



## A Study on the Trend of Caesarean Section in Regional Institute of Medical Sciences in Imphal

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### ABSTRACT

**Objective:** To determine the trend, indications and maternal and foetal outcome of Caesarean section in RIMS, Imphal.

**Methods:** A prospective cross-sectional study was conducted among 500 patients who underwent Caesarean delivery starting from October 2013 for a period of 18 months till August 2015. All caesarean delivery cases above the age of 18 were included. A comparative study was made with a previous study conducted by Uttam Kumar Kharka titled 'The Changing Trend of Caesarean Section in Obstetric Practice' in RIMS, Imphal in the year 2010. Also, the indications for Caesarean Section along with the maternal and foetal outcome for all the patients was followed up and documented.

**Results:** The total number of deliveries during the period was 18181 out of which 6363 patients underwent Caesarean Section. The mean age of the women undergoing Caesarean Section was 29.3 years and most common among Hindu patients with middle socio economic class. It was also most common in the second gravida with term pregnancy. Elective Caesarean Section was done in 345 of the cases and emergency caesarean sections in 155 of the cases. The most common cause of Caesarean Section was Post Caesarean Section patients with cephalopelvic disproportion. Out of all the babies delivered, 8 were admitted in Neonatal Intensive Care with no neonatal mortality.

**Conclusion:** There is an increase in the rate of caesarean section at 35% compared to 28% in 2010, the most common indication being post caesarean section with cephalopelvic disproportion with no maternal or neonatal mortality.

**Keywords:** Caesarean section, indication, mortality

### INTRODUCTION

From the Oxford English Dictionary, the etymology of caesarean section derives from the Roman legal code, the lex Caesare. This law had its origins as the lex Regia from the eighth century BC and prescribed that a baby should be cut out from its mother's womb if she dies before giving birth. Similar terminology is evident in other

languages, for example, in the German term Kaiserschnitt (Emperor's section). The derivation of Caesar and caesarean is from the Latin verb caedere 'to cut'. For caesarean section have risen dramatically over the last 30 years especially for women in the higher age groups. The increased rates have coincided with the enhanced safety of the operation as well as widespread application of

ultrasound and electronic foetal monitoring. The most common indications accounting for this increase are dystocia, repeat caesarean, breech presentation, foetal distress and increase in the size of the baby.<sup>1</sup> Caesarean sections, when adequately indicated, can prevent poor obstetric outcomes and be life-saving procedures for both the mother and the fetus. However, at a time when the caesarean delivery rate has been rising globally, there is growing concern about unnecessary caesarean sections. Unnecessary caesarean sections can increase the risk of maternal morbidity, neonatal death and neonatal admission to an intensive care unit. At the same time, there is also concern that in developing countries in general and among the poorer sections of the populations in such countries in particular, caesarean sections are not always accessible, even when they are clearly indicated. There is no consensus on the “optimal” rate of Caesarean delivery at the population level. Although values between 5% and 15% of live births have been suggested, the basis on which these thresholds have been proposed is not clear. Some historical studies indicate that low maternal mortalities can be achieved when the caesarean delivery rate is far below 15% of live births. In the Netherlands, for example, maternal mortality had fallen below 20 deaths per 100000 live births by 1950, when caesarean sections were associated with less than 2% of live births. The results of some ecological studies also indicate that rates above 15% may be associated with additional mortality. The World Health Organization (WHO) has suggested that a caesarean delivery rate of 15% should be taken as a threshold that should not be exceeded – rather than a target to be achieved. The lower threshold for an “acceptable” rate of Caesarean delivery has received much less attention than the upper threshold. Extremely low rates are indications that access to surgical care is poor and that, in consequence, women, fetuses and neonates are dying unnecessarily. As 1 to 2 % of all births are associated with conditions that require caesarean sections to save the mothers’

lives such as obstructed labour and complete placenta praevia – caesarean delivery rates of less than 1% or less than 2% are thought to reflect a real deficit in access to life-saving obstetric care and to be associated with excess maternal mortality. Rates of at least 5% are thought to be necessary to save the greatest numbers of both mothers and neonates, although there is little evidence to support such a cut-off. National rates of caesarean delivery can mask substantial within-country variation in the rates of such surgery. For example, urban rates are consistently found to be higher than rural rates and the rates for the poorest sections of the population often fall well below the national mean.<sup>2</sup> So, this study was undertaken to review the changing trend of caesarean section in obstetric practice and its impact on fetomaternal outcome.

#### **MATERIALS AND METHODS**

This prospective cross-sectional study was done in the Department of Obstetrics and Gynaecology, Regional Institute of Medical Sciences (RIMS), Imphal. The study was carried out for a period of 18 months with effect from October 2013. The study population was pregnancy cases undergoing caesarean delivery in the department of Obstetrics & Gynaecology, RIMS Hospital, Imphal during the study period. All Caesarean delivery cases above the age of 18 years (both elective and emergency) during the study period were included. Subjects who were unwilling to be part of the study will be excluded. Subjects who were in a critical condition and not in a position to give an interview were excluded from the study. A written informed consent was taken from the subjects willing to participate in the study and was screened for inclusion and exclusion criteria for the study. Detailed history of the patient was taken and examination of the cases were done and recorded. The investigations as listed in the proforma were advised and recorded. Details of operation, whether it was elective or emergency caesarean section, indication of caesarean section, time of operation, type of anaesthesia used and the

surgeon who conducted the operation, all intra-operative findings and complications were all be noted. Apgar score of the baby was noted and recorded soon after birth. The mother was examined post delivery and the findings were recorded. Mothers and babies were followed up till discharge from the hospital. The indications for Caesarean section and the complications associated with it, maternal and foetal outcome was evaluated and compared with past studies. Current trends in indication, operative technique and attitude of the mother regarding the mode of

delivery was studied and reviewed. Data were checked for consistency and accuracy and were entered in IBM SPSS version 16. Data were described in mean and percentages. Chi-square test and t-test were used for test of significance. p-value less than 0.05 was taken as significant.

