

Full Length Research Paper

Grand multiparity: Its impact on maternal and fetal outcome at the University College Hospital, Ibadan, Nigeria

Oluwasomidoyin Olukemi Bello

Department of Obstetrics and Gynecology, University College Hospital, Ibadan, Oyo State, Nigeria.

Accepted 21 January, 2019

High parity is associated with serious consequences to the fetus, mother, family, and the society. This study aimed at determining current situation in adverse fetal and maternal outcomes among grand multiparous women at University College Hospital (UCH), Ibadan. A five year retrospective study of grand multiparous women presented at UCH, Ibadan. Information was extracted from their medical records using a structured proforma. Data were entered and analyzed with SPSS version 20. Of the 11, 699 births during the study period, medical records of 153 grand multiparous (GMP) women were retrieved and analyzed. Mean age was 35.63 ± 3.91 years and prevalence of grand multiparity was 1.4%. Majority, 114 (74.5%) were unbooked. Anemia 72 (47.1%) was the commonest antenatal complication and over half 89 (58.2%) of them had caesarean delivery with majority 69 (77.5%) performed as emergencies. Among their babies, 38 (24.8%) were stillbirth and 24 (15.7%) were admitted into special care baby unit (SCBU). Antepartum haemorrhage, hypertensive disorders, postpartum hemorrhage, caesarean delivery, stillbirth, low birth weight and SCBU admission were maternal and fetal complications associated with the booking status of the study population $p < 0.05$. In conclusion, prevalence of grand multiparity was low and confirms downward trend in Nigeria but almost all the complications were seen more in the unbooked women. Even though there was no maternal mortality, there were fetal mortality indicating GMP women are still liable to the serious complications of pregnancy, which can lead to higher maternal morbidity and fetal morbidity and mortality. Thus, there is need to educate women on these complications and promote family planning with small family size.

Keywords: Grand multiparity, stillbirth, caesarean delivery, anemia, postpartum hemorrhage.

INTRODUCTION

Grand multiparity (GMP) is the delivery of fifth to ninth fetuses, while the delivery of ten or more times is considered to be great-grand multiparity (Bai et al., 2002; Afolabi et al., 2013; Njoku et al., 2017) and this is a serious risk factor for

poor pregnancy outcome because of the associated consequences to the mother and the fetus (Njoku et al., 2017; Odukogbe et al. 2001). In developed countries, GMP is on the brink of extinction, with an incidence of 1% - 4% of all births while in developing countries like Nigeria, the incidence of grand-multiparity is 5.1% - 18.1% (Ogbe et al., 2010; Afolabi et al., 2013; Njoku et al., 2017). This is of great concern because when added to the existing burden

of low socioeconomic status, unavailability and poor accessibility to emergency obstetric care in Nigeria it significantly increases the risk to the mother and fetus with resultant fetomaternal morbidities and mortalities (Ogbe et al., 2010; Njoku et al., 2017; Ogedengbe et al. 2003). Complications associated with GMP include medical complications such as diabetes, hypertension, increased incidence of abortions, anemia, antepartum and postpartum hemorrhage, malpresentation, dysfunctional labour, feto pelvic disproportion, preterm labour, uterine rupture, increased rate of instrumental delivery, puerperal infections, congenital malformations and perinatal mortality, some of which can be effectively reduced with good antenatal and intrapartum care (Omole-Ohonsi et al., 2011; Shechter et al., 2010; Al-Shaikh et al, 2017; Mgaya et al., 2013; Severinski, 2009; Bai et al. 2002). In addition, effective family planning measures, increase level of education and desensitization of women of old cultural and religious beliefs and stigmas of small family size can also reduce the incidence of GMP and its associated consequences (D'souza et al., 2011).

Conversely, some studies from Nigeria and other parts of Sub-Saharan Africa have confirmed various reasons like the desire for large family size, gender preferences, death of a child or wish to have a child for a new husband and failed contraception for the current pregnancy amongst grand multiparous women despite the associated complications (Obiechina et al., 2008; Idoko et al., 2016).

According to the 2013 Nigeria demographic health survey (NDHS) report, women have an average of 5.5 children while fertility varies with mother's education and economic status. Women who have more than secondary education have an average of 3.1 children, while women with no education have 6.9 children (NHDS, 2013). Remarkably, about half (49.5%) of all the women (38, 948) studied in the NDHS considered 6 or more children to be ideal even with the associated GMP maternal and fetal complications and only 9% considers 3 or less children as ideal for a family (NDHS, 2013). Notably, grand multiparity remains a high risk group and therefore it is against this background that this study was carried out to determine the current prevalence and impact of GMP on maternal and fetal outcomes among booked and unbooked patients in a tertiary hospital.

