

OBSTETRIC OUTCOME IN GRANDMULTIPAROUS WOMEN IN JOS UNIVERSITY TEACHING HOSPITAL

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ABSTRACT

Background: The grandmultipara is traditionally regarded in Obstetrics as a high risk in pregnancy. However, some authors believe that if matched for age and socioeconomic status in a setting of satisfactory health care conditions, grandmultiparity should not be considered dangerous. This study determined the maternal morbidity and mortality and perinatal outcomes associated with grandmultiparity among women who came to deliver in Jos University Teaching Hospital.

Method: This hospital based prospective case control study was carried out between June 2008 and January 2009 in the labour ward of the maternity unit of Jos University Teaching Hospital among 250 consecutive grandmultiparous women and another 250 consecutive women of parity 2 to 4 who were matched for age and socioeconomic status.

Result: The 250 grandmultiparous women and their matched multiparous group had an average age of 32.9 ± 4.6 years. Grandmultiparous women were significantly more likely to develop hypertensive disease in pregnancy, have malpresentation and develop postpartum haemorrhage. Their fetuses were significantly more likely to have fetal distress in labour, to be low birth weight babies and be admitted to the special care baby unit (SCBU).

Conclusion: In the developing countries where the health care delivery system is still facing a lot of challenges, the grandmultipara should still be considered a high risk in pregnancy.

Key words: Obstetric, Outcome, Grandmultipara, Women, Jos

Introduction

There are differences in the definition of grandmultiparity in the literature. While most authors regard a grandmultipara as a woman who has given birth at least 5 times after 22 completed weeks (age of viability) of gestation^{1,2}. Others use the old definition of para 7 or more^{3,4}.

Grandmultiparity is now less frequently encountered in the developed countries because of increased use of family planning. However, this is not so utilized in some regions of the world for cultural, religious, or social reasons⁵. The incidence therefore, varies in different parts of the world ranging from 0.6% in Croatia, 19.3% in Jos, Nigeria to 36% in the United Arab Emirates^{5,6}.

The grandmultipara is usually considered as a cause of increased morbidity and mortality for the mother and fetus as a result of increased incidence of adverse outcome during pregnancy, labour and delivery⁶⁻⁸. Commonly reported complication in pregnancy include anaemia, hypertensive

disorders, diabetes mellitus, malpresentation, antepartum haemorrhage, precipitate labour, ruptured uterus and postpartum haemorrhage^{6,9}. However, some authors have argued that the complications attributed to grandmultiparity did not consider confounding variables like age and socio-economic status of the pregnant women^{10,11}. These authors believed that if matched for age and socio-economic status, in a developed country with satisfactory health care conditions, grandmultiparity should not be considered dangerous, and risk assessment should only be based on past and present obstetric history and not simply on the basis of parity¹¹.

In a previous study in Jos University Teaching Hospital, there were reported increases in both maternal and fetal complications amongst grandmultiparous women. The study however, did not match the populations compared for age and socio-economic status. The purpose of this study therefore, is to determine whether if appropriately

matched for age and socioeconomic status with a low multiparous group, there will be any adverse events during pregnancy, labour and delivery in the mothers and fetuses of grandmultiparous women.

Aims/objectives

1. To determine maternal morbidity or mortality associated with grandmultiparity in Jos University Teaching Hospital
2. To ascertain the perinatal outcome associated with grandmultiparity.

Materials And Methods

Study Area

The study was a prospective case control study carried out in Jos University Teaching Hospital labour ward, postnatal wards and the special care baby unit (SCBU).

The hospital is one of the three federal teaching hospitals in the North-Central zone of Nigeria. It serves as a referral centre for the neighbouring states of Bauchi, Gombe, Benue, Kogi, Nasarawa, Taraba, Adamawa and part of Kaduna states. Jos is the capital of Plateau state. Plateau state has over 30 different ethnic groups. The 2006 Nigerian census put the population of Plateau state at 3,178,712 with 1,585,679 females¹².

Study Population

These were pregnant women who came into the labour ward of the maternity unit of Jos University Teaching Hospital for delivery.

Study Design

This was a hospital based prospective case control study.

Inclusion Criteria

1. Parturient undergoing their second to fourth delivery to serve as control group
2. Parturient undergoing at least their fifth delivery to serve as the study group

Exclusion Criteria

Primiparous women were excluded.

Sampling Technique

Convenience sampling technique was employed.

