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Obstetric complications: Primiparity Vs. Multiparity

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ABSTRACT

The study aimed to compare obstetrical complications in two parity groups, primiparity and multiparity and further determine the association of parity status with neonatal outcomes. A Retrospective study was conducted in the Department of Obstetrics & Gynaecology, Punjab Institute of Medical Sciences, Jalandhar (Punjab, India). One hundred patients delivered in the department (booked and unbooked) during April, 2012 to June, 2012 were included in the study. A questionnaire was predesigned to meet the requirements of the study. It included history & examination, investigation, source & reasons for referral, mode of delivery, maternal outcome, neonatal outcome in the form of gestational age & birth weight, obstetrical complications and their management. Subjects were classified as primiparous (52) and multiparous (48). The prevalence of various obstetrical complications like; pregnancy induced hypertension, intrauterine growth retardation, preterm labour, fetal distress, oligohydraminos, type of delivery and fetal weight was assessed in these two parity groups. Majority of unbooked patients belonged to primiparity (67.30%) and booked patients to multiparity (52.08%) group. Compared to multiparity, primiparity had a higher tendency to have Pregnancy Induced Hypertension (15.38%), Intrauterine Growth Retardation (19.23%), Preterm Labour (09.61%), Fetal Distress (19.23%) and Oligohydraminos (17.30%). The rate of Emergency Cesarean Section (65.51%) was higher in primiparity as compared to multiparity (41.66%). The number of Low Birth Weight babies was also higher in primiparity (55.76%) when compared to multiparity (35.41%), although the differences were statistically significant in case of Booking status, Intrauterine Growth Retardation and Low Birth Weight babies ($p<0.05$). The rate of obstetric complications was higher in primiparous as compared to multiparous mothers. So, primiparous are considered as high risk patients. Comprehensive antenatal care should be provided in this group of patients to have better maternal & fetal outcomes.

Key words: Parity, Unbooked, Obstetrical complications, Emergency cesarean section, Low birth weight.

INTRODUCTION

The ‘OBSTETRICS’ complications have become a major health issue resulting in poor maternal & perinatal outcome.The global maternal mortality rate has decreased from 422 in 1980 to 320 in 1990 and was 251/100,000 live births in 2008. But more than 50% of all maternal deaths were recorded in only six countries namely India, Nigeria, Pakistan, Afghanistan, Ethiopia and Democratic Republic of Congo [1]. According to latest United Nations figures, India and Nigeria together accounted for one third of deaths of pregnant women globally in 2010, with India at 19% (56,000) and Nigeria at 14% (40,000) (http:// www.asianage.com/India/un - report - india-tops rate- maternal

deaths-521; retrieved on June 30, 2012). Although maternal deaths have declined by half in past two decades worldwide but India still forms the bulk of maternal mortality rate.

Obstetric complications result in large number of babies with low birth weight (LBW), requiring neonatal intensive care. According to WHO [2] estimates, about 11% of newborns (12.6 million infants) suffer from LBW at term. Prevalence of LBW in India is 30% which is highest among South Asian countries [3]. Pregnancy specific health problems (Obstetric complication) are associated with more depressive symptoms & decreased health related quality of life (HRQL) in pregnancy. Women of preterm group had statistically significant higher depression score and lower HRQL on the physical domain during pregnancy. Women with hypertensive disorder showed the second most depressive symptoms. Significant improvement in physical and global HRQL and decrease in depressive symptoms from late pregnancy & early postpartum period to late postpartum has been reported in literature [4].

Thus, the 'Obstetric' complications are an important concern for Indian clinical medicine and for health care systems in order to improve our maternal mortality rate, HRQL and LBW prevalence rate. The major factors behind these complications are; lack of education especially health education, lack of provision of health services, lack of awareness regarding importance of antenatal care, lack of proper referral system resulting in mismanagement of patients during antenatal and postnatal period. Moreover, people trust their local birth attendants. Due to lack of education they have got misconception regarding immunization, medical checkups and investigation which keep them away from due care during pregnancy & labour [5].

Various conditions, having their own prevalence rates, make pregnancy complicated. Hypertension disease complicates about 6 to 8% of all pregnancies [6], Premature Preterm Rupture Of Membranes (PPROM) is seen in 3% of all pregnancies [7], Placenta previa occurs in about 0.64% of all pregnancies among Asians [8], Intrauterine growth restriction (IUGR) in 3 to 7% [9], Oligohydraminos 4.45% [10], Pregnancy with anemia is 14% in developed countries and 51% in developing countries with 65 to 75% in India alone [11].