MATERIALS AND METHODS

This was a five year retrospective study designed to identify maternal and fetal outcomes of all grand

multiparous women who presented at the University College Hospital (UCH), Ibadan. This is teaching hospital that provides tertiary level obstetric care and also serves as a referral center for several hospitals with an average of 2, 400 deliveries per year. Of the 158 women grand multipara admitted into labour ward for delivery during the study period, 153 medical records were retrieved with a retrieval rate of 96.8%. A detailed proforma was used to extract information on their socio-demographic and obstetric characteristics, antepartum, intrapartum and postpartum events of index parous experience, maternal and fetal outcome. Booked patients were regarded as those who received antenatal care at the University College Hospital, Ibadan while unbooked patients were those who did not access antenatal care at all or had it outside University College Hospital. Women who had greater or equal to 5 parous experiences were considered as grand multipara. The data were entered and analyzed using IBM Statistical Package for the Social Sciences version 20. Results were presented in tables and figures. Bivariate analysis was done to determine the relationship between booked and unbooked grand multiparous women with their outcomes. The level of statistical significance was set at $p < 0.05$.

RESULTS

There were 11,699 deliveries during the study period of which 158 were grand multiparous women. The prevalence of grand multiparity was 1.4%. The mean age and parity was 35.63 ± 3.91 years and 5.35 ± 0.62 respectively. Age ranged between 28 to 48 years while higher proportions (45.8%) were between 31 and 35 years. Almost all were married (99.3%) with about two-third, 100 (65.3%) having had at least secondary school education of which 30.7% had tertiary education. The parity of the women ranged from 5 to 8 and they were mainly traders (60.8%) while majority 102 (89.5%) of those who had never used contraceptive did not book their pregnancy. Educational status ($p=0.027$), occupation ($p=0.005$) and lack of contraceptive use ($p=0.003$) were found to be significantly associated with the women's booking status (Table 1).

Anemia was the commonest antenatal complication 72 (47.1%), others are antepartum hemorrhage (placenta previa/abruption placenta) (21.6%), hypertensive disorders (27.5%), malaria in pregnancy (9.2%), and pre labour rupture of membrane (7.8%). Antepartum hemorrhage ($p=0.003$) and hypertensive disorders (0.001) were significantly associated with the women's booking status (Table 2).

Table 1. Comparison of the women basic characteristics with booking status.

Variables	Booking Status		Total	Chi ²	P value
	Booked (%) 39	Unbooked(%) 114			
Age (years) Mean ±SD(35.63±3.91)				0.323	0.956
≤ 30	4 (10.3)	14 (12.3)	18 (11.8)		
31-35	19 (48.7)	51 (44.7)	70 (45.8)		
36-40	13 (33.3)	38 (33.3)	51 (33.3)		
>40	3 (7.7)	11 (9.6)	14 (9.2)		
Educational status				9.180	0.027
None	7 (17.9)	6 (5.3)	13 (8.5)		
Primary	8 (20.5)	32 (28.1)	40 (26.1)		
Secondary	9 (23.1)	44 (38.6)	53 (34.6)		
Tertiary	15 (38.5)	32 (28.1)	47 (30.7)		
Occupation				16.935	0.005
Trading	19 (48.7)	74 (64.9)	93 (60.8)		
Artisans	5 (12.8)	22 (19.3)	27 (17.6)		
Housewife	3 (7.7)	9 (7.9)	12 (7.8)		
Civil servants	6 (15.4)	4 (3.5)	10 (6.5)		
Teaching	6 (15.4)	3 (2.6)	9 (5.9)		
Clergy	0 (0.0)	2 (1.8)	2 (1.3)		
Marital Status				0.344	1.000
Married	39 (100.0)	113 (99.1)	152 (99.3)		
Divorced	0 (0.0)	1 (0.9)	1 (0.7)		
Parity Mean±SD (5.35±0.62)				8.009	0.046
5	23 (59.0)	85 (74.6)	108 (70.6)		
6	16 (41.0)	23 (20.2)	39 (25.5)		
7	0 (0)	3 (2.6)	3 (2.0)		
8	0 (0)	3 (2.6)	3 (2.0)		
History of contraceptive use				9.003	0.003
Yes	12 (30.8)	12 (10.5)	24 (15.7)		
No	27 (69.2)	102 (89.5)	129 (84.3)		
Received ANC in any healthcare during index pregnancy?				47.762	<0.001*
Yes	39(100.0)	41(36.0)	80 (52.3)		
No	0(0)	73(64.0)	73(47.7)		

ANC- Antenatal Care.