**RESULTS**

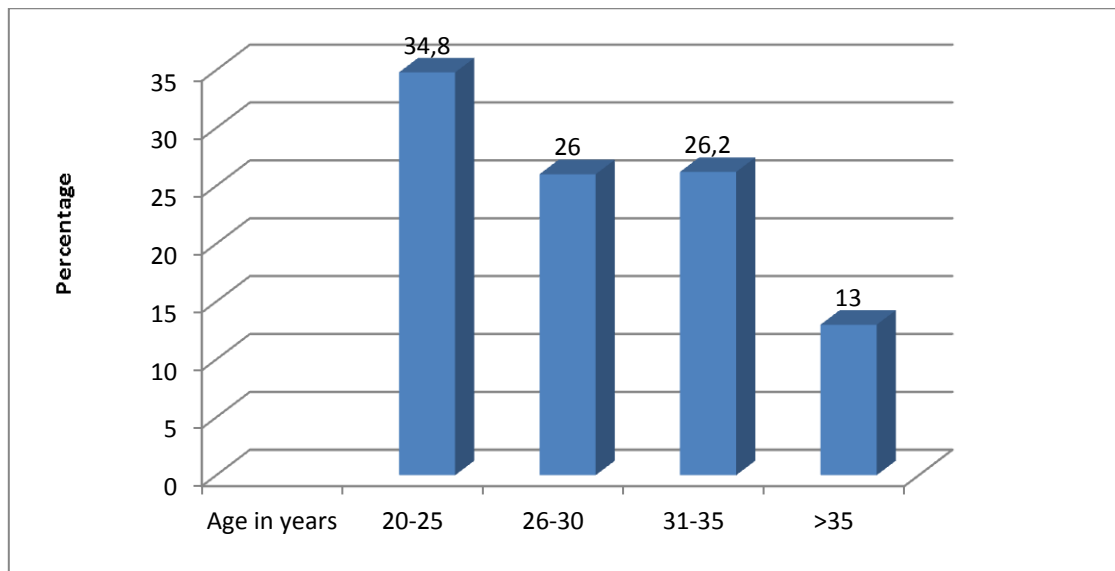
The study included 500 pregnancy cases undergoing caesarean delivery in the department of Obstetrics & Gynaecology, RIMS Hospital, Imphal during October 2013 to August 2015.

**Table 1:** Distribution of respondents by age

| Age in years     | Number            | Percentage   |
|------------------|-------------------|--------------|
| 20-25            | 174               | 34.8         |
| 26-30            | 130               | 26.0         |
| 31-35            | 131               | 26.2         |
| >35              | 65                | 13.0         |
| <b>Total</b>     | <b>500</b>        | <b>100.0</b> |
| <b>Mean ± SD</b> | <b>29.3 ± 4.6</b> |              |

Majority of the pregnant ladies were from the age group of 20-21 years followed by 31-30 years and 26-30 years. Mean age was 29.3 years with a

standard deviation of 4.6 years as shown in table 1 and figure 1.



**Figure 1:** Bar diagram showing distribution of the respondents by age

**Table 2:** Distribution of respondents by religion

| Religion     | Number     | Percentage   |
|--------------|------------|--------------|
| Hindu        | 301        | 60.2         |
| Muslim       | 126        | 25.2         |
| Christian    | 73         | 14.6         |
| <b>Total</b> | <b>500</b> | <b>100.0</b> |

Table 2 and figure 2 show that most of the patients were Hindu (60.2%) followed by Muslim (25.2%) and Christians

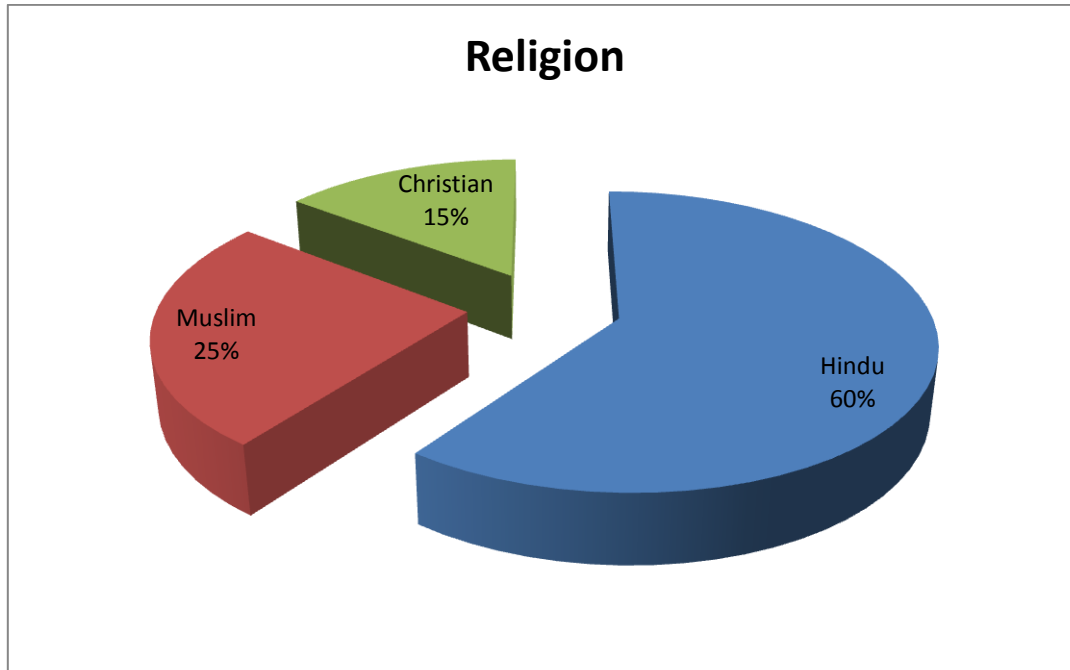


Figure 2: Pie chart showing distribution of respondents by religion

Table 3: Distribution of respondents by socio economic status

| Socio economic status | Number     | Percentage   |
|-----------------------|------------|--------------|
| Low                   | 107        | 21.4         |
| Medium                | 235        | 47.0         |
| High                  | 158        | 31.6         |
| <b>Total</b>          | <b>500</b> | <b>100.0</b> |

Nearly half of the pregnant ladies undergoing caesarean section were of the middle socio

economic class group followed by high SES as shown in table 3 and figure 3.

