.7	27.8	98.4	0.0001
Marital				
Single	2(1.3)	3(1.9)	2.0530	0.358
Married	153(98)	149(95.5)		
Cohabiting	1(0.6)	4(2.6)		
Education				
None	50(32.1)	43(27.6)	9.2207	0.026
Primary	83(53.2)	68(43.6)		
SI-4	21(13.5)	40(25.6)		
S5-6	2(1.3)	5(3.2)		
Religion				
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 GMP were significantly older than the MP. GMP were associated with a significantly lower secondary education profile than the MP.

Table 2
Intra-partum and immediate post-partum complications among GMPs and MPs in Mulago high risk labour ward

	GMP n (%)	MP n (%)	RR(95%CI)	p-value
Abruptio placentae	0(0)	1(0.6)	-	-
Post-partum haemorrhage	10(6.4)	3(1.9)	1.61(1.20-2.17)	0.029
Blood transfusion	1(0.6)	0(0)	-	-
Caesarean section	8(5.1)	10(6.4)	0.88(0.52-1.50)	0.627
Ruptured uterus	2(1.3)	1(0.6)	1.34(0.60-3.00)	0.562
Aggregated complications	21(13.5)	15(9.6)	1.19(0.88-1.61)	0.276

GMP women were more likely to develop PPH ten (6.4%) versus three (1.9%) and this was statistically significant. The results did not show an increased incidence of Caesarean section delivery among GMP 8(5.1 %) vs. MP 10(6.4%).

Although there were more maternal complications among GMP women compared to the MP women 21(13.5) vs. 15(9.6), they were not statistically significant.

Table 3
Bivariate analysis of factors that could be associated with maternal complications in GMP

Factor	X^2	p-value
Age	1.5063	0.220
Education	3.2277	0.358
ANC visits	0.0031	0.956
Marital status	2.0121	0.311

Age, marital status, antenatal visits and education were not significantly associated with maternal complications in the GMP.

Table 4
Multivariate analysis of factors that could be associated with aggregated maternal complications in GMP

Factor	Relative risk	95% Conf. interval	p- value
Grandmultiparity	1.89	0.88 - 4.07	0.104
Marital status	2.61	0.36- 18.68	0.340
Age	0.43	0.15-1.21	0.109
Education	0.87	0.69- 1.09	0.239
ANC visits	1.10	0.42- 2.88	0.840

GMP, marital status and antenatal visits were not independently significantly associated with maternal complications. Education and age appeared to have been protective against maternal complications in the GMP women, they were not statistically significant.

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, 4, 7, 8, 14, 19-

23). 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 healthcare and trained staff, grandmultiparity is not associated to poor outcomes when compared with lower parity groups (11- 13, 15,24-26). 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. Our study may also not be able to conclude on the other rare complications except PPH due to a small sample size.

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, 18). 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. The Caesarean sections done in both groups were due to cephalopelvic disproportion due to big babies and foetal distress. 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.

Our study showed no statistical difference in most of the maternal complications between GMPs and MPs in the high risk labour ward in Mulago hospital. It is however worth noting that in the analysis of the complications, PPH was noted at a higher frequency among the GMPs. The observations made in our study with regard to PPH were made despite the use of active management of third stage of labour for all deliveries in our labour ward. PPH experienced by the participants was due to uterine atony which was successfully managed according to the available protocol in the labour ward for management of PPH. We found that the incidence of PPH was not corresponding to the incidence of blood transfusion. This may be due to early recognition and successful management of the PPH cases.

Similarly, Goldman in Israel also found that the GMPs were more likely to get PPH than the MPs, while, Ramayajhi in Kathmandu observed that the GMPs developed PPH and required blood transfusion than the MPs (9, 12). In contrast to these findings, in a study of factors associated with PP4, Combs *et al* did not find GMP as a factor associated with PPH (27). An Australian study also found that GMP was not significantly associated with PPH or blood transfusion (11). In Nigeria, Ijaiya *et al* analysed cases of PPH and cited GMP as the predominant risk factor, however, Selo-Ojeme *et al* did not find it to have been a risk factor for primary PPH (28, 29).

In conclusion, there were higher numbers of PPH among the GMPs when compared to MPs; however this was not statistically significant at multivariate analysis. There is need to look out for PPH in GMPs delivering in our setting. A population study with a longer follow-up considering that only 4 out of 10 women deliver in a health facility in Uganda is needed.

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