Study Procedure

On presentation in labour ward, 250 consecutive grandmultiparous women and 250 women of parity 2-4 were recruited between June 2008 and January 2009. Their antenatal history were assessed retrospectively and then they were followed up for maternal and fetal intrapartum and postpartum

outcomes till discharge or Admission into SCBU. The two groups were matched for age and socioeconomic status.

Maternal antenatal outcomes compared include PCV, APH, hypertensive diseases in pregnancy, gestational diabetes, PROM, multiple pregnancy and preterm delivery. Intrapartum maternal outcomes compared were malpresentation, oxytocin augmentation, vacuum delivery, caesarean section and ruptured uterus. Postpartum comparison looked at postpartum haemorrhage, retained placenta, perineal tear and maternal mortality.

Fetal outcomes compared include fetal distress, intrauterine fetal deaths, stillbirths, early neonatal deaths, LBW, birth asphyxia, admission to SCBU and perinatal mortality rate.

Sample Size

The sample size was determined using the formular $N \leq Z^2 Pq/d^2$ to determine the minimum sample size¹³.

Where $N \leq$ minimum sample size, $P \leq 19.3\%$ (prevalence in Jos)⁶, $Z \leq 1.96$ (value read from standardized normal distribution table at 95% confidence interval, $q \leq 1-P$ and $d \leq$ precision (0.05) read from statistical table.

Hence $N \leq (1.96)^2 \times 19.3 \times (1 - 0.19) / (0.05)^2 \leq 239.33$. This was rounded up to 250.

The biodemographic data, antenatal, intrapartum, postpartum and neonatal outcomes of the two groups were then compared. The data was then analyzed using the EPI info version 3.5.1 2008 statistical software.

Results

There were 250 grandmultiparous women identified during the period of study from June 2008 to January 2009 among the 1,383 deliveries in the hospital, giving an incidence of 18.07%. The average age of the grandmultiparous women was 32.9 ± 4.6 years and the matched multiparous group was also 32.9 ± 4.6 years. The age range was from 22-45 years (Table1). The grandmultipara had a parity range from 5-9 with a mean of 6.3 (Table 2). Table 3 shows that 21.2% of the grandmultipara are illiterate and Table 4 shows that 55.2% were housewives. Table 5 shows that 90.8% of both the grandmultipara and the low parity group were booked in Jos University Teaching Hospital antenatal clinic, 6.8% of the grandmultipara were booked in other health facilities and 2.4% were unbooked.

Antenatal outcomes were compared between the two groups. This revealed that grandmultiparous women were significantly more likely to develop hypertensive diseases in pregnancy (4.4%) (RR≤3.7, CI ≤ 1.03-12.98, P-Value ≤ 0.03). Table 6. Among the intrapartum outcomes analyzed, the grandmultipara were found to be significantly more likely to develop malpresentation (6%) (RR≤3.88, CI≤1.26 to 11.14, P-Value < 0.01). Table 7. The postpartum outcomes analyzed showed that grandmultiparous women were more likely to develop postpartum haemorrhage when compared to their multiparous control (5.2%) (RR≤3.3, CI≤1.079.83, P-Value ≤ 0.03). Table 8.

Fetal outcomes compared between the two groups revealed that fetuses of grandmultiparous women were significantly more likely to have fetal distress in labour (4.8%) (RR≤4, CI≤1.14-14.0, P-Value ≤ 0.02) and their babies were significantly more likely to have low APGAR scores (birth asphyxia) (8.8%) (RR≤24, CI≤ 1.14 to 5.20, P-Value ≤ 0.02) and be admitted to the special care baby unit (4.8%) (RR≤2.6, CI≤1.36 to 4.91, P-Value < 0.01). Table 9.

TABLES

Table 1. Distribution of Grandmultiparous women by age.

Age group	Frequency	Percentage %
20-25	10	4.0
25-30	87	34.8
30-35	80	32.0
35-40	66	26.4
40-45	7	2.8
Total	250	100%

Range 22-45years, mean= 32.9 ± 4.6years, median=32years.

Table 2. Distribution of Grandmultiparous women by parity.

Parity	Frequency	Percentage %
5	105	42.0
6	66	26.4
7	41	16.4
8	25	10.0
9	13	5.2
Total	250	100%

Range=5-9, mean=6.34, median=6.

Table 3. Distribution of Grandmultipara by Educational Status.

Educational status	Frequency	Percentage %
Primary	68	27.2
Secondary	85	34.0
Tertiary	38	15.2
Arabic	6	2.4
Non-literate	53	21.2
Total	250	100%

Table 4. Distribution of Grandmultipara by Occupation.