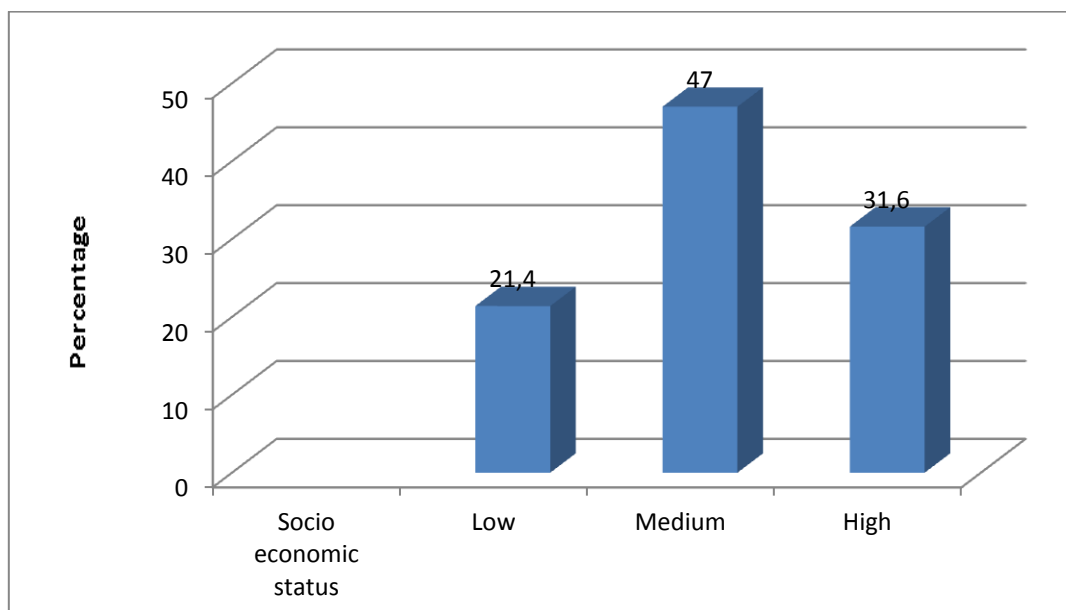


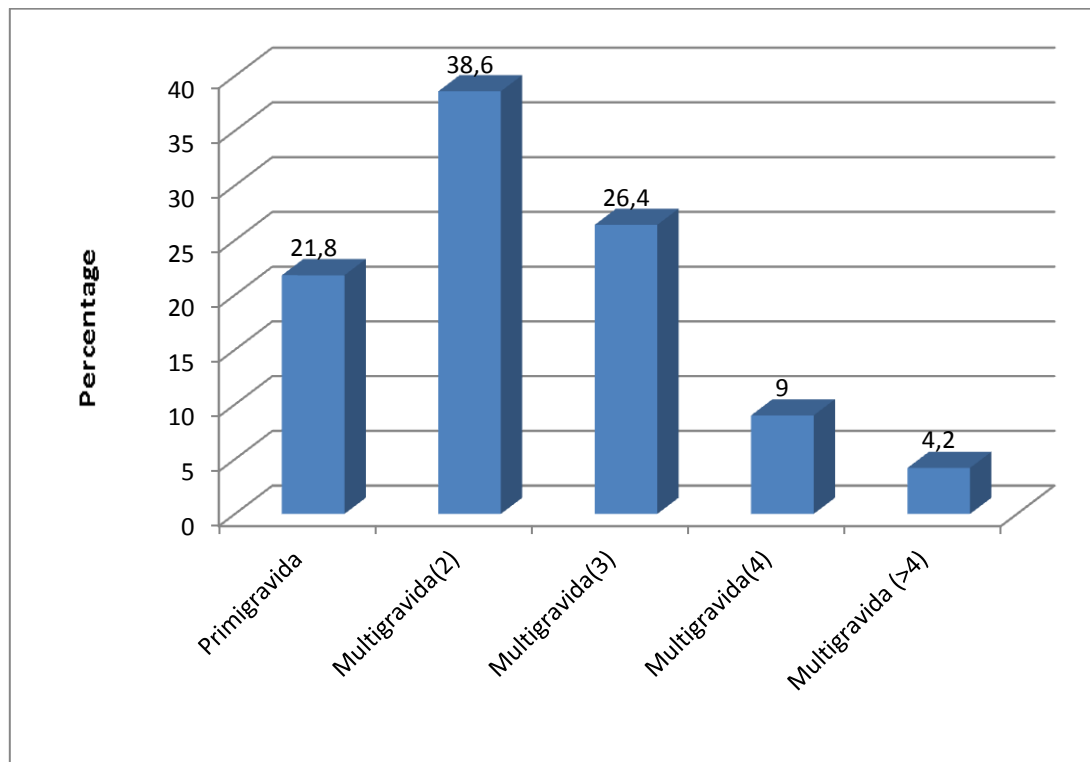
Figure 3: Bar diagram showing distribution of the respondents by SES

**Table 4:** Distribution of respondents by gravida

| Gravida           | Number     | Percentage   |
|-------------------|------------|--------------|
| Primigravida      | 109        | 21.8         |
| Multigravida(2)   | 193        | 38.6         |
| Multigravida(3)   | 132        | 26.4         |
| Multigravida(4)   | 45         | 9.0          |
| Multigravida (>4) | 21         | 4.2          |
| <b>Total</b>      | <b>500</b> | <b>100.0</b> |

Second gravida was most common in pregnancies undergoing caesarean section followed by third

gravida and primigravida as shown in table 4 and figure 4.

