Anam Riaz, Alia Bano, Samina Saleem Dojki

INTRODUCTION
One of the most common procedures for obstetrics is the induction of labor. It is reported that one fifth of all pregnancies require induction procedure. Some studies suggest that induction of pregnancy increases the risk of complications due to uterine overactivity or atony. Various studies have reported that in women with induced labor, caesarean sections were considerably higher than in women with spontaneous labor. Mean Apgar score, however, was better than spontaneous labor in induced labor. Cesarean delivery was found to be significantly higher among women with >29 years of age (p-value 0.006), >38 weeks of gestational age (p-value <0.001), obesity (p-value <0.001), and induction of labor (p-value 0.020). Mean Apgar score at 1 min was 7.45 ±0.69 and Apgar score at 5min was 8.84 ±0.41. Mean Apgar score at 5 minutes was significantly higher in women vaginal delivery than that of women with cesarean delivery (p-value 0.034).

METHODS
This descriptive study was conducted at Obstetrics and Gynecology department of Patel Hospital, Karachi from April to October 2019. All women with age between 20-40 years, gestational age between 37-42 weeks, and singleton pregnancy were consecutively included. Mode of delivery and Apgar score at 5 minutes were noted. Of 172 women, the mean age of the women was 29.9±4.64. Vaginal delivery was reported in 102 (59.3%) and cesarean section in 70 (40.7%) women. Cesarean delivery was found to be significantly higher among women with >29 years of age (p-value 0.006), >38 weeks of gestational age (p-value <0.001), obesity (p-value <0.001), and induction of labor (p-value 0.020).

RESULTS
Of 172 women, Vaginal delivery was reported in 102 (59.3%) and cesarean section in 70 (40.7%) women. Cesarean delivery was found to be significantly higher among women with >29 years of age (p-value 0.006), >38 weeks of gestational age (p-value <0.001), obesity (p-value <0.001), and induction of labor (p-value 0.020). Mean Apgar score at 1 min was 7.45 ±0.69 and Apgar score at 5min was 8.84 ±0.41. Mean Apgar score at 5 minutes was significantly higher in women vaginal delivery than that of women with cesarean delivery (p-value 0.034).

CONCLUSION
The frequency of vaginal delivery was found higher in nulliparous women presenting at term. Moreover, Apgar score at 5 minutes was found to be significantly different in both groups.

ABSTRACT
Objective: To assess the delivery outcome in nulliparous women at term and to compare the outcomes among induced versus spontaneous labor.

Methods: A descriptive study was conducted at Obstetrics and Gynecology department of Patel Hospital, Karachi from April to October 2019. All women with age between 20-40 years, gestational age between 37-42 weeks, and singleton pregnancy were consecutively included. Mode of delivery and Apgar score at 5 minutes were noted.

Results: Of 172 women, the mean age of the women was 29.9±4.64. Vaginal delivery was reported in 102 (59.3%) and cesarean section in 70 (40.7%) women. Cesarean delivery was found to be significantly higher among women with >29 years of age (p-value 0.006), >38 weeks of gestational age (p-value <0.001), obesity (p-value <0.001), and induction of labor (p-value 0.020). Mean Apgar score at 1 min was 7.45 ±0.69 and Apgar score at 5min was 8.84 ±0.41. Mean Apgar score at 5 minutes was significantly higher in women vaginal delivery than that of women with cesarean delivery (p-value 0.034).

Conclusion: The frequency of vaginal delivery was found higher in nulliparous women presenting at term. Moreover, Apgar score at 5 minutes was found to be significantly different in both groups.

Keywords: Caesarean delivery, Induction of labor, maternal outcome, Induced labor, Spontaneous labor, Nulliparous women.
placenta previa, primi breach presentation (diagnosed by ultrasonography), and fetal distress in first stage of labor (diagnosed by strict fetal monitoring by fetoscope during labor) were excluded.

A sample of 172 women was estimated with 95% confidence level, reported percentage of caesarean section with induced labor i.e. 20% at margin of error 6%. All females underwent induced labor with 3mg dinoprostone vaginally. Dose were repeated after six hours. Maximum allowable up to two doses (6 microgram of the drug). While females underwent spontaneous initiation of labor, all were followed-up till delivery. Regarding delivery outcomes, mode of delivery and Apgar score at 5-minutes were noted. Nulliparous was defined as if female has never given birth to a viable child before current pregnancy. Apgar score were measured in term of mean and standard deviation recorded after 1 minute and 5 min of birth. This information of outcome variable and demographics like age, gestational age, and obesity were noted.

Statistical analysis was done using SPSS version 20. Mean ±SD for quantitative while frequencies and percentages for quantitative variables were computed. Inferential statistics were calculated using chi-square test and independent sample t-test. P-value ≤0.05 was taken as significant.