Occupation	Frequency	Percentage %
Housewife	138	55.2
Business woman	57	22.8
Civil servant	41	16.4
Seamstress	13	5.2
Farmer	1	0.4
Total	250	100%

Table 5. Booking status of the Grandmultipara compared with low multipara.

Booking status	Grandmultipara n (%)	Multipara n (%)
Booked in JUTH	227 (90.8)	227 (90.8)
Booked in PSSH	2 (0.8)	3 (1.2)
Booked in private hospitals	4 (1.6)	8 (3.2)
Booked in PHC	11 (4.4)	11 (4.4)
Unbooked	6 (2.4)	1 (0.4)
Total	250 (100%)	250 (100%)

Table 6. Antenatal outcomes of the Grandmultipara compared with low multipara.

Antenatal outcomes	Grandmultipara n (%)	Multipara n (%)	RR (95% Confidence interval)	P-Value
PCV < 10g/dl	11 (4.4)	4 (1.6)	2.75 (0.9-8.5)	0.07
APH	4 (1.6)	2 (0.8)	2 (0.4-10.8)	0.45
Hypertensive diseases in pregnancy	11 (4.4)	3 (1.2)	3.66 (1.04-12.9)	0.03
Gestational diabetes	1 (0.4)	0	-	-
PROM	6 (2.4)	7 (2.8)	0.86 (0.3-2.5)	0.80
Multiple pregnancy	7 (2.8)	4 (1.6)	1.75 (0.6-5.9)	0.36
Preterm delivery	67 (26.8)	52 (20.8)	1.29 (0.9-1.8)	0.12

Table 7. Intrapartum outcomes of the Grandmultipara compared with low multipara.

Intrapartum outcome	Grandmultipara n (%)	Multipara n (%)	RR (95% confidence interval)	P-Value
Malpresentation	15 (6)	4 (1.6)	3.75 (1.3-11.1)	< 0.01
Oxytocin augmentation	8 (3.2)	7 (2.8)	1.14 (0.4-3.1)	0.79
Vacuum delivery	3 (1.2)	1 (0.4)	3 (0.3-28.6)	0.37
Caesarean section	57 (22.8)	51 (20.4)	1.12 (0.8-1.6)	0.51
Ruptured uterus	1 (0.4)	1 (0.4)	1 (0.1-15.9)	0.99

Table 8. Postpartum outcomes of the Grandmultipara compared with low multipara.

Postpartum outcome	Grandmultipara n (%)	Multipara n (%)	RR (95% confidence interval)	P-Value
PPH	13 (5.2)	4 (1.6)	3.25 (1.1-9.8)	0.03
Retained placenta	3 (1.2)	3 (1.2)	1 (0.2-4.9)	0.99
Perineal tear	34 (13.6)	56 (22.4)	0.61 (0.4-0.9)	0.01
Maternal mortality	1 (0.4)	1 (0.4)	1 (0.1-15.9)	0.99

Table 9. Fetal outcomes of the Grandmultipara compared with low multipara.

Fetal outcomes	Grandmultipara n (%)	Multipara n (%)	RR (95% confidence interval)	P-Value
Fetal distress	12 (4.8)	3 (1.2)	4 (1.1-14.0)	0.02
Intrauterine fetal death	5 (2.0)	1 (0.4)	5 (0.6-42.5)	0.12
Stillbirth	9 (3.6)	7 (2.8)	1.3 (0.5-3.4)	0.61
Early neonatal death	3 (1.2)	1 (0.4)	3 (0.3-28.6)	0.37
Low birth weight	31 (12.4)	20 (8.0)	1.55 (0.9-2.6)	0.10
Birth asphyxia (5min APGAR <7)	22 (8.8)	9 (3.6)	2.44 (1.1-5.2)	0.02
Admission to SCBU	31 (12.4)	12 (4.8)	2.58 (1.4-4.9)	< 0.01
Perinatal mortality	12 (4.8)	8 (3.2)	1.5 (0.6-3.6)	0.36

Discussion

The study demonstrated that the incidence of grandmultiparity in Jos University Teaching Hospital was 18.07%. This is slightly higher than

the reported incidence from other parts of Nigeria, 17.3% among parturient in Benin-City¹⁴, 16.4% in Enugu¹⁵, and 5.1% in the obstetric population in Ile-Ife¹⁶. This higher incidence may be explained by the generally earlier age at marriage in the Northern part of the country⁶. The incidence is however; lower than the reported incidence of 36% in the United Arab Emirates⁵.