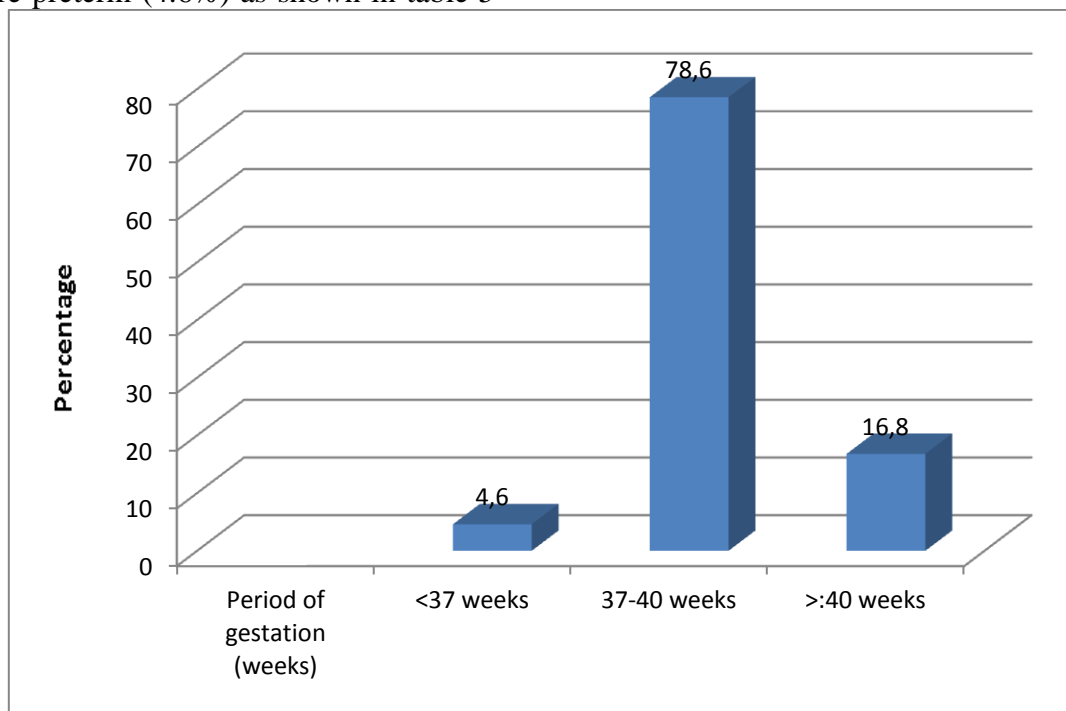


**Figure 4:** Bar diagram showing distribution of the respondents by gravida

**Table 5:** Distribution of respondents by period of gestation

| Period of gestation (weeks) | Number     | Percentage   |
|-----------------------------|------------|--------------|
| <37 weeks                   | 23         | 4.6          |
| 37-40 weeks                 | 393        | 78.6         |
| >:40 weeks                  | 84         | 16.8         |
| <b>Total</b>                | <b>500</b> | <b>100.0</b> |

Majority of the pregnancies were term (78.6%) and figure 5. and few were preterm (4.6%) as shown in table 5



**Figure 5:** Bar diagram showing distribution of the respondents by period of gestation

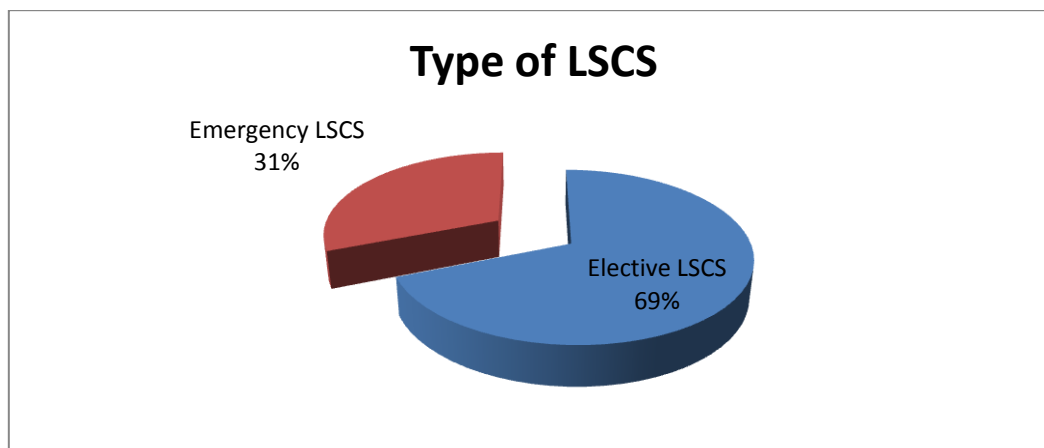
**Table 6:** Distribution of respondents by percentage of anaemia

| Haemoglobin  | Number     | Percentage   |
|--------------|------------|--------------|
| Low (<11)    | 172        | 34.4         |
| Normal       | 328        | 65.6         |
| <b>Total</b> | <b>500</b> | <b>100.0</b> |

Anaemia was present in 34.4% of the pregnancies

**Table 7:** Distribution of respondents by type of LSCS

| Type of LSCS   | Number     | Percentage   |
|----------------|------------|--------------|
| Elective LSCS  | 345        | 69.0         |
| Emergency LSCS | 155        | 31.0         |
| <b>Total</b>   | <b>500</b> | <b>100.0</b> |