Some of the intrapartum and postpartum complications observed were uterine atony (45.1%), postpartum hemorrhage (31.6%), prolonged labour (17.0%), retained placenta (11.8%), malpresentation/malposition (9.2%) and genital laceration (4.6%). Postpartum hemorrhage (PPH), blood transfusion and wound infection were significantly associated with the women's booking status. Lower proportion (7.7%) of the booked GMP women had PPH compared to 39.8% among the unbooked women (P<0.001). Almost half (45.1%) of the GMP women had blood transfusion with a higher proportion of the unbooked women (59.6%) transfused compared with 2.6% of the booked grand multiparous women (P<0.001).

Puerperal sepsis was one of the common postpartum complications with the primary source of infection identified as endometritis (14.4%), wound infection (11.8%), and urinary tract infection (7.2%). Wound infection was experienced more among the unbooked 14.9% compared to 2.6% who had wound infection among booked (P=0.039). Seven (4.6%) of the GMP women were admitted in the intensive care unit and all cases of uterine rupture occurred in the unbooked GMP women (Table 3).

The maternal and fetal outcomes associated with booking status were mode of delivery (p=0.032), still birth (p=0.003), low birth weight (p=0.048) and SCBU

Table 2. Association between antenatal complications with booking status.

Variables	Booking Status		Total	Chi ²	P value
	Booked (%)	Unbooked(%)			
Anemia	14 (35.9)	58 (50.9)	72 (47.1)	2.617	0.106
Malaria	6 (15.4)	8 (7.0)	14 (9.2)	2.447	0.118
APH(Placenta Previa/abruptio placentae)	2 (5.1)	31 (27.2)	33 (21.6)	8.363	0.003*
Pre labour rupture of Membrane	1 (2.6)	11 (9.6)	12 (7.8)	2.018	0.298*
Hypertensive disorders	19 (48.7)	23 (20.2)	42 (27.5)	11.887	0.001*

*APH – Antepartum hemorrhage.

Table 3. Comparison of Intrapartum/Postpartum complications with booking status.

Variables	Booking Status		Total	Chi ²	P value
	Booked (%)	Unbooked(%)			
Prolonged labour	3 (7.7)	23 (20.2)	26 (17.0)	3.210	0.087
Malpresentation/malposition	1 (2.6)	13 (11.4)	14 (9.2)	2.731	0.118*
PPH	3 (7.7)	45 (39.8)	48 (31.6)	13.853	<0.001*
Genital laceration	1 (2.6)	6 (5.3)	7 (4.6)	0.485	0.679*
Retained placenta	6 (15.4)	12 (10.5)	18 (11.8)	0.661	0.416*
Uterine atony	15 (38.5)	54 (47.4)	69 (45.1)	0.931	0.358*
Ruptured Uterus	0(0)	8 (5.2)	8 (5.2)	2.888	0.204*
Blood transfusion	1 (2.6)	68 (59.6)	69 (45.1)	38.245	<0.001*
Wound infection	1 (2.6)	17 (14.9)	18 (11.8)	4.268	0.039*
Urinary Tract infection	3 (7.7)	8 (7.0)	11 (7.2)	0.020	1.000*
Endometritis	3 (7.7)	19 (16.7)	22 (14.4)	1.901	0.197*
ICU admission	0 (0.0)	7 (6.1)	7 (4.6)	2.510	0.192*

*=Fisher's Exact Test

ICU – Intensive Care Unit; PPH – Postpartum haemorrhage

admission ($p=0.036$). Caesarean delivery (CD) rate was 58.2%, majority (77.5%) of which was performed as emergencies while spontaneous vaginal delivery occurred in 41.8% of the GMP women. More than half of those who had CD did not book the index pregnancy (80.9% vs 19.1%). About three-quarter (75.2%) of them delivered a live baby while 38 (24.8%) had stillbirth. Out of the 115 (75.2%) who had live babies, one-fifth, 23 (20.0%) had birth weight less than 2.5kg, 6 (3.9%) had congenital malformations and 24 (15.7%) were admitted into the special care baby unit (SCBU) (Table 4). The indication for SCBU admission were birth asphyxia (45.8%), prematurity (16.7%), respiratory distress syndrome (16.7%), very low birth weight (8.3%), neonatal sepsis (8.3%) and congenital malformation (4.2%) (fig 1).

