Original Research Article

The impact of grand multiparity on late pregnancy and early labour, hospital-based study on Garhwal region, Uttarakhand

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ABSTRACT

Background: Grand multiparity has been associated with adverse outcome for both fetus and mother such as antepartum hemorrhage, malpresentation, caesarean section rate, postpartum hemorrhage, iron deficiency anemia, and a high perinatal mortality rate. This study aimed to estimate the proportion of the antenatal, intrapartum and perinatal complications outcomes related to grand multiparity.

Methods: This is a prospective observational study conducted during a period of 1 year from 2021 to 2022 in the department of obstetrics and gynaecology, Himalayan hospital, Jollygrant, Dehra Dun, Uttarakhand. 60 grand multiparous patients who delivered during this period was analysed. Mothers with fetus/neonates were assessed for antenatal and obstetrical complications, mode of delivery and post-partum complications.

Results: During the study period, majority of women were in age group 26-30 years (45%), from plain areas (60%), and hilly areas (40%), 85% patients delivered vaginally, while 15 patients delivered by lower segment caesarean section. The main indication of C section was previous 2 LSCS. Maternal complications noted were anemia (30%), preterm labour (23.3%), malpresentation (1.7%) and placenta previa was seen in 3.3% women. Atonic PPH was noted in 10% cases. In present study there was no maternal death reported among grand multipara. 61 babies were born, in which 1.6% neonates were still born. There were no perinatal deaths. 34.45% newborns were born with low birth weight.

Conclusions: Grand-multiparity is an obstetric risk factor. Proper antenatal care, education, properly timed caesarean section in selected cases would reduce the grand-multiparity associated adverse pregnancy outcomes.

Keywords: Grand-multiparity, Obstetric complications, Antenatal care, Perinatal complications

INTRODUCTION

The international federation of gynecology and obstetrics (1993) define grand-multiparity, a patient who has had five to ninth infant, whereas women who are undergoing their tenth (or more) delivery are considered to be great-grand-multiparas.[1] Solomon introduced the term "grand multipara" or "dangerous multipara" in 1934 after observing that as the parity increases, risk of pregnancy complications and maternal mortality increased steadily from the 5th to the 10th pregnancy.[2] Grand-multiparity has been viewed with great caution for several decades. Late pregnancy is those pregnancy which are in their third trimester (i. e., after 28 weeks).[3] The great grand-multiparas is also known as extreme grand multipara or great grand multipara, coined by Silva.[4]

As per the report of centre for disease control and prevention (CDC), incidence of grand multiparity was much higher in developing nations (19.3%) as compared to developed nations (4%).[5] Illiteracy, non-use of contraception, high perinatal mortality and desire for male child are predisposing factors. The low prevalence attributed to standard literacy level of grand-multipara.[6]

It has been noted that in cases of grand multiparas, the average time recorded for labour is approx. 4.4 hours. In the case if nulliparas this average goes up by more 4.4 hours, means 8.8 hours.[7]

Grand-multiparity has been considered an independent factor for increasing adverse out-come for mother specially diabetes mellitus, iron deficiency anemia, malpresentation, multiple pregnancies, placenta previa, antepartum haemorrhage, hypertension with or without superimposed pre-eclampsia, caesarean section rate.[8] There is increased incidence of cephalopelvic disproportion, premature labour, abnormal lie and presentation obstructed labour, ruptured uterus and cord prolapse, post-partum haemorrhage, shock, subinvolution failing lactation and maternal perinatal morbidity and mortality.[9]

Developing nations have recorded maternal morbidity and mortality as severe health concerns. India also struggles with high incidence of maternal mortality and morbidity. We must admit that almost all pregnancies and deliveries carry some or other form of probable risk but under certain conditions such as grand multi parity, the risk increases.[10]

Aims and objective

Aim and objectives were to note the effect of grand multiparity on late pregnancy and early labour, to monitor the progress of labour in grand-multiparity and to evaluate the maternal following labour.

METHODS

This is prospective observational study conducted in department of obstetrics and gynaecology, Himalayan institute of medical sciences (HIMS), Swami Ram Nagar, Dehradun, over a period of one year from 2021 to 2022. Subjects had been recruited from patients presenting in obstetrics and gynaecology OPD, IPD and emergency and getting admitted in Himalayan hospital, Swami Ram Himalayan university, Dehradun and attached peripheral rural hospitals after written informed consent and approval of ethics committee.

