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Feto-maternal outcome among pregnant females in block Hazratbal of district Srinagar, Jammu and Kashmir: a prospective longitudinal study

Rouf Hussain Rather^{1*}, Umar Nazir¹, Sheema Samreen¹, Mohammad Saleem Itoo²

¹Department of Community Medicine, ²Department of Anatomy, Government Medical College, Srinagar, Jammu and Kashmir, India

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*Correspondence:
Dr. Rouf Hussain Rather,

E-mail: rouf.rather86@gmail.com

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ABSTRACT

Background: Pregnancy is a normal physiological state which a woman experiences at some point of her life. During pregnancy a woman may develop complications which pose a risk to both maternal and fetal health. Caesarean section is a surgical procedure in which incision is made through a mother's abdomen and uterus to deliver one or more babies. The aim and objective of the study was to describe feto-maternal outcome among the study population in block Hazratbal, Srinagar.

Methods: A community based longitudinal study was conducted in block Hazratbal (District Srinagar) for a period of 18 months. All the pregnant females attending the antenatal clinic at the subcenters and PHCs were included in the study and assessed for eligibility. The pregnant women enrolled in the study were examined again around 30 weeks, 37 weeks and once in postnatal period.

Results: Only 2.6% were home deliveries. More than two-thirds (71.7%) of the study subjects delivered by LSCS and less than 2% of the study subjects delivered twins. Out of 391 children born 2 were born dead and 55.2% were of male gender. The mean gestational age at delivery was 38.56 weeks and the mean birth weight of neonates was 2.731 kg with only 4.9% LBW neonates.

Conclusions: The percentage of institutional deliveries was good (97.4%) and the proportion of twins and male babies were within expected limits. The prevalence of LBW babies was only 4.9 against the national average of 28%. But the 71.7% caesarean section rate is too high and needs immediate attention by policy makers. Moreover both healthcare professional as well as general population need to be educated about the disadvantages of unnecessary caesarian sections.

Keywords: Caesarean section, Feto-maternal outcome, Twins, Srinagar, Male gender

INTRODUCTION

Pregnancy is a normal physiological state which a woman experiences at some point of her life. During pregnancy a woman may develop complications which pose a risk to both maternal and fetal health. United Nations estimates of Maternal mortality showed that number of maternal

deaths globally in year 2000 was 529,000, 99% of which were in developing countries and almost equally divided between Africa (251,000) and Asia (253,000), with India contributing 136,000 maternal deaths. A comprehensive analysis of the burden of obstetric morbidity and mortality would need to address both direct and indirect causes of maternal deaths and disabilities. The maternal

deaths can be due to direct and indirect causes, of which direct causes like haemorrhage, infections, preeclampsia and eclampsia, obstructed labour and abortions contribute to 80% of total maternal deaths. Among these complications, hypertension during pregnancy contributes significantly (12%) to the maternal mortality. The association of hypertension with proteinuria during pregnancy markedly increases the risk of perinatal mortality and morbidity. 3

Caesarean section is a surgical procedure in which incision is made through a mother's abdomen and uterus to deliver one or more babies. It is usually performed when a vaginal delivery would put a baby's or mother's life or health at risk. The WHO recommended that the rate of caesarean section should not exceed 15% in any country and further states that no additional health benefits are associated with a caesarean section rate above 10–15%. But unfortunately this rate has been put on backburner in the modern obstetric practice in India because of many factors.

The birth weight of an infant is the single most important determinant of its chances of survival, healthy growth and development. By international agreement low birth weight (LBW) has been defined as a birth weight of less than 2.5 kg. Low birth weight is a measure public health problem in many developing countries. As per UNICEF report 2013 16% of infants are LBW globally. About 28% of babies born in India are LBW as compared to 4% in some developed countries.

Aims and objectives

To describe feto-maternal outcome among the study population in block Hazratbal, Srinagar.

METHODS

Study design

A community based longitudinal study.

Study period

The study was done for a period of 18 months from April 2015 up to September 2016. The present study was a part of the bigger study whose primary objective was to estimate the incidence of PIH and to look for its risk factors. During the first 12 months data was collected and during the next 6 months data entry, analysis and write-up was carried out.

Study area

Study was conducted in the field practice area of GMC Srinagar which is Block Hazratbal (district Srinagar). Hazratbal block is a semi urban area of Srinagar situated 12 kilometers from the centre of city and is under the administrative control of Department of Community Medicine, Government Medical College Srinagar. It

comprises of 65 villages which have been divided into four zones viz; Hazratbal, Harwan, Nishat, and Tailbal and the total population of the area is about 75083 (as per block survey report BMO Hazratbal April 2013).