### RESULTS

The average age of the women was 29.9±4.64 (ranging: 10+20 years). Spontaneous induction of labor was observed in 118 (69%) women. Most of the women found obese i.e. 115 (67%) who had body mass index more than 30 kg/m². Gestational age of 148 women (86%) was more than 38 weeks while 24(14%) was observed less than 38 weeks. A total of 102 (59.3%) women delivered through vaginal and 70 (40.7%) women delivered by cesarean section. (Table 1)

Cesarean delivery was found to be significantly higher among women with >29 years of age (p-value: 0.006), >38 weeks of gestational age (p-value: <0.001), obesity (p-value: <0.001), and induction of labor (p-value: 0.020). (Table 2)

Mean APGAR score at 1-minute was 7.45 ±0.69 and APGAR score at 5-minutes was 8.84 ±0.41. Mean APGAR score at 5-minutes was significantly higher in women vaginal delivery than that of women with cesarean delivery (p-value: 0.034). (Table 3)

### DISCUSSION

Labor induction is one of the main procedures in obstetrics, and is not risk-free. In many circumstances, induction of labor may either result in an increase or a decrease in maternal or perinatal morbidity.

### Table 1: Descriptive statistics of the patients (n=172)

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>Mean ±SD</th>
<th>Range (Max-Min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>29.9±4.64</td>
<td>22(42-20)</td>
</tr>
<tr>
<td>Height</td>
<td>1.6±0.06</td>
<td>0.49(1.73-1.24)</td>
</tr>
<tr>
<td>Weight</td>
<td>76.17±9.94</td>
<td>50(108-58)</td>
</tr>
<tr>
<td>BMI</td>
<td>30.83±3.35</td>
<td>18(42-24)</td>
</tr>
<tr>
<td>Gestational Age</td>
<td>38.37±1.93</td>
<td>10(42-32)</td>
</tr>
<tr>
<td>n</td>
<td>118</td>
<td>69</td>
</tr>
<tr>
<td>%</td>
<td>31</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Classification of labor</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneous</td>
<td>118</td>
<td>69</td>
</tr>
<tr>
<td>Induced</td>
<td>54</td>
<td>31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Obesity</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>115</td>
<td>67</td>
</tr>
<tr>
<td>No</td>
<td>57</td>
<td>33</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mode of delivery</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal</td>
<td>102</td>
<td>59.3</td>
</tr>
<tr>
<td>Cesarean Section</td>
<td>70</td>
<td>40.7</td>
</tr>
</tbody>
</table>

SD: Standard deviation, Max: Maximum, Min: Minimum n: number
The successful vaginal delivery rate in those induced was 22.7% compared to 36.6% in those with spontaneous labor. This difference was statistically significant, which is in agreement with those documented in the literature. Comparatively, the study's successful induction rate was lower than previous study reported. Our successful induction rate was, however, similar to that reported in the large Latin American Study. Orji et al. achieved successful labor induction in 64.7% nulliparous cases following use of vaginal misoprostol compared to 72.1% in women with spontaneous labor. In this study, induced labor was associated with a higher caesarean rate (32.3%) compared to 16.4% in those who had spontaneous onset labor. This finding is consistent with other studies. Caesarean section rate in this study was observed to be higher in nulliparous women in both the induced and spontaneous labor groups. This was similar to findings of Orji et al.

Regarding mode of delivery, spontaneous onset of labor had more vaginal deliveries as compared to induced labor group while vice versa for caesarean section. Our results were comparable to a study in which they found that a larger proportion of spontaneous group females had vaginal deliveries compared to induced group and also a smaller proportion of spontaneous group ended up on caesarean section. Women with nulliparous status are suspected as an independent detrimental factor for elective induction, which is contrary to some studies and found it to be a protective effect.

The findings of this study have certain limitation. Firstly, the study was a descriptive study. Further exploratory research is recommended to explore the outcome of this study. Secondly, this study has reported findings from a single center. Despite of these limitations, the current study was conducted on an ample number of cases from a private sector hospital of metropolitan city Karachi.

**CONCLUSION**

In nulliparous women presenting at term, the frequency of vaginal delivery was found to be higher. In addition, it was found that APGAR performance at 5 minutes is significantly different in both classes. The findings of this study have indicated that a decline in cesarean birth in nulliparous women is correlated with the elective induction of labor at more than 38 weeks gestation.
ETHICAL APPROVAL
Patel Hospital Ethical Review Board approval was obtained before the start of study.

CONFLICT OF INTEREST
Authors declared no conflict of interest.

AUTHORS' CONTRIBUTION
AR: Planned and designed the study, analysed the results of the study, wrote the discussion and reviewed the final draft. AB, SSD Collected data and reviewed the final draft.

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REFERENCES