**Figure 6:** Pie chart showing distribution of respondents by type of LSCS

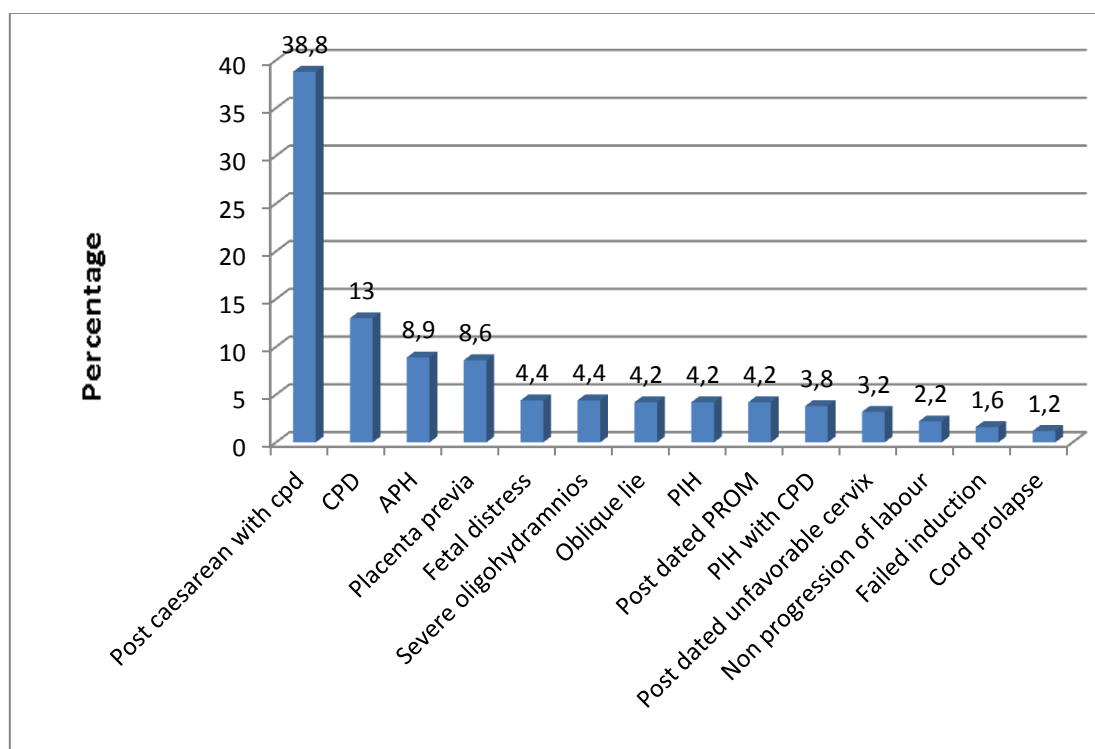
Table 6 and figure 5 show that majority (69%) of the caesarean were elective LSCS.

**Table 8:** Distribution of respondents by indication for LSCS

| Reason for LSCS               | Number     | Percentage   |
|-------------------------------|------------|--------------|
| Post caesarean with cpd       | 194        | 38.8         |
| CPD                           | 65         | 13.0         |
| APH                           | 44         | 8.9          |
| Placenta previa               | 43         | 8.6          |
| Fetal distress                | 22         | 4.4          |
| Severe oligohydramnios        | 22         | 4.4          |
| Oblique lie                   | 21         | 4.2          |
| PIH                           | 15         | 4.2          |
| Post dated PROM               | 13         | 4.2          |
| PIH with CPD                  | 19         | 3.8          |
| Post dated unfavorable cervix | 16         | 3.2          |
| Non progression of labour     | 11         | 2.2          |
| Failed induction              | 8          | 1.6          |
| Cord prolapse                 | 6          | 1.2          |
| <b>Total</b>                  | <b>500</b> | <b>100.0</b> |

The commonest reason for LSCS was post caesarean section with CPD which accounted for

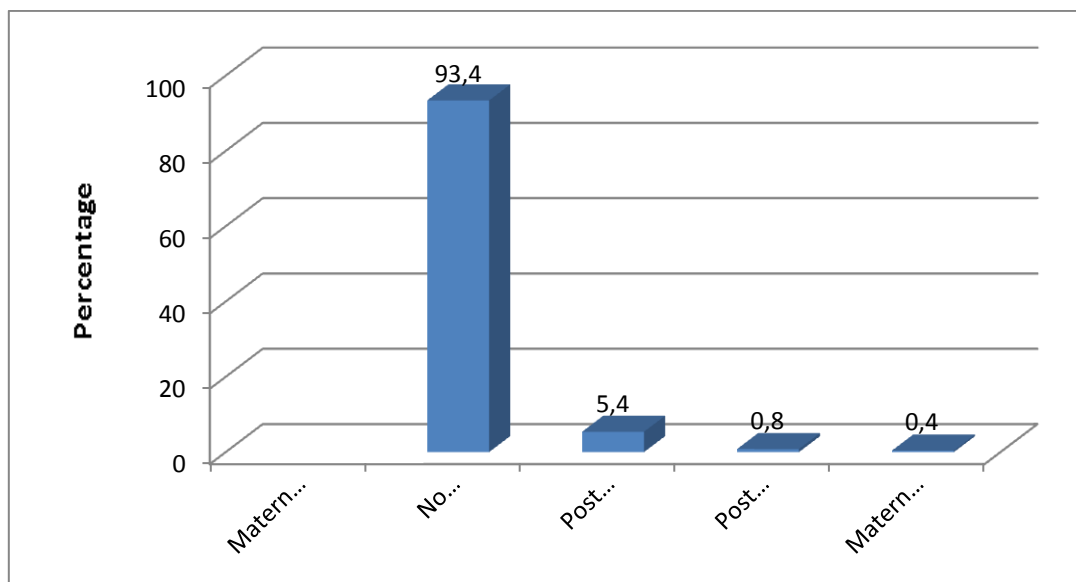
38.8% of cases followed by CPD and APH and placenta previa as shown in table 8 and figure 7.



