ANALYSIS OF CAESAREAN SECTION AETIOLOGY IN A RURAL MEDICAL COLLEGE- A RETROSPECTIVE STUDY

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ABSTRACT

BACKGROUND
Caesarean section (CS) is the most commonly performed surgery in obstetrical care. The WHO stated, in 2015, that every effort should be made to provide CS to women in need, rather than striving to achieve a specific rate.[1] The prevalence of CS has increased fastest among rural, poor and less educated women.[2]

To compare the rise in institutional deliveries with rise in CS (Caesarean Section) in a rural medical college and analyse trends.

MATERIALS AND METHODS
All delivery records of a rural medical college during 6 years period from Jan. 2010 to Dec. 2015 were examined and data of all deliveries including CS was collected and analysed. Statistical analysis was done using regression analysis for generalised linear regression for changes in incidence and indications.

RESULTS
Over 6 years, annual number of deliveries in rural college increased from 285 to 2209 (775% rise). CS rates increased from 113 to 1224 (1083% rise). Total no. of consultants and paramedical staff remained same. This rise in CS rate when compared with rise in total deliveries was found to be statistically highly significant (p < 0.0001). Amongst the indications, increase in CS rate was mainly due to increase in post-CS pregnancies (26.17%-41.457%), non-progress of labour (NPOL) (7.56%-17.32%) and foetal distress (5.31%-22.9%).

CONCLUSION
Rapid rise in institutional deliveries increases the CS rates. Rise in CS rate in this study was found statistically highly significant. Post-caesarean pregnancy, non-progress of labour and foetal distress were the largest contributors for CS.

KEYWORDS
Caesarean Section, Indication, Post-Caesarean Pregnancy, Rural Medical College, Institutional Deliveries.


Government's emphasis on deliveries attended by doctors rather than midwives may also have contributed especially in public health facilities.

MATERIALS AND METHODS
Retrospective analysis of all the delivery records of births during 6 years period from Jan. 2010 to Dec. 2015 was done and data of CS was analysed. Statistical analysis was done using regression analysis for generalised linear regression for changes in incidence and indications.

RESULTS
Over the years, annual number of deliveries increased approx. 50.6% per year totalling 775% from 285 (2010) to 2209 (2015) as shown in Table 1. In the corresponding period, CS delivery rates rose approx. 61.05% annually totalling 1083% from 113 (39.65%) to 1224 (55.41%). Table 1 shows number of total deliveries and CS and its percentage. This rise in CS delivery was found statistically highly significant (p<0.0001).

<table>
<thead>
<tr>
<th>Year</th>
<th>Total CS</th>
<th>Total Deliveries</th>
<th>% Rise CS</th>
<th>% Rise Total del</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>113</td>
<td>285</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2011</td>
<td>275</td>
<td>595</td>
<td>143.36</td>
<td>108.77</td>
</tr>
<tr>
<td>2012</td>
<td>354</td>
<td>691</td>
<td>213.27</td>
<td>142.45</td>
</tr>
<tr>
<td>2013</td>
<td>489</td>
<td>926</td>
<td>332.74</td>
<td>224.91</td>
</tr>
<tr>
<td>2014</td>
<td>755</td>
<td>1368</td>
<td>568.14</td>
<td>380</td>
</tr>
<tr>
<td>2015</td>
<td>1224</td>
<td>2209</td>
<td>983.18</td>
<td>675.08</td>
</tr>
</tbody>
</table>

Table 1. Number of Total Deliveries and CS and their % Age Rise annually taking year 2010 as Baseline
Table 2 shows most common indications of CS, their frequency and percentage contribution to total CS in the rural medical college.

<table>
<thead>
<tr>
<th>Year</th>
<th>Post CS</th>
<th>NPOL</th>
<th>Foetal Distress</th>
<th>Breech</th>
<th>PIH</th>
<th>APH</th>
<th>CPD</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>46 (40.71%)</td>
<td>14 (12.39%)</td>
<td>6 (5.31%)</td>
<td>17 (15.04%)</td>
<td>4 (3.54%)</td>
<td>11 (9.73%)</td>
<td>3 (2.65%)</td>
<td>12 (10.62%)</td>
</tr>
<tr>
<td>2011</td>
<td>114 (40.45%)</td>
<td>41 (14.90%)</td>
<td>27 (9.81%)</td>
<td>22 (8.00%)</td>
<td>10 (3.63%)</td>
<td>29 (10.54%)</td>
<td>11 (4.00%)</td>
<td>21 (7.63%)</td>
</tr>
<tr>
<td>2012</td>
<td>105 (29.66%)</td>
<td>90 (25.42%)</td>
<td>43 (12.14%)</td>
<td>40 (11.30%)</td>
<td>17 (4.80%)</td>
<td>21 (5.93%)</td>
<td>18 (5.08%)</td>
<td>20 (56.5%)</td>
</tr>
<tr>
<td>2013</td>
<td>128 (26.76%)</td>
<td>37 (7.56%)</td>
<td>112 (22.90%)</td>
<td>66 (13.49%)</td>
<td>50 (10.22%)</td>
<td>21 (4.29%)</td>
<td>8 (1.63%)</td>
<td>67 (13.70%)</td>
</tr>
<tr>
<td>2014</td>
<td>239 (31.65%)</td>
<td>72 (9.53%)</td>
<td>134 (17.74%)</td>
<td>75 (9.93%)</td>
<td>72 (9.53%)</td>
<td>29 (3.84%)</td>
<td>23 (3.04%)</td>
<td>111 (14.70%)</td>
</tr>
<tr>
<td>2015</td>
<td>409 (33.41%)</td>
<td>212 (17.32%)</td>
<td>129 (10.93%)</td>
<td>136 (11.11%)</td>
<td>140 (11.44%)</td>
<td>54 (4.41%)</td>
<td>54 (4.41%)</td>
<td>90 (7.35%)</td>
</tr>
</tbody>
</table>