DISCUSSION

The prevalence of grand multiparity in this study was 1.4%. This figure is though similar but lower than that reported by Afolabi et al who reported 2.29% however, this is significantly lower than the rates documented in different hospitals in Nigeria (Afolabi et al. 2013; Bai et al. 2002; Emechebe et al. 2016). This might be because some of the studies were conducted in northern and eastern states of the country where women give birth to more children. Though, when compared to the study done in south-western states, this study showed a decrease in the trend of grand multiparity which might be attributed to improved female education, relatively better obstetric care, slight improvement in family planning uptake and worsening economic situations in the country (Odukogbe et al. 2001; Afolabi et al. 2013; NDHS, 2013). The mean age was 35.63 ± 3.91 years which corroborate reports from other studies (Ola et al. 2000; Ogedengbe et al, 2003) but lower to the mean age documented in more recent studies (Omole-Ohonsi, 2011; Afolabi et al. 2013; Emechebe et al. 2016). This is unexpected because there has been increase in female education in recent times and majority of literate females might not engage in early marriages or have many children. Also, the prevalence of grand multiparity has been documented to be reduced in areas with a high level of education (Afolabi et al. 2013).

In this present study majority of the women were unbooked probably because these mothers had had previous successful deliveries without antenatal care and therefore confident and did not see the need to seek antenatal care in the index pregnancy (Afolabi et al.

2013; Shahida et al. 2011; Mundhra et al. 2013; Sahoo et al., 2015).

About two-third of the women had basic education as defined in Nigeria with more than half having secondary education which is in keeping with other studies in the country, however this is likely because female literacy rate has increased (Okonkwo et al. 2013; Afolabi et al. 2013). Though, this did not correlate with their antenatal health seeking behavior because only 52.3% of the women ever received antenatal care in a health facility in the index pregnancy. This also supports the Nigeria Demographic Health Survey (NDHS) 2013 with 61% of women of all parity seeking antenatal care (NDHS, 2013). It was also shown that poor history of contraceptive use was more in unbooked women and further buttress the high unmet need of family planning in Nigeria.

As shown in previous studies maternal complications are high in GMP women (Odukogbe et al. 2001; Eze et al. 2006; Ogbé et al. 2010; Afolabi et al. 2013). In this study, several complications like anemia, antepartum hemorrhage and hypertensive disorders were the common antenatal complications which substantiates previous reports and this might be because the GMP women have short inter-pregnancy interval with no time to replenish their iron levels before the next pregnancy and some of the women are advance in age (Odukogbe et al. 2001; Shahida et al. 2011; Bai et al. 2002). Also, postpartum hemorrhage following uterine atony, retained placenta and genital laceration as well as puerperal sepsis secondary to endometritis, urinary tract infection and prolonged labour were observed and almost half of the GMP women transfused with blood despite the complications associated with blood transfusion. No maternal death was reported in this study and this is probably due to the better obstetric emergency services provided at the University College Hospital, Ibadan. However, this pattern of complication has not changed compared to the study among grand multiparous women in UCH almost two decades ago (Odukogbe et al. 2001). In addition, the effect of high parity on the booking status in this study was found to be pronounced amongst the unbooked GMP women compared to the booked and this is in keeping with findings by Fabamwo et al. which is attributed to the overconfidence of the GMP women (Fabamwo et al. 2009).

Caesarean delivery rate was high in this study. This observation is in keeping with the studies of Mgaya et al., and Shahida et al (Mgaya et al. 2013; Shahida et al. 2011). This finding could be as a result of secondary

Table 4. Association between mode of delivery and fetal outcomes with booking status.

Outcomes	Booking Status		Total	Chi ²	P value
	Booked (%)	Unbooked(%)			
Mode of delivery CD SVD	17 (19.1)	72 (80.9)	89 (58.2)	4.573	0.032
	22 (56.3)	42 (36.8)	64 (41.8)		
Still birth	3 (7.7)	36 (31.9)	38 (24.8)	8.877	0.003*
Low Birth weight (kg)	8 (34.8)	15 (16.3)	23 (20.0)	3.927	0.048
Congenital malformations	3 (7.7)	3 (2.6)	6 (3.9)	1.975	0.160*
SCBU Admission	2 (5.1)	22 (19.3)	24 (15.7)	4.412	0.036*

*CD – caesarean delivery, SVD – Spontaneous Vaginal Delivery, SCBU – Special Care Baby Unit.