**Figure 7:** Bar diagram showing distribution of the respondents by indication for LSCS

**Table 9:** Distribution of respondents by maternal complication

| Maternal complication   | Number     | Percentage   |
|-------------------------|------------|--------------|
| No complication         | 467        | 93.4         |
| Post partum haemorrhage | 27         | 5.4          |
| Post partum sepsis      | 4          | 0.8          |
| Maternal death          | 2          | 0.4          |
| <b>Total</b>            | <b>500</b> | <b>100.0</b> |

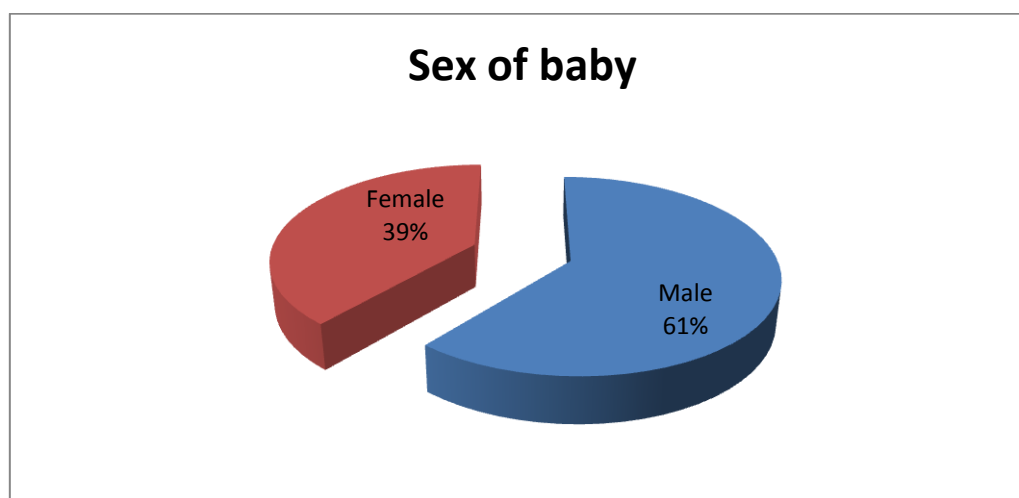


**Figure 8:** Bar diagram showing distribution of the respondents by maternal complication

**Table 10:** Distribution of respondents by sex of the baby

| Sex of the child | Number     | Percentage   |
|------------------|------------|--------------|
| Male             | 306        | 61.2         |
| Female           | 194        | 38.8         |
| <b>Total</b>     | <b>500</b> | <b>100.0</b> |

Majority of the babies born were males which accounted for 61.2% of the cases as shown in table 10 and figure 9.



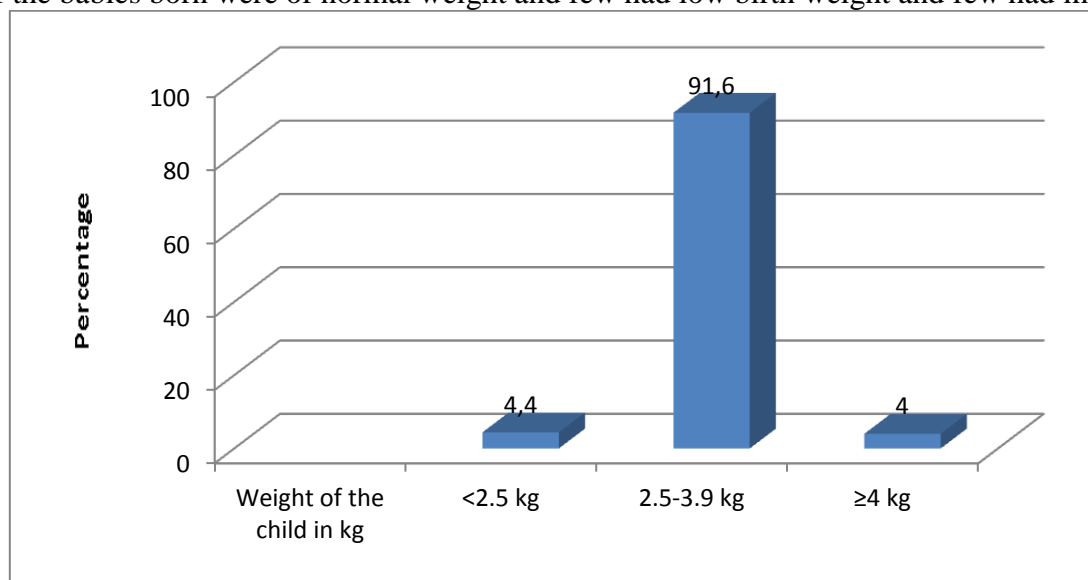
**Figure 9:** Pie chart showing distribution of respondents by sex of the baby



**Table 11:** Distribution of respondents by weight of the baby

| Weight of the child in kg | Number     | Percentage   |
|---------------------------|------------|--------------|
| <2.5 kg                   | 22         | 4.4          |
| 2.5-3.9 kg                | 458        | 91.6         |
| ≥4 kg                     | 20         | 4.0          |
| <b>Total</b>              | <b>500</b> | <b>100.0</b> |

Majority of the babies born were of normal weight and few had low birth weight and few had macrosomia.