Table 2. Commonest Indications of CS and their Frequency and Percentage Contribution

Chart 1 shows number of total deliveries and CS and percentage rise of CS as compared to % rise in total deliveries from 2010-2015 as shown in tables 1.

Chart 2 shows proportion of common indications of CS over the years as shown in Table 2.

Chart 3 and chart 4 show regression analyses with total deliveries and percentage rise in total deliveries in X axis and CS and percentage rise in CS in Y axis showing generalised linear regressions.

Regression data analysis change in CS vs total delivery

Statistical analysis of chart 3 shows best fit value of slope $0.5818 \pm 0.0077$ (95% confidence limit $0.5602$ to $0.6034$) with goodness of fit $0.9993$ and P value $<0.0001$ showing significant deviation from horizontal. Probability of $Y = 0.5818 \star X - 54.00$.

Regression analysis rise in CS % vs rise in total delivery %

Statistical analysis of chart 3 shows best fit value of slope $1.500 \pm 0.0437$ (95% confidence limit $1.379$ to $1.621$) with goodness of fit $0.9966$ and P value $<0.0001$ showing significant deviation from horizontal. Probability of $Y=1.500 \star X - 17.71$. 
DISCUSSION

Estimates of CS rates in India was 2.7% (NFHS1 92-93), 7.1% (NFHS2 98-99), 10.6% (NFHS3 05-06) and 24.5% (NFHS4 phase 1 average estimate 2015-16) and showing 10.1% increase in the rates annually in India. CS rate is much higher (30-69.9%) in tertiary care hospitals and teaching hospitals.[3-8] In our study, CS rate was 39.65% - 55.41%. It appears very high considering the 10.6% (rural) - 13.6% (urban) CS rate for Haryana.[9] However, in Haryana, with increase in institutional deliveries from 35.7% (NFHS3) to 80.5% (NFHS4), CS rate has more than doubled from 5% (NFHS3) to 13.38% (NFHS4). In India, many women deliver at home due to lack of access to better facilities. Many despite of requiring CS, are forced to undergo normal delivery resulting in maternal and perinatal complications. The rural areas in most parts of India do not have facility for conducting even a normal delivery. Only 13.1% CHC in Haryana were posted with obstetrician and most of them are located in urban areas.[10]

Many delivery complications can be handled efficiently initially by normal delivery, but if over looked, later require CS e.g. PIH etc. This is a vital reason for which the caesarean section is more in tertiary care institutions. In Haryana, complete Ante natal care is available only to 18.3% women in rural areas.[9] The emergency obstetric care provided to the patients is not uniform over the geographical spread. It is different for urban and rural regions and it is even different for different states of India. In the states with high level of urbanisation and literacy and higher level of antenatal and institutional care, CS rate is higher in both rural and urban areas e.g. Telangana (5.34% vs. 63.2%), Tamil Nadu (32.3% vs. 36.1%).[9]

With rapid increase in institutional deliveries in recent years due to improvement of socioeconomic conditions, level of education, enhanced advocacy for institutional deliveries in India [34% (DLHS, 1998-99); 47% (DLHS, 2007-08); 60.5% (SRS, 2010)], easy access to communication and free transport facilities under National Rural Health Mission (NRHM), the emergency obstetric care provided to the patients is not uniform over the geographical spread. It is different for urban and rural regions and it is even different for different states of India. In the states with high level of urbanisation and literacy and higher level of antenatal and institutional care, CS rate is higher in both rural and urban areas e.g. Telangana (5.34% vs. 63.2%), Tamil Nadu (32.3% vs. 36.1%).[9]

CONCLUSION

This study shows that rapid rise in institutional deliveries increases the CS rates. Rise in CS rate in this study was found statistically highly significant with post-caesarean pregnancy, NPOL (non-progress of labour) and foetal distress being the largest contributors.

REFERENCES