The frequencies of these complications further varies among primiparity (first time mother) and multiparity status (being mother for the second time and so on). The present study was designed to assess the prevalence of all these complications among these two parity groups with reference to both, booked and unbooked status.

MATERIALS AND METHODS

Present cross-sectional retrospective study was conducted in the department of Obstetrics and Gynaecology at Punjab Institute of Medical Sciences (PIMS), Jalandhar (Punjab, India) during the period of April, 2012 to June, 2012. PIMS is a tertiary care centre having a large number of referral cases (unbooked patients) from city as well as from periphery. A questionnaire consisting of demographic variables, obstetric history, medical history, family history, maternal outcome and neonatal outcome was designed to meet the requirement of the study. The study was approved by PIMS Ethical Review Committee. Informed consent was obtained from women admitted during study. All patients (booked & unbooked) were managed according to the protocol of the department. Mothers who delivered during the study period and freely consented to participate were interviewed post delivery and record was maintained on the questionnaire designed for this purpose.

Technically, booked mothers were defined as those who had at least 2 antenatal visits at our center while unbooked mothers included those who had no prenatal care during their whole pregnancy and those who were referred in emergencies from other medical centers and hospitals. Demographic variables included age, socioeconomic status and booking status. Obstetric history included parity status, maternal health before & during pregnancy, significant clinical events in previous pregnancy and detailed information regarding complication occurring intrapartum or postpartum. Medical evaluations including medical disorders like; diabetes milletus, chronic hypertension, cardiac disease, thyroid disorders which can show their impact on maternal outcome was also obtained. Detailed family history including history of congenital abnormalities in babies and twins was also taken. Maternal outcome was also recorded which included mode of delivery, occurrence of anemia, postpartum hemorrhage and maternal death. Neonatal outcome such as gestational age, birth weight, perinatal mortality etc. were also documented. The subjects were further divided into two different parity groups; primiparous (52) and multiparous (48). The prevalence of all the complications and events related to pregnancy were calculated in these two groups. The results were analyzed by Chi Square test. P value <0.05 was considered as significant.

RESULTS

Table1: Demographic variables compared between Primiparous and Multiparous groups.

Category	PRIMIPARITY N=52		MULTIPARITY N=48		p value
	Percentage	No. of subjects	Percentage	No. of subjects	
Age(yrs.)					
<20	15.38	08	04.16	02	p<0.001
21-25	51.92	27	31.25	15	
26-30	26.92	14	35.41	17	
>30	05.76	03	29.16	14	
Socio Economic Status					
Low	19.23	10	14.58	07	NS
Middle	67.30	35	66.66	32	
High	13.46	07	18.75	09	
Antenatal Care					
Booked	32.69	17	52.08	25	P<0.05
Unbooked	67.30	35	47.91	23	

Table 1 shows demographic variables of primiparous & multiparous mothers. Majority of primiparous mothers falls in 21-25 yrs of age group (51.92%), whereas 35.41% of multiparous were in 26-30 yrs and 31.25% were in 21-25 yrs. There was statistical significant difference between primiparous and multiparous with reference to their age (p<0.001).

The bulk of patients belonged to middle socioeconomic status and was in equal proportions in both the groups (67.30% in primiparous and 66.66% in multiparous). Where majority of primiparous mothers (67.30%) didn't approach for antenatal care, greater part of multiparous women (52.08%) booked themselves for the same (p<0.05).

Table2: Event Outcomes compared between Primiparous and Multiparous groups.

Category	PRIMIPARITY N=52		MULTIPARITY N=48		P Value
	Percentage	No. of subjects	Percentage	No. of subjects	
Gestational Age					
Preterm	17.31	09	16.66	08	NS
Term	82.69	43	83.33	40	
Birth Weight (kg)					
<2.50	55.76	29	35.41	17	<0.05
>2.51	44.23	23	64.58	31	
Mode of Delivery					
NVD	44.23	23	25.00	12	<0.05
LSCS	55.76	29	75.00	36	
Elective LSCS	34.48	10	58.33	21	NS
Emergency LSCS	65.51	19	41.66	15	

(NVD-Normal vaginal delivery, LSCS-Lower segment cesarean section, NS-Non significant).

Table 3: Obstetric Complications compared between Primiparous and Multiparous groups.

OBSTETRIC COMPLICATIONS	PRIMIPARITY N=52		MULTIPARITY N=48		p value
	Percentage	No. of subjects	Percentage	No. of subjects	
Placenta Previa	03.84	02	12.50	06	NS
PIH	15.38	08	10.41	05	NS
PPROM	7.69	04	10.41	05	NS
Uteroplacental insufficiency	7.69	04	2.08	01	NS
IUGR	19.23	10	6.25	03	<0.05
Preterm labour	9.61	05	4.16	02	NS
Fetal distress	19.23	10	12.50	06	NS
Oligohydraminos	17.30	09	10.41	05	NS
Anemia	23.07	12	25.00	12	NS

(PIH-Pregnancy induced hypertension, PPROM-Preterm premature rupture of membrane, IUGR- Intrauterine growth restriction, NS-Non significant).