The study included all grand multiparous women delivered during the study period. Grand-multiparity was defined as a woman who has already had five or more deliveries of at least >28 weeks gestation.

Parameters were collected and analysed with regard to maternal age, residence, parity, booking status and mode of delivery. History of previous perinatal deaths was also recorded. Maternal variables we assessed included diabetes mellitus, hypertensive disorders of pregnancy, premature rupture of membrane, placental abruption, placenta previa, postpartum hemorrhage, caesarean hysterectomy, preterm labour, and post term labour. Data regarding indication of caesarean section was also noted. Booked status refers to women who had 3 or more antenatal visits.

Statistical analysis was done with the excel computer software and results were reported as percentage.

RESULTS

The Table 1 represents the socio-demographic profile of patients shows that majority of patients belonged to age group 26-30 years (45%) with mean age of 31.25±3.88 years. Most of the patient were from plain areas 36 (60%). Maximum number of women, 76.7% were Booked cases. Most of the women were educated upto primary school in our study (45%).

Table 1: Socio-demographic profile of the study population, (n=60).

Variables	N	Percentage (%)
Age group (In years)		
21-25	3	5
26-30	27	45
31-35	22	36.67
36-40	7	11.67
41-45	1	1.66
Registered		
Booked case	46	76.7
Unbooked case	14	23.3
Altitude		
Hilly area	24	40.0
Plain area	36	60.0
Educational status		
Illiterate	7	11.7
Primary	27	45.0
Secondary and above	26	43.0

Mean age: 31.25±3.88 years

Table 2 shows that out of 60 women, max of participants went into spontaneous labour (88.3%). Most common mode of delivery was normal vaginal delivery (78.3%), followed by emergency LSCS (11.7%) followed by VBAC (6.7%) and elective LSCS (3.3%). Therefore, overall LSCS was done in 9 patients (15%). Out of 9 patients, most common indication for LSCS was previous 2/more LSCS (66.66%), in which 33.33% cases only previous 2/more LSCS were indication followed by previous 2 LSCS with Doppler changes in 1 case (11.11%), previous 5 LSCS with transverse lie in 1 case (11.11%) and prev LSCS with fetal distress in 1 case (11.11%). Other indications for LSCS only fetal distress seen in 1 case (11.11%) and abnormal lie in 2 cases (22.22%).

Table 3 shows that the mean duration of active phase is 3.95 hours with mean duration of II stage labour is 11.37 min and IIIrd stage labour 6.3 min. Mean duration of total duration of labour is 5.39 hours.

Table 4 shows that in antenatal period, the most common antenatal complication was anemia, which was present in 18 cases (30%), followed by post term pregnancy (26.6%) and preterm labour (23.3%). Other high risk antenatal complications were PIH (13.3%), pendulous belly (13.3%), PROM (11.7%), GDM (6.7%), abnormal lie (5%), placenta previa (3.3%), hypothyroidism (5%) with

abnormal presentation (1.7%) and twin/high order pregnancy being the least common (1.7 %). No cases of abruptio placentae and congenital anomaly were seen. In intrapartum period, the most common complication was precipitate labour, which was present in 6 cases (10%). Only 2 cases (3.3%) needed episiotomy. Meconium-stained liquor was seen in 2 cases (3.3%). In postpartum period, most common complication was lactational failure (13.3%) followed by postpartum haemorrhage (PPH) (10%) followed by subinvolution (6.7%). One case (1.6%) had soft tissue injury. There was only 1 patient (1.6%) underwent subtotal hysterectomy.

Table 2: Distribution of study participants according to labour, (n=60).

Variables	N	Percentage (%)
Labour		
Spontaneous	53	88.3
Induction	3	5.0
Not in labour	4	6.6
Type of delivery		
Normal vaginal delivery	47	78.3
Emergency LSCS	7	11.7
Elective LSCS	2	3.3
VBAC	4	6.7
Instrumental	0	0.0
Total	60	100
Overall LSCS	9	15
Indication of LSCS, (n=9)		
Emergency LSCS		
Total previous 2 or more LSCS in labour	6	66.66
Only Previous 2 LSCS or more in labour	3	33.33
Previous 2 LSCS with Doppler changes (not in labour)	1	11.1
Previous5 LSCS with transverse lie in labour	1	11.1
Previous 2 LSCS with fetal distress in labour	1	11.1
Fetal Distress (not in labour)	1	11.1
Elective LSCS		
Abnormal lie	2	22.22

Table 3: Mean duration of various stages of labour among the study participants, (n=51).

