

APPLICATIONS OF REGRESSION ANALYSIS TO DETERMINE PREVALENCE OF LSCS IN RELATION TO BIRTH WEIGHT.

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Abstract: In the present study the data from a teaching hospital in a rural community over the period of one year (2009) was analyzed and the relationship between birth weight and chances of emergency lower segment caesarean section (E-LSCS) delivery was investigated using various statistical tests, most importantly using logistic regression. The 299 cases selected after simple random sampling formed the database for various pregnancy and birth related details. This information was analyzed using Chi square test, which concluded that the risk of emergency LSCS is significantly higher in the case of newborns with high birth weights. Applying Z-test we can conclude that the birth weight of baby by LSCS delivery is high as compared to birth by normal vaginal delivery. The application of Logistic regression analysis very clearly showed that birth weight 2300 to 2900 gm is most significantly associated with Normal Delivery. Birth weight more than 2900gm is most significant with emergency LSCS delivery. Thus this study examines the usefulness of logistic regression as a statistical tool to predict the occurrence of LSCS in a tertiary hospital setting depending on the birth weight of the child.

Keywords: Birth Weight, Mode of delivery, Regression

Introduction: Pregnancy & delivery are considered as normal physiological states in women. In today's situation when the access to obstetric care is growing day by day there has been a concern over the rising caesarean rates over the world. Caesarean Section (CS) is the surgical intervention in case of serious delivery complications. This surgical procedure has been saving lives for a long period of time. Evidence from research studies indicates that there is a growing tendency for caesarean section deliveries during complications at the time of pregnancy and delivery. Birth weight is one of the major reasons behind caesarean delivery. The proportion of births conducted by cesarean section in India is on the rise. (I. Kambo et al , 2002) .Caesarean section is a highly invasive procedure and involves more skill, resources and risks as compared to vaginal delivery. Furthermore, abdominal delivery following an uncomplicated pregnancy is associated with increased morbidity in the newborn. According to WHO Standards approximately 8 % of the deliveries are considered as high risk of which may lead to LSCS. In last few decades the rate of caesarean section delivery is steadily increasing in developing country like India. In India

data collected from 30 medical colleges & teaching hospitals revealed that caesarean section rate increased from 21.8 % in 1988-89 to 25.4% in 1993-94 (I Kambo et al, 2002). An increase in the Caesarean Section (LSCS) rates is a concern in the health care systems all over

the world. In a developing country, an increase in the CS rate has major implications on the limited health care resources. In the past three decades, the rate of caesarean births has raised dramatically¹. Although neonatal mortality has declined during the same period, there is little evidence that more frequent

caesarean births are the cause. This study was undertaken to explore the relation of birth weights is one of the reasons to undergo caesarian section delivery in the study area.

Objectives:

- The objective of the present study is to study the pattern of mode of delivery in the government run tertiary medical college in Nasik district.
- To compare the proportion of LSCS & normal vaginal delivery (NVD) with respect to birth weight in Nasik district.

Materials and Methods: This study was undertaken to explore the prevalence of LSCS delivery with respect to birth weights in a period 1st Jan 2009 to 31st Dec 2009 in the Department of Obstetrics and Gynecology, Medical College & Hospital, Nasik. This is a cross-sectional study aimed at studying the pattern of prevalence of LSCS as the mode of delivery in the largest tertiary care institution situated in the rural area of Nasik district. The delivery case register at the department of obstetrics and gynecology at the medical college served as the universe for selection of the cases. The cases were then subjected to simple random sampling and data such as mode of delivery, sex of a baby, birth weight & complications at the time of delivery were collected. All the cases delivered at the institution during 2009 served as the sampling frame. Both booked and unbooked cases were included. Cases brought to the institution after home deliveries were excluded. As the new born were weighed on a single weighing scale in the labor room which was standardized, there is less likelihood of introduction of bias due to measurement errors.

Results and discussion

The results of this study indicate more than one third of the deliveries being conducted at the institution

were by caesarean section. This is a very high rate considering percentages documented in Maharashtra through the NFHS (15.6 percent). Out of the studied cases 70 percent were from rural area; however the percentage of caesarean sections from rural area was little more than 33 percent. The percentage of women from urban areas undergoing caesarean sections was considerably higher at 39.75 percent. In Table1 the mean & variance of birthweights of 78 babies delivered by LSCS & 190 babies delivered by NVD are shown.

Table1:

	Birthwt(LSCS)	Birthwt(NVD)
Cases	78	190
Mean	3.001538	2.535868
Variance	0.279969	0.245442

The mean birth weight in the study sample is 2.66 ± 0.557 kgs. When the birth weights in the two groups viz : the normal delivery group and the LSCS group were compared using the F test, it was observed that the variances in the two groups did not differ significantly. However, when the Z test was conducted on the two groups of neonates for birth weight, it was found that the birth weight of children born by a LSCS was significantly higher than those born by normal vaginal delivery.

The birthweight wise distribution of infants according to the mode of delivery was shown in the following table.

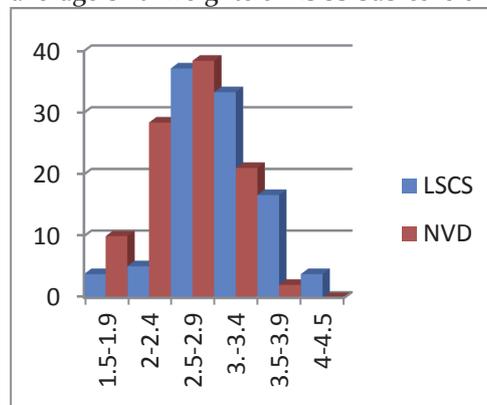
Table 2:

	LSCS	NVD
1.45-1.95	3	19
1.95-2.45	4	54
2.45-2.95	29	73
2.95-3.45	26	40
3.45-3.95	13	4
3.95-4.55	3	0
Total	78	190

References

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The simple measure coefficient of skewness shows that weights of LSCS babies are positively skewed, where as weights of NVD babies is symmetrically distributed. Further Percentage Bar Diagram of the two data sets shows that the on an average birthweights of LSCS babies is on higher side.



The regression analysis of the above data suggests that birth weight 2300 to 2900 gm is most significantly associated with Normal Delivery. Birth weight more than 2900gm is most significant with emergency LSCS delivery.

The above findings suggest that the birthweight of the child can be an important determinant in the case of decision making regarding the mode of delivery. Though the birthweight can be determined by a number of maternal and foetal factors like health during pregnancy, parity etc, its significance is closely related to the mode of delivery in the current context. As discussed earlier, medicaliation of pregnancy and child birth has made LSCS easily accessible and affordable to a number of women across the rural and urban India. However, India is a witness to a paradox wherein maternal mortality due to inadequate health care and medicalisation in terms of increased rates of LSCS continue to co-exist. Fair and rational distribution of healthcare services thus remains a long-term goal of health care delivery in India.

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