The Hazratbal block is predominately of plain topography but some of the villages have hilly terrain where tribal population is inhabited. The block has four primary Health centres and 12 sub centers.

As per the table of estimating the sample size of a study for calculating the incidence rate with a specified relative precision from the manual sample size determination in health studies By S. K. Lwanga and S. Lemeshow, World Health Organization Geneva 1991, using the formula:

$$n = (z_{1-\alpha/2} \div \mathcal{E})$$

Where; n is the sample size; z is 1.96; α is type 1 error, and ε is relative precision.

In this study, keeping relative precision at 10% and confidence level at 95%, the sample size came out to be 385.

Selection of sample and data collection

All the pregnant females attending the antenatal clinic at the subcenters and PHCs during the data collection period were included in the study and assessed for eligibility, till the desired number of 385 eligible pregnant females was reached. The information was collected from the study subjects on the basis of pretested semi- structured questionnaire. For better coverage, the zonal headquarters and their subcenters were visited on the respective antenatal days. All the pregnant women who were identified by ASHA of the respective area and registered at sub-centers and PHCs were covered. Any Pregnant woman, as identified by ASHA, if not registered at the respective health institution was advised to attend the health centre and get herself registered with the help of ASHA of the respective area. The pregnant females were followed up till the completion of pregnancy and examined at least once in immediate postnatal period.

Statistical analysis

The data was entered in the Microsoft excel and analysed using SPSS v16.

RESULTS

Majority of the study subjects (21.6%) were from PHC Harwan and the other two PHCs (13.8% and 11.2%).

The study subjects had a mean age of 29.61 years, a mean height of 159.18 cm and a mean monthly per capita income of Rs. 4035. The mean gestational age at delivery was 38.56 weeks and the mean birth weight of neonates was 2.731 kg with 4.9% of neonates having birth weight less than 2.5 kg (Table 2).

Table 1: Distribution of study subjects according to health centres.

Health Centre	Frequency	Percentage (%)
PHC Harwan	83	21.6
SC Theed	41	10.6
SC Darbagh	34	8.8
SC Syedpora	18	4.7
PHC Tailbal	53	13.8
PHC Nishat	43	11.2
SC Shahanpora	38	9.9
SC Hazratbal	19	4.9
SC Dhara	19	4.9
SC Abidal	23	6.0
SC Kanikachi	14	3.6
Total	385	100.0

Table 2: Distribution of continuous variables among study subjects.

Variable	Number	Minimum	Maximum	Mean	Std. deviation
Age (years)	385	17	39	29.61	4.467
Monthly per capita income in Rsx100	385	11	115	40.35	16.182
Time since last child born (years)	220	2	11	3.56	1.764
Height (cm)	385	140	170	159.18	4.187
Gestational age at delivery (weeks)	385	31	43	38.56	1.662
Birth weight of neonates (Kgs)	389	1.0	4.0	2.731	0.3392

Table 3: Distribution of study subjects according to place of delivery.

Place of delivery	Frequency	Percentage (%)
PHC Hazratbal	6	1.6
JLNM hospital	141	36.6
LD hospital	128	33.2
SKIMS trust hospital	28	7.3
Home delivery	10	2.6
Private hospital	54	14.0
Others	18	4.7
Total	385	100.0

Table 4: Distribution of study subjects according to mode of delivery.

Mode of delivery	Frequency	Percentage (%)
Normal delivery	109	28.3
LSCS	276	71.7
Total	385	100.0

Table 5: Distribution of study subjects according to number of children born.

Number of children born	Frequency	Percentage (%)
1	379	98.4
2	6	1.6
Total	385	100.0

Majority of the deliveries were conducted at JLNM hospital and LD hospital (36.6% and 33.2% respectively) and only 2.6% were home deliveries (Table 3).

More than two-thirds (71.7%) of the study subjects delivered by LSCS (Table 4). Less than 2% of the study subjects delivered twins (Table 5).

Table 6: Distribution of fetal outcome.

Fetal outcome	Frequency	Percentage (%)
Alive	389	99.5
Dead	2	0.5
Total	391	100.0

Out of 391 children born 2 were born dead (Table 6).

Table 7: Distribution of fetal outcome in terms of fetal gender.

Fetal gender	Frequency	Percentage (%)
Female	175	44.8
Male	216	55.2
Total	391	100.0

Male gender (55.2%) was more common than female gender (44.8%) among children born to study subjects (Table 7).