Stage of labour	Mean	SD	Min	Max
Ist stage active phase (In hours)	3.95	1.51	0.16	7.66
IInd stage (In minutes)	11.37	8.54	3.00	60.00
IIIrd stage (In minutes)	6.3	3.1	4.00	15.00
Total duration (In hours)	5.39	1.89	2.48	12.45

Table 4: Maternal complication in study group.

Complication	N	Percentage (%)
Antepartum complication		
Anaemia	18	30.0
Preterm labour	14	23.3
PIH	8	13.3
Pendulous belly	8	13.3
PROM	7	11.7
GDM	4	6.7
Abnromal breech presentation	1	1.7
Abnormal lie	3	5
Hypothyroidism	3	5
Placenta previa	2	3.3
Twin or high order pregnancy	1	1.7
Abruptio placentae	0	0.0
Congenital anomaly	0	0.0
Intrapartum complication		
Precipitate labour	6	10.0
Prolong labour	0	0.0
Episiotomy	2	3.3
Meconium-stained liquor	2	3.3
CPD	0	0.0
Scar dehiscence	0	0.0
Rupture uterus	0	0.0
Cord prolapsed	0	0.0
Postpartum complication		
Lactation failure	8	13.3
PPH	6	10.0
Subinvolution	4	6.7
Soft tissue injury	1	1.6
Subtotal hysterectomy	1	1.6
Fever	0	0.0
Uterine inversion	0	0.0

More than one co morbidity was found to be existing in several patients.

DISCUSSION

The empirical evidences have drawn that high parity often result in poor maternal outcomes. In the study, the incidence of grand-multiparity is 3% more than what was presented in empirical evidence by Jain et al (1.5%) in their study conducted in Madhya Pradesh, India and Das et al conducted study in Western Odisha, India (1.01%) but lower than reported by Santosh et al and Afzal et al in their studies conducted in Kota, Rajasthan (4.5%) and Jammu and Kashmir, India (5.76%) respectively.[11,12] The highest incidence of multiparity was observed in Africa at 27%. On the other hand, the lowest prevalence was found in Croatia at 0.6%. The reasons observed for higher incidence of grand multiparity in countries with low-income profile were-poor quality and accessibility to educational facilities, gender specific choices, preference for large families. In our study most of the patient were from plain area (60%) and 40% patient were from hilly area. The grand-multiparas who were reported were the ones who

got referrals from marginal hospitals. These hospitals on the margins referred the cases when they found early labour high risk factors.[13]

The present study, the mean age 31.25±3.88 years. It was found that majority of cases belonged to the age group of 26-30 years. This reflects the practice of early marriage and also lesser interval of inter pregnancy. Other findings also found similar results in the study by Ghadeer et al.[14]

Delay in management is also one of the main reasons for majority of maternal problems and complications. In the research, 23.3% of patients were unbooked cases. Though, in our 76.7% were the booked cases, but most of them had their antenatal visits in the peripheral units and waited for their pregnancies to almost term before booking at the teaching hospital.

Education status another factor for increase booked cases and low prevalence. There were 7 (11.7%) illiterate women, 27 (45%) had primary education and 26 (43%) had secondary education. The literacy rate of Uttarakhand has also been increased to 78.82% as per census in India.[15] On the contrary, in the study by Roy et al the women have found to be 49.1% illiterate, 38.2% to have attended matriculation and only 1.8% have gone for the graduation.[16]

Most of the grand-multiparity goes into spontaneous labour (88.3%) which similar to Irvine et al (84%).[17] Only 5% was need to be induced. The average time of 1st stage latent phase of labour in our research is 3.74 hours which is again slightly higher than mean duration of 2.2 hours reported by Juntunen et al.[7] The average time of 1st stage of active phase of labour in our study is 3.96 hours which is higher than 2.8 hours reported by Juntunen et al.[7] It is noteworthy that the total length of the delivery is dependent on the variances in the latent phase. In our study there are 6 (10%) cases has precipitated labour. These findings are in contrast with Yasmeen et al with 1% case of precipitate labour and 5% cases of prolonged labour.[18]