Table 2 reflects the 'event outcomes' of pregnancies with gestational age at delivery, mode of delivery and neonatal birth weight. The gestational age at which deliveries happened in both primiparous and multiparous was TERM (complete 37 weeks) with 82.69% and 83.33%, respectively. 55.76% of neonates in primiparous mothers weigh upto 2.50 kg which falls into category of LBW while in multiparous, majority of neonates (64.58%) weigh more than 2.50 kg which shows that LBW babies were significantly more ($p<0.05$) in primiparous group as compared to their counterparts. Similarly, the incidence of emergency lower segment cesarean section (LSCS) in primiparous was 65.51% which is again higher than incidence of emergency LSCS in multiparous mothers (41.66%) although the differences were not statistically significant.

The prevalence of complications in both parity groups is evident from **Table 3**. Incidence rate of Pregnancy induced hypertension (PIH-15.38%), uteroplacental insufficiency (07.69%), Intrauterine growth retardation (IUGR-19.23%), Preterm labour (09.61%), fetal distress (19.23%) and oligohydraminos (17.30%) were higher in primiparous when compared to multiparous which showed 10.41% PIH, 02.08% uteroplacental insufficiency, 06.25% IUGR, 04.16% Preterm labour, 12.50% fetal distress and 10.41% oligohydraminos, although significantly differences were observed in the case of IUGR only.

DISCUSSION

Maternal mortality is an issue which requires high level research studies followed by lots of efforts to reverse the present trend in maternal health seeking behavior if significant improvement in maternal health is to be achieved. In this study, demographic characteristics, obstetrical complications and pregnancy outcomes in primiparous mothers were compared with multiparous mothers during antepartum, intrapartum and postpartum phases of pregnancy. The results show higher rate of complications in primiparous mothers when compared to multiparous. This high risk of obstetric complications in primiparity has been supported by various other studies [12-15].

The analysis of demographic factors in relation to booking status showed that unbooked (67.30%) primiparous mothers were statistically higher ($p<0.05$) in number than unbooked multiparous mothers (47.91%) (**Table1**). Pregnancy outcome in unbooked mothers were significantly poorer than in booked mothers due to high rate of obstetric complications, low birth weight babies and a very high incidence rate of emergency cesarean rates. The reason might be that many unbooked patients were admitted in labour in substandard conditions after a prolonged delay & onset of some problems which might have resulted in higher outcome of these complications among them. So, this unbooked status for antenatal care might have led to higher prevalence of the obstetrical complications among primiparous women as compared to their counterparts, so former were significantly more sufferers than the latter. Various other studies [16, 17] have also observed the same relationship between unbooked cases and maternal and fetal outcomes. In case of booked patients, adequate antenatal care and hospital deliveries enable obstetricians to diagnose complication at an early stage when intervention brings about better results [18]. The same has also been supported by Owolabi et al. [16].

In our study, majority of primiparous (51.92%) were in 21 -25 age group (**Table 1**). Young age of primiparous group along with lack of awareness regarding importance of antenatal care & lack of education especially health education might have withdraw them from taking antenatal care at an early gestational age or till the development of obstetric complication. This led to their higher number in unbooked group. Late booking status by this parity group gave chance to complications to develop. Women that are less than 25 yrs old and are less educated are more likely to register late [19].

Most of live births in both primiparous (82.69%) and multiparous (83.33%) were at term (**Table 2**) but the number of LBW neonates born to primiparous group was statistically ($p<0.05$) higher as compared to multiparous (55.76% vs. 35.41%). Other researchers have also reported higher prevalence of LBW in primiparity [20, 21]. But this has been in contrast to the study conducted by Sharma et al. [22] which has shown higher incidence of LBW in multiparity. However another study found that parity and fetal weight had an insignificant effect on perinatal mortality [23]. Higher incidence of obstetric complications in primiparous mothers had led to the increased incidence of Emergency Cesarean Section in primiparity (65.51%) when compared to multiparity (41.66%). In contrast to the current study, an increase in cesarean section rates is seen with increasing maternal age and parity [24]. However, studies have shown that the trend of Emergency LSCS in primiparous mothers has been rising [25, 26]. It could have been because of referral system and unbooked status among this group. Reason for delay may be due to negligence of understanding the seriousness of patient's condition and financial constraints etc. Another big

issue may be non availability of transport to shift patient towards tertiary care centre. Delay of referral due to transport problem is also highlighted by Rathi et al [27] in their study.