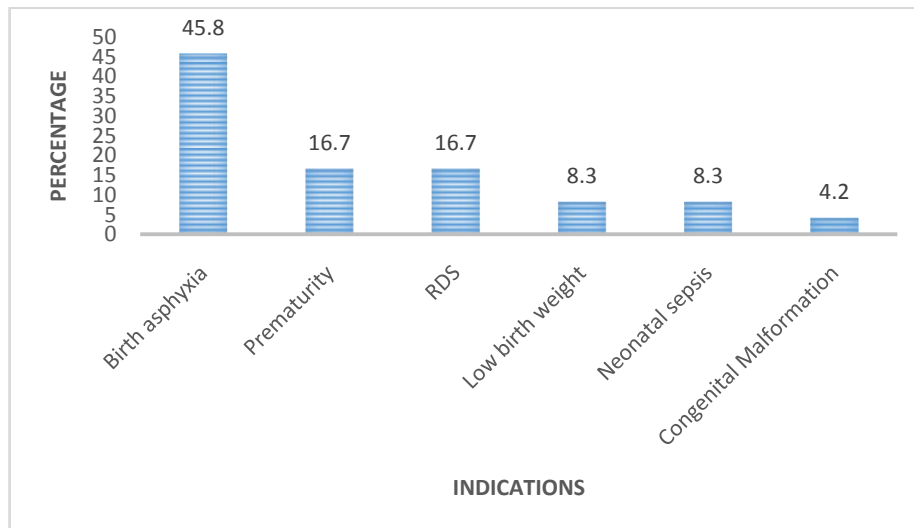


Figure 1. Indications for SCBU admission *RDS – Respiratory Distress Syndrome.

contracted pelvis due to repeated compensatory lordosis of pregnancy, aging and exhaustion (Mutahir, 2005). Likewise, higher incidence of fetal malpositioning, mal presentation and medical disorders might. In the present study, there was a high stillbirth rate and admission into special care baby unit mainly due to birth asphyxia. This might be due to the fact that majority of the women were

unbooked and referral cases to the hospital. Also a greater proportion of them did not have antenatal care and they have earlier presented in health center or hospitals while in labour where different manipulations might have been to aid labour or for delivery of the baby before presenting in UCH. Similar findings had been documented in some studies in Nigeria (Afolabi et al.

2013; Rayamajhi et al, 2006).

This study is not without its limitation because it's retrospective; some of the other factors that could affect pregnancy outcome in GMP women like their nutritional, psychological, social and financial status were not assessed. Also the reasons for grand multiparity which could be used to reduce its prevalence and subsequently its contribution to maternal and fetal morbidities and mortalities could not be explored. On the other hand, the study showed a downward trend in prevalence of grand multiparity and that it remains a high risk with complications to both the mother and the fetus.

CONCLUSION

The low prevalence of grand multiparity confirms the condition is on the downward trend in Nigeria though most of them were unbooked. Although, there was no maternal mortality, there were maternal morbidities, fetal mortalities and morbidities indicating grand multiparous women is still liable to serious complications of pregnancy. The association between unbooked GMP women and increased maternal and fetal adverse outcomes could be reduced with good antenatal care that is tailored towards increasing women's awareness through adequate counseling and increasing uptake of family planning.