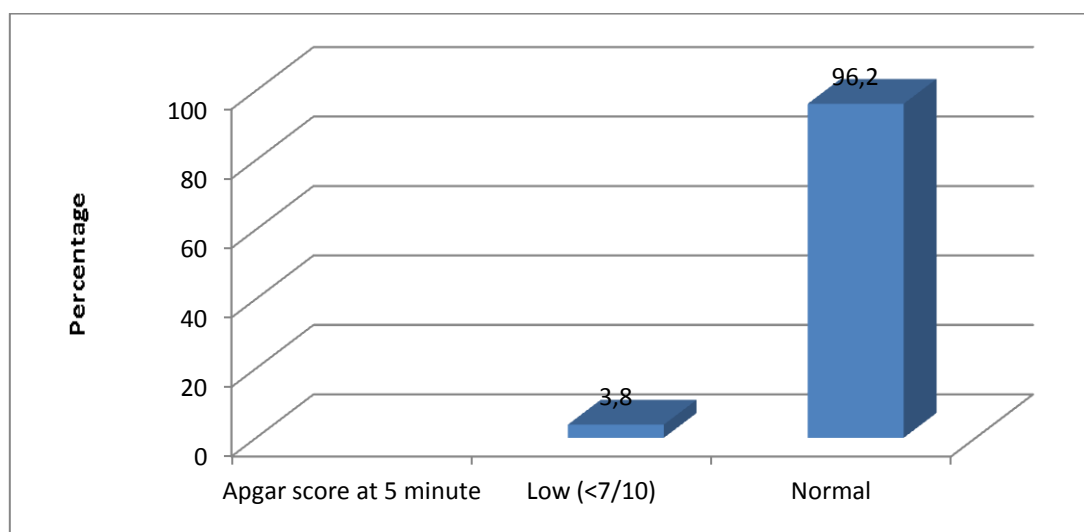


**Figure 10:** Bar diagram showing distribution of the respondents by baby's weight

**Table 12:** Distribution of respondents baby by apgar score at 5 minute

| Apgar score at 5 minute | Number     | Percentage   |
|-------------------------|------------|--------------|
| Low (<7/10)             | 19         | 3.8          |
| Normal                  | 481        | 96.2         |
| <b>Total</b>            | <b>500</b> | <b>100.0</b> |

Apgar score at 5 minute was low in 3.8% of cases as shown in table 12 and figure 11.

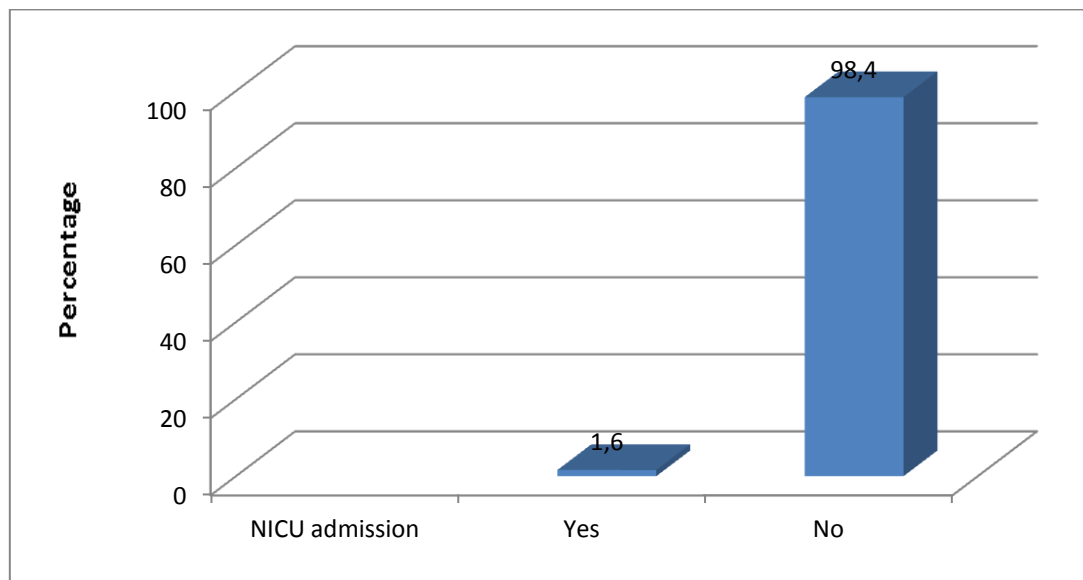


**Figure 11:** Bar diagram showing distribution of the respondents baby apgar score at 5 minute

**Table 13:** Distribution of respondent's baby by NICU admission

| NICU admission | Number     | Percentage   |
|----------------|------------|--------------|
| Yes            | 8          | 1.6          |
| No             | 492        | 98.4         |
| <b>Total</b>   | <b>500</b> | <b>100.0</b> |

Eight babies were admitted to NICU as shown in table 13 and figure 12.

**Figure 12:** Bar diagram showing distribution of the respondents by NICU admission**Table 14:** Distribution of respondent's baby by mortality

| Mortality    | Number     | Percentage   |
|--------------|------------|--------------|
| Yes          | 0          | 0.0          |
| No           | 500        | 100.0        |
| <b>Total</b> | <b>500</b> | <b>100.0</b> |

No neonatal mortality was observed in this study.

## DISCUSSION

This study was conducted Department of Obstetrics and Gynaecology, Regional Institute of Medical Sciences (RIMS), Imphal among 500 pregnancy cases undergoing caesarean delivery. The commonest age group of the pregnant women was 20-25 years with a mean age of 29.3 years. Hindu was the most common religion and nearly half of them were from middle socio economic class.

In this study caesarean section was done mostly with pregnant ladies of second and third gravida. Pregnant women were mostly term pregnancy. More than two third cases had elective caesarean section in this study. But the study by Kaur J et al<sup>17</sup> had more of emergency (52.31%) over

elective (47.70%) caesarean sections. In the study by Gao Y et al<sup>16</sup> also fetal indications contributed most to the caesarean rate.

In the present study, the commonest reason for caesarean section is post caesarean section with CPD (38.8%) followed by CPD (13%). The indications of caesarean section in order of frequency were previous caesarean section in 346 (56.3%) patients, followed by fetal distress in 108 (17.5%); failure to progress in 88 (14.3%), mal-presentation & PIH in 20 (3.2%) cases each, placenta praevia in 18 (2.93%); twin in 8 (1.3%) and placental abruption in 6 (0.9%) cases in a study by Rafique S et al<sup>11</sup>. Similar finding was obtained by Geidam AD et al<sup>1</sup>, Unnikrishnan B et al<sup>7</sup> and Ebrashy AE et al<sup>10</sup>. In the study by

Wagan F et al<sup>8</sup>, the main indication of caesarean section was previous caesarean section, dystocia, foetal distress, placenta praevia and breech presentation.