DISCUSSION

Majority of the deliveries were conducted at JLNM Hospital and LD Hospital (36.6% and 33.2% respectively) and only 2.6% were home deliveries. More than two-thirds (71.7%) of the study subjects delivered by LSCS and less than 2% of the study subjects delivered twins. Out of 391 children born 2 were born dead and 55.2% were of male gender. The study subjects had a mean age of 29.61 years, a mean height of 159.18 cm and a mean monthly per capita income of Rs. 4035. The mean gestational age at delivery was 38.56 weeks and the mean birth weight of neonates was 2.731 kg with 4.9% of neonates having birth weight less than 2.5 kg.

The frequency of naturally occurring twins is approximately one in 80 births (1.25%) and in our study 6 out of total 385 study subjects delivered twins (1.55%). The frequency of twin pregnancy increased significantly in the late 20th century more so in developed countries. ^{10,11} The increase is mostly because of increased use of assisted reproductive techniques and advanced maternal age at the time of conception. ^{12,13}

Out of 391 children 2 were born dead which is equivalent to around 5 stillbirths per 1000 pregnancies which is far better than the national rate of 22 in every 1,000 pregnancies in 2015. In our study more children (55.2%) were of male gender as compared to female gender (44.8%). This is equivalent to a sex ratio at birth of 123 boys to 100 girls. The sex ratio at birth is variable and is commonly thought to be 107 boys to 100 girls' worldwide. In the human species the ratio between males and females at birth is slightly biased towards the male sex. The natural "sex ratio at birth" is often considered to be around 105. This means that at birth on average, there are 105 males for every 100 females (WHO). Child sex ratio of J & K as per 2011 census is

862 (862 girls per 1000 boys), but it includes all the children in the age group of 0–6 years. It is equivalent to 116 boys per 100 girls, quite near to our result of 123.

In our study the average birth weight of live born children was 2.73 kg and average gestational age at delivery was 38.5 weeks. In total 4.9% of the live born infants were LBW (i.e. birth weight <2.5 kg). Thus a 4.9% prevalence of LBW against the national average of 28% and global average of 16% is very encouraging. It is an indirect indication of an overall good nutritional status of the community and a high standard of utilization and delivery of MCH services.

There was no maternal death among the study population. The MMR is calculated as the number of deaths of women during pregnancy or within 42 days of termination of pregnancy within a specified period of time per 100,000 live births in the same period of time. According to the latest report of the Registrar General of India's sample registration system (RGI-SRS; the sole source of data for fertility and mortality in India), the maternal mortality ratio (MMR) in India has registered a decline from 212 per 100,000 live births in the period 2007-09 to 178 in 2010-12. It has declined further to 167 per 100,000 live births in the period 2011-13 which means one death per 599 live births. The absence of any maternal death in our study can be explained as we did not follow the study subjects beyond two days postpartum up to 42 days and also that sample was 385.

In our study 71.7 percent of study subjects delivered by LSCS and only 28.3 percent delivered by normal delivery. This rate of Caesarian sections is very high by any standards. WHO recommended that the rate of caesarean section should not exceed 15% in any country and further states that no additional health benefits are associated with a caesarean section rate above 10 - 15%. ⁷ But unfortunately this rate has been put on backburner in the modern obstetric practice in India because of many factors especially commercialization of health sector and new indication of caesarean section i.e., Women's will. One of the major changes in the practice of obstetrics over the past century is progressive increased frequency of caesarean delivery which has been associated with an increased risk of post- operative complications and increased risk of fetal distress which in turn increases maternal and neonatal morbidity and mortality. In modern obstetrics women have four times more chance of caesarean section than thirty years ago. The increase in caesarean section rate has been a global phenomenon. Studies have shown that mothers who deliver their babies by caesarean section take longer to first interact with their child when compared with mothers who deliver their babies vaginally. Due to extended hospital stays, both the mother and the child are at increased risk for developing hospital borne infections. 16 Caesarean section rate in U.S.A is 29.1%, England 21.5%, and in Latin American countries 40%. ¹⁷⁻¹⁹

CONCLUSION

The percentage of institutional deliveries was good (97.4%) and the proportion of twins and male babies were within expected limits. The prevalence of LBW babies was only 4.9 against the national average of 28%. But the 71.7 percent caesarian section rate is too high and needs immediate attention by policy makers. Moreover both healthcare professional as well as general population need to be educated about the disadvantages of unnecessary caesarian sections.

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