The mean age of the grandmultipara was 32.9±4.6years, similar to the finding of an earlier study done in Jos University Teaching Hospital with an incidence of 32.6years⁶. This is however, lower than the mean age of 37.4years in Ile-Ife¹⁶ and 34.6years in Enugu¹⁵. This can be attributed to early marriage and commencement of childbirth in these women compared to their counterparts in the Southern part of the country⁶. Fifty three (21.2%) of these women were illiterate; a figure lower than the 61.6% illiterate women from the study in Enugu¹⁵. However, in spite of the relatively high literacy level in these women, most of them (55.2%) worked as housewives, underlying the already known relationship between low socio-economic status and grandmultiparity¹⁷.

Maternal morbidities included increased postpartum haemorrhage, caesarean section rate and multiple pregnancy compared to the multiparous group. This is similar to an earlier study done in Jos University Teaching Hospital where all these parameters were increased compared to the general population⁶. In addition, this study found an increased incidence of antenatal anaemia, antepartum haemorrhage, hypertensive diseases in pregnancy, preterm delivery, malpresentation and oxytocin augmentation. However, the statistically significant increase was only found with hypertensive diseases in pregnancy (RR≤3.66, CI≤1.04 to 12.9, P-Value ≤ 0.03), malpresentation (RR≤3.75, CI≤1.3 to 11.1, P-Value < 0.01) and postpartum haemorrhage (RR≤3.25, CI≤1.1 to 9.8, P-Value ≤ 0.03). In a study in Enugu, East Western Nigeria, grandmultipara was found to be associated with anaemia hypertension and multiple pregnancies¹⁵. Similarly, a study carried out in Sydney, Australia, found that compared to multiparous women, grandmultiparous women were at higher risk of antepartum haemorrhage, gestational diabetes, pregnancy induced hypertension threatened premature labour, postpartum haemorrhage and perineal tear⁸. A study in the United Arab Emirates⁵ found only diabetes mellitus to be the risk associated with grandmultipara, even as another

study from Sweden¹⁸ found only placental complications as the risk associated with grandmultiparity. However, other studies from Manchester UK¹⁰ and Queensland Australia¹¹ concluded that grandmultiparous women do not have an increased likelihood of poor pregnancy outcome.

The fetal outcome showed that there was an increased incidence of fetal distress, intrauterine fetal death, stillbirth, early neonatal death, low birth weight, birth asphyxia and Admission to SCBU in the grandmultipara than in the multiparous group. Although, the statistically significant increase were in fetal distress (RR≤4, CI≤1.1 to 14.0, P-Value ≤ 0.02), birth asphyxia (RR≤2.44, CI≤1.1 to 5.2 P-Value ≤ 0.02) and Admission to SCBU (RR≤2.58, CI≤1.4 to 4.9, P-Value < 0.01). An earlier study in Jos University Teaching Hospital, found an increased incidence of low birth weight⁶ and the study from Enugu found an increase in perinatal mortality rate¹⁵. Similarly, the study from Sydney, Australia found that compared with low multiparity, babies of grandmultipara are at higher risk of perinatal mortality and neonatal morbidities⁸.

The consistent results of poor pregnancy outcome in the grandmultipara from developing countries and conflicting findings in the developed countries may suggest that with satisfactory health care conditions as obtained in developed countries, the pregnancy risk in the grandmultiparous women could be reduced. However, in the setting of the developing countries, where the poorly funded, poorly equipped and poorly staffed health care facilities pose hindrances to satisfactory health care delivery, the grandmultipara should still be considered a high risk in pregnancy. Therefore efforts should be made to prevent these high risk pregnancies by addressing such issues as non-use of contraception, educating families on the risk involved with this avoidable parity status and emphasizing education of the girl child as a means of delaying early marriage and the commencement of childbirth.

Limitations

1. Data on neonatal outcome was gotten from the special care baby unit (SCBU) in Jos University Teaching Hospital. Therefore, if a baby were to be admitted in any other health facility, such a baby would have been missed out in the study.
2. The mothers were followed up only up to the time of their discharge from the hospital, hence any morbidity after this but still within the puerperium would have been missed out in the study

Recommendations

1. The Grandmultipara should still be considered and managed as a high-risk pregnancy especially in the setting of a developing country.
2. Efforts should be targeted at reducing the incidence of this avoidable and high-risk pregnancy through promoting contraceptive use, health educating the public on its risk and emphasizing education of the girl child as a means of reducing early marriage and hence, the commencement of childbirth.

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