But in the study by Kaur J et al<sup>17</sup> the commonest reasons for caesarean sections were fetal distress (30.77%) and repeat caesarean sections (29.23%). In the study by Gao Y et al<sup>16</sup> also fetal indications contributed most to the caesarean rate.

Majority (69%) of the caesarean were elective LSCS in the present study. However, in the study conducted by Karim F et al<sup>8</sup>, elective caesarean section was done on 14.14% of the study population.

Maximum number of newborn has normal apgar score at 5 minutes in this study. This finding was in agreement with the findings of Baskett TF et al<sup>18</sup>.

In the present study, majority did not have any post cesarean complications. Only 5.4% had post partum hemorrhage. These findings were in agreement with the observations of Karlstrom A et al<sup>19</sup>. Maternal complication was present in 7% of cases in caesarean delivery in this study. Among this post partum haemorrhage was most frequently encountered. Maternal mortality was present in 2 cases (0.4%). Low apgar score was found in 3.8% of babies born and 8 babies (1.6%) were admitted to NICU. No neonatal mortality was observed in this study. This is in contrast to the findings of Mehta A et al<sup>3</sup> where perinatal mortality rate in caesarean births increased significantly. This may be due to the fact that majority of the caesarean delivery in the present study was at term pregnancy. This finding was consistent with SRS data 2013 that Manipur is one of the best states in India with regards to Infant mortality. And also in the study by Wuttikonsammakit P et al<sup>2</sup> there was neonatal mortality of 20.5% but no maternal deaths.

In the present study, the total number of total deliveries is 18181 out of which 6363 patients underwent Caesarean Section which amounts to 35% of the total deliveries. As per the thesis study of Uttam Kumar Kharka titled 'The Changing

Trend of Caesarean Section in Obstetric Practice' in 2010, the total number of caesarean deliveries was 28% of the total deliveries which indicates an increase in the total number of caesarean deliveries.

## CONCLUSION

This study was conducted Department of Obstetrics and Gynaecology, Regional Institute of Medical Sciences (RIMS), Imphal among 500 pregnancy cases undergoing caesarean delivery. The commonest age group of the pregnant women was 20-25 years with a mean age of 29.3 years. Hindu was the most common religion and nearly half of them were from middle socio economic class.

In this study caesarean section was done mostly in second and third gravida and in term pregnancy. More than two third cases had elective caesarean section in this study. The commonest reason for caesarean section was post caesarean section with CPD (38.8%) followed by CPD (13%) in this study. Maximum number of newborn has normal apgar score at 5 minutes in this study. In the present study, very few had post cesarean complications. No neonatal mortality was observed in this study.

In this study, as caesarean section was done mostly with pregnant ladies of second and third gravida and were mostly term pregnancy. More than two third cases had elective caesarean section in this study. But the study by Kaur J et al<sup>17</sup> had more of emergency (52.31%) over elective (47.70%) caesarean sections. In the study by Gao Y et al<sup>16</sup> also fetal indications contributed most to the caesarean rate.

In the present study, the commonest reason for caesarean section is post caesarean section with CPD (38.8%) followed by CPD (13%). The indications of caesarean section in order of frequency were previous caesarean section in 346 (56.3%) patients, followed by fetal distress in 108 (17.5%); failure to progress in 88 (14.3%), malpresentation & PIH in 20 (3.2%) cases each, placenta praevia in 18 (2.93%); twin in 8 (1.3%)

and placental abruption in 6 (0.9%) cases in a study by Rafique S et al<sup>11</sup>. Similar finding was obtained by Geidam AD et al<sup>1</sup>, Unnikrishnan B et al<sup>7</sup> and Ebrashy AE et al<sup>10</sup>. In the study by Wagan F et al<sup>8</sup>, the main indication of caesarean section was previous caesarean section, dystocia, foetal distress, placenta praevia and breech presentation. But in the study by Kaur J et al<sup>17</sup> the commonest reasons for caesarean sections were foetal distress (30.77%) and repeat caesarean sections (29.23%). In the study by Gao Y et al<sup>16</sup> also fetal indications contributed most to the caesarean rate.

No neonatal mortality was observed in this study. This is in contrast to the findings of Mehta A et al<sup>3</sup> where perinatal mortality rate in caesarean births increased significantly. This may be due to the fact that majority of the caesarean delivery in the present study was at term pregnancy.

Majority (69%) of the caesarean were elective LSCS in the present study. However, in the study conducted by Karim F et al<sup>8</sup>, elective caesarean section was done on 14.14% of the study population.

Maximum number of newborn has normal apgar score at 7 minutes in our study. This finding is in agreement with the findings of Ugwu GO et al<sup>18</sup>.

In the present study, majority did not have any post cesarean complications. Only 5.4% had post partum hemorrhage. These findings were in agreement with the observations of Corral-Chávez M et al<sup>19</sup>.

Maternal complication was present in 7% of cases in caesarean delivery in this study. Among this post partum haemorrhage was most frequently encountered.. Maternal mortality was present in 2 cases (0.4%). Low apgar score was found in 3.8% of babies born and 8 babies (1.6%) were admitted to NICU. But there was no mortality. But in the study by Wuttikonsammakit P et al<sup>2</sup> there was neonatal mortality of 20.5% but no maternal deaths.

In the present study, the total number of total deliveries is 18181 out of which 6363 patients underwent Caesarean Section which amounts to 35% of the total deliveries which indicates an

increase in the number of carsarean deliveries compared to the previous five years in which the percentage of caesarean delivery was 28%.

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