When we compared obstetric complications in both groups (**Table 3**), 15.38% of primiparous and 10.41% of multiparous mothers were complicated by PIH. High incidence of PIH in primiparity has been consistent in other studies also [28, 29]. Significantly higher number of IUGR in case of primiparity (19.23%) as compared to their counterparts (6.25%) was observed in our study. Acharya et al [30] and Al'Essa et al [31] have also reported the higher occurrence of IUGR in primiparity. Higher fetal distress among primiparous mothers (19.23%) as compared to multiparous mothers (12.50%) might be due to meconium stained liquor as reported in other studies [32, 33]. Higher incidence of oligohydraminos among primiparous as compared to their counterparts (17.30% vs. 10.41%) in the present study has also been quoted by other studies [34, 35], whereas, a latest study have reported the contrasting outcome [36]. Association of primiparous mothers with high rate of preterm labour and delivery has been noticed in both current study and preexisting litearature [37] although no association of parity with preterm labour has been found by Anorlu et al. [38]. This shows that primiparity in itself is an important risk factor for these obstetrics complications alongwith various other risk conditions like; prepregnancy weight, maternal age, maternal education, gestational weight gain, tobacco chewing, caloric intake during pregnancy, maternal height, socio-economic condition, general morbidity, birth interval, strenuous maternal work, sexual activity during pregnancy, urinary tract infection, first antenatal visit, number of antenatal visits and quality of antenatal care.

When subgroup analysis was performed in relation to multiparous mothers, incidence of placenta previa was higher among multiparous. The study conducted by Cieminski and Dlugolecki [39] has found the same results. Studies [40, 7] have shown the incidence of PPROM higher among primiparous mothers which has been in contrast to the current study. Our study shows the prevalence of anemia higher in multiparity which has been also supported by Prechapanich and Tongtub [14]. This could have been due to depletion of iron stores in previous pregnancies, inadequate spacing between consecutive pregnancies and inadequate protein and caloric consumption due to unavailability of proper share of nutrition and negligence due to care for other children and households by the multiparous group. However, Idowu et al. [41] have observed the prevalence of anemia higher in primiparous mothers.

High maternal mortality in different studies has been reported mainly among unbooked mothers due to postpartum hemorrhage, puerperal pyrexia, wound infections and anemia [42]. In present study, no maternal mortality was recorded. This could be possible only through provision of tertiary health care at our setup.

Various factors like young age, lack of awareness regarding provision of antenatal care, lack of health education, negligence, financial constraints, environmental & cultural prejudices, male involvement in maternal health care, poor nutritional status of young women (anemia), lack of transport facility, absence of patient counseling prior to planning of mode of delivery particularly in primiparous are the important reasons behind high prevalence rate of these complications. Women under these conditions choose to seek care in substandard facilities.

To bring improvement in proportion of booked mothers need effective action not only by health sectors but also by major other development sectors such as education, economic development & employment sector. To work on the same track, Janani Suraksha Yojna (JSY) which literally means 'Pregnant Women Safety Scheme' has been introduced. JSY is a 100% centrally sponsored scheme under National Rural Health Mission being implemented with the objective of reducing maternal and neonatal mortality by promoting institutional delivery among poor pregnant women. It gives a cash incentive of rupees 1000-1400 per institutional delivery to women from low performing states. There is separate provision of rupees 250 for transport in case of emergency with another provision of rupees 1500 for cesarean section if needed [43]. These are the steps in right direction to promote institutional deliveries. It is thus proposed that all primigravida mothers must be delivered at tertiary level hospital. All primigravida should have at least three antenatal cases by consultants and delivery at district levels hospital, with all facilities for cesarean section if required [44].

The limitation of this study is the retrospective method of collecting data which might have missed some adequate information. It should have been done in prospective way for the better outcome. The comparison rate of many complications among both parities is not statistically significant which might be due to small sample size but trend in their outcomes shows the higher prevalence of obstetrical complications in primiparous mothers as compared to their multiparous counterparts.

CONCLUSION

The study shows a strong association between unbooked status and risks of maternal and fetal adverse outcomes. As the number of unbooked cases in higher in primiparous group, it makes them high risk group. There is a need to mobilize and motivate government as well as a private sector to play active role and go long way to improve the availability and accessibility of good quality antenatal care and delivery services that are urgently needed. Recently introduced health insurance scheme like JSY can ensure adequate antenatal care utilization, supervised delivery by trained attendants and can also help in eliminating deliveries under substandard facilities.

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