REFERENCES

- Afolabi AF, Adeyemi AS. (2013). Grand-multiparity; Is it still an obstetric risk? *Open J Obstet Gynecol.* 3: 411 - 415.
- Al-Shaikh GK, Gehan HI, Amel AF, Hazem Al. (2017). Grand multiparity and the possible risk of adverse maternal and neonatal outcomes: a dilemma to be deciphered. *BMC Pregnancy and Childbirth.*17:310.
- Bai J, Wong F, Bauman A, Mohsin M (2002). Parity and pregnancy outcomes. *Am J Obstet Gynecol.* 186: 274 - 278.
- Bugg GJ, Atwal GS, Maresh M (2002). Grand multipara in a modern setting. *BJOG.*109: 249 - 253.
- D'souza K, Monteiro F, Jayaprakash K., Bhagavath P, Krishnan S. (2011). Spectrum of Grand Multiparity. *Journal of Clinical and Diagnostic Research.* 5: 1247-1250.
- Emechebe CI, Njoku CO, Eyong EM, Maduekwe K, Ukaga JT (2016). The social class and reasons for grand multiparity in Calabar, Nigeria. *Trop J ObstetGynaecol.* 33: 327-331
- Eze, JN, Okaro JM, Okafor MH. (2006). Outcome of pregnancy in the grand multipara in Enugu, Nigeria. *Trop J Obstet and Gynaecol.* 23: 8-11.
- Fabamwo A, Akinola D, Mojinyinola O. (2009). The Tragic Consequences Of Unsupervised Pregnancies Among Patients Referred To A Tertiary Maternity Unit In Lagos, South West Nigeria. *The Internet Journal of Tropical Medicine.* 7: 1
- Idoko P, Nkeng G, Anyawu M. (2016). Reasons for current pregnancy amongst grand multiparous Gambian women – a cross sectional survey. *BMC Pregnancy and Childbirth.*16:217.
- MgayaAH.,Massawe SN, Kidanto HL and Mgaya HN (2013). Grand multiparity: is it still a risk in pregnancy? *BMC Pregnancy and Childbirth.*13: 241.
- Mundhra R, Agarwal M, Singh AS. (2013). Obstetrical challenges of grand multipara- experience from a tertiary care centre. *Int J Innov Med Health Sci.* 1: 1-5.
- Mutihir JT (2005). Obstetric outcome of the grandmultipara in Jos, Nigeria. *J Med Trop.* 7: 14-20.
- Nigeria demographic health survey (NDHS), (2013).NDHS Final report. Available from: <http://dhsprogram.com/publications/publication-fr293-dhs-final-reports.cfm#sthash.V67EQ1mm.dpuf>. (Accessed: 28 March, 2018).
- Njoku C.O., Abeshi, S.E. and Emechebe, CI (2017) Grand Multiparity: Obstetric Outcome in Comparison with Multiparous Women in a Developing Country. *Open Journal of Obstetrics and Gynecology* , 7, 707-718.
- Obiechina NJA, Ugboaja JO, Ezeama CO. (2008). Grand multiparity: reasons for the index pregnancy. *Trop J Med Res.* 12 :65–70.
- Odukogbe AA, Adewole IF, Ojengbede OA, Olayemi O, Fawole BO, Ahmed Y, Owoade E (2001). Grandmultiparity--trends and complications: a study in two hospital settings. *J ObstetGynaecol.* 21: 361-372.
- Ogbe AE, Ogbe BP, Ekwempu CO. (2010). Obstetric outcome in grand-multiparous women in Jos University Teaching Hospital. *Jos Journal of Medicine.* 6: 1-5.
- Ogedengbe OK, Ogunmokun AA. (2003). Grandmultiparity in Lagos, Nigeria. *Niger Postgrad Med J.* 23: 374-377.
- Okonkwo MC,Obineli AS. (2013). Challenges of universal Basic Education programme: The role of counselors. *An international multidisciplinary Journal.* 7: 265-273.
- Omole-Ohonsi A, AshimiAO. (2011): Grand multiparity: Obstetric performance in AminuKano Teaching Hospital, Kano, Nigeria. *Niger J ClinPract.* 14: 6-9.
- Ola ER, Adeboye B, Abudu OO. (2000). Grandmultiparity: The problem in current obstetric

- practice. *NigQt J Hosp Med.* 10: 33-37.
- Rayamajhi R, Thapa M, Pande S. (2006). The challenge of grandmultiparity in obstetric practice. *Kathmandu Univ Med J.* 4: 70 - 74.
- Roman H, Robillard PY, Verspyck E, Hulseley TC, Marpeau L, Barau G. (2004). Obstetric and Neonatal complications in grand multiparity. *ObstetGynaecol.* 103:1294-1299.
- Sahoo S, Somani R, Somani S, Sree K, Babu P. (2015). Obstetric & perinatal morbidity & mortality in booked & unbooked antenatal Patients. *Indian Journal of Basic and Applied Medical Research.* 4: 510-517.
- Severinski NS, Mamula O, Severinski S, Mamula M. (2009). Maternal and fetal outcomes in grand multiparous women. *Int J Gynaecol Obstet.* 107: 63 - 64.
- Shahida SM, Islam MA, Begum S, Hossain MA, Azam MS. (2011). Maternal outcome of grand multipara. *Mymensingh Med J.* 20: 381-385.
- Shechter Y, Levy A, Wiznitzer A, Zlotnik A, Sheiner E. (2010). Obstetric complications in grand and great grand multiparous women. *J Matern Fetal Neonatal Med.* 23: 1211–1217.