Around 85 percent women have had vaginal delivery. Amongst this, 2 cases were found to require episiotomy. This finding resonated to that of Munim et al (70.6%) of normal vaginal delivery and Irvine et al 3 cases requiring of episiotomy.[8,17] The 6.7% cases delivered VBAC. In the present study, 15% cases delivered by lower segment caesarean section in which 3.3% were elective and 11.7% were emergency which is in lesser number than cases reported by Garg et al (26.58%).[5] Similar findings reported by Irvine et al (14%) but elective cases were 6% and emergency cases were 7% (17). Also, for one patient who was diagnosed with placenta previa, caesarean hysterectomy was chosen. The reason for caesarean section in our study is mainly previous 2 or more LSCS (66.66%), with previous LSCS with Doppler changes was 11.1%, with previous LSCS with transverse lie was 11.1%, previous LSCS with fetal distress was 11.1%, abnormal lie was 22.22% cases.

Another major finding that was common among grand multiparous women was prevalence of anaemia (30%). Similar findings were reported by the Yasmeen et al.[18] The smaller number of anemia may be due to most of the patients belong to hilly area. Another antenatal complication was preterm labour (23.4%). Similar findings reported by Ogbe et al (26.8%).[19] This is in contrast to Alsammani et al (11%) and Njoku et al (10%).[20] Another common antenatal complication was pregnancy induced hypertension (13.3%). Similar findings were reported by the Muniro et al (13.64%).[21] In addition to this, in case of grand multiparity it is the maternal age. The incidence of hypertension was lower than reported from Munim et al (15.4%) but higher than Eze et al (6.15%), hence need for obstetricians to be watchful with all grand-multipara irrespective of age.[12] There are 5% cases reported with hypothyroidism. Another important complication of grand-multipara is premature rupture of membrane (PROM). In our study there were 11.7% cases reported with PROM which is likely similar to Njoku et al study reported with 10%.[20] There are 13.3% cases reported with pendulous belly. There were 5% cases with abnormal lie which are the causes of LSCS which is similar to Baghotia et al (6.16%).[22] The 1.7% cases reported with malpresentation (breech). Lax abdominal wall, decreased muscle tone, pendulous abdomen are possible risk factors for increasing incidence of malpresentation with parity. There are 2 cases (3.3%) reported with placenta previa but 0 case of abruptio placentae. This is in contrast to study reported by Afzal et al (5.9% of abruption placentae and 7% of placenta previa).[11] The parity of the patients was considered to be significant factor for the occurrence of placental abnormalities. There is 1 case (1.7%) reported with twin pregnancy which is similar to Das et al (1.7%) and Bezircioglu et al (1.2%). The study is contrary with the study reported by Agarwal et al (2.8%).[23,24]

In our study there was 0 cases of cephalopelvic disproportion, scar dehiscence, ruptured uterus and cord prolapsed. Only 2 cases (3.3%) need episiotomy. This is in contrary to the study Roy et al reporting 2 cases (1.8%) of ruptured uterus, 42.5% cases of cephalopelvic disproportion leading to the cause caesarean section.[16] The study is also contrary with Das et al reports suggesting 0.6% cases of ruptured uterus and cord prolapsed.[23] On the contrary, Hochler study which included older grand multiparous women found 14 cases of uterine rupture with a prevalence of 1 per 3855 labours in their study.

In this study, no maternal death was observed among grand multipara, whereas Singh et al recorded 4 deaths in their research.[25] In our present study, 10.0% cases have PPH, in which 1 case was landed up in subtotal hysterectomy, this is contrast to the study reported by Afzal et al (17.9%).[11] This suggest that, grand-multiparity is a risk factor for PPH, obstetrician should be more vigilant and perform active management of third stage of labour more effectively, 23.3% cases needed blood transfusion. This can be due to high number of cases of anemia and PPH. Grand-multiparity are more prone to lactational failure

(13.3%). This could be due to lack of nutrition, low resources and large family size.

CONCLUSION

The study revealed that grand-multiparity is still common to the age group of 26-30 years suggesting early age of marriage and lesser inter pregnancy interval. Most of the women were booked cases and were educated upto high school. Most of the grand-multiparity had spontaneous labour and only few needs induction of labour and the most common intrapartum complication was precipitate labour. Grand-multiparity delivered mostly by vaginally but some cases need Emergency or Elective due to previous 2 or more LSCS followed by abnormal lie. In our study, anemia is the most common cause of antenatal complication which can be the cause of increase number of PPH and multiple blood transfusion. Preterm labour is another cause of antenatal complication which can lead to premature delivery of neonates. Grand-multiparity with increasing age can lead to pregnancy induced hypertension and GDM.

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