Cesarean Section Rate in a Sample of Primigravida Women in the Public Maternity Hospital in Erbil City, Iraq

Shahla Mehedi¹, Jawad Al-Diwan¹, Tariq Al-Hadithi²

Abstract
Objectives: The worldwide rise in the cesarean section rates might be associated with maternal factors and health care services. This study aimed to measure the rate of cesarean section in a sample of primigravida women and find out the association of the cesarean section rate with the socio-demographic characteristics of pregnant women, pregnancy risk factors, and the utilization of antenatal care services.

Materials and Methods: A cross-sectional study was carried out from the 1st of July, 2015 to 30th of June, 2016. The study sample included 400 primigravida women with singleton pregnancy at the labor room of Erbil Maternity Teaching Hospital. A specially designed questionnaire was used for data collection. Chi-square test and Fishers exact test were used for statistical analyses.

Results: The rate of cesarean section in the primigravida women was 30%. Cesarean section was significantly associated with the increasing maternal age (P<0.001) and the history of treatment for infertility (P=0.027). The cesarean section rates had a statistically significant (P<0.001) strong positive correlation (r = 0.84) with the maternal age and a significant (P<0.001) weak positive correlation (r = 0.005) with the gestational age.

Conclusions: The cesarean section rate in the primigravida women was much higher than the “ideal rate” recommended by the World Health Organization (WHO). Efforts should be undertaken to reduce the rate of cesarean delivery as recommended by the WHO.

Keywords: Cesarean section, Primigravida, Infertility, Singleton pregnancy, Erbil

Introduction
Cesarean section is usually performed when a vaginal delivery would put the baby’s or mother’s life or health at risk. Cesarean section can save lives, but it is frequently performed without medical indications (1). It is often done as an emergency procedure in women with cephalopelvic disproportion, obstructed labor, fetal distress, antepartum hemorrhage and previous cesarean section resulting in high perinatal and maternal morbidities (2).

Cesarean section rates have risen worldwide. A study that involved 150 countries reported a rate of 18.6% ranging from 6% in the least developed countries to 27.2% in the most developed countries. Cesarean section rates are highest in the Latin America and the Caribbean region (40.5%) and Northern America (32.3%), while they are lowest in Asia (19.2%) and Africa (7.3%) (3). In the Arab countries, cesarean section rates vary widely with Egypt having the highest cesarean section rate (26.2%) and Mauritania the lowest (5.3%) (4).

Studies from industrial countries have shown that the indications for the cesarean section have changed over the last decades and increased knowledge about current indications could lead to the reduction of cesarean section rates through correct counseling and advice to pregnant women and health workers (5-8).

The worldwide increase in cesarean section rate which might be associated with maternal factors and health care services provided the impetus for carrying out this study. It is important to ensure that a cesarean section is provided to women in real need. This study aimed to determine the rate of cesarean section in a sample of primigravida women and find out the association between the cesarean section rate and the socio-demographic characteristics of pregnant women, pregnancy risk factors, and the utilization of antenatal care services.

Materials and Methods
This cross-sectional study was conducted at Erbil Maternity Teaching Hospital in Kurdistan region of Iraq from 1st of July, 2015 to 30th of June, 2016. A sample of 400 primigravida women was selected for the study by convenient sampling technique. All the primigravida women who were present in Erbil Maternity Teaching Hospital in the days when the researcher was attending the hospital for data collection were invited to participate in the study. The study included the primigravida women

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¹Directorate of Health, Mosul, Iraq. ²Baghdad University, Community Medicine, Baghdad, Iraq. ³Hawler Medical University, Community Medicine, Erbil, Iraq.

*Corresponding Author: Tariq Al-Hadithi, Email: talhadithi@yahoo.com
who were above 24 weeks of gestation. Women with chronic
diseases such as hypertension, cardiovascular disease,
diabetes mellitus, renal disease, and bronchial asthma in
addition to the women with multiple pregnancies or pre-
eclampsia were excluded from the study.

A structured questionnaire was designed and field
tested before using it to obtain the relevant data. The
primigravida women were directly interviewed in the labor
room or post labor wards of the hospital to collect the data.
A detailed history was obtained and physical examination
of each woman was performed. The hemoglobin level was
measured for the participants and abdominal ultrasound
was performed to ascertain the viability of the fetus and
determine the gestational age. Cesarean section was
taken as the dependent variable, while current maternal
age, history of treatment for infertility, psychosocial
stress, antenatal care, iron/folic acid supplementation, and
anemia during the current pregnancy were considered as
independent variables.

The Statistical Package for the Social Sciences (SPSS)
version 21.0 was used for the statistical analysis. Chi-
square analysis test and Fisher exact test, as relevant,
were used. A P value ≤0.05 was considered statistically
significant. The association of the cesarean section rates
with the gestational and the maternal age was further
analyzed by regression analysis.

Results
The mean age ± SD of the study participants was 22.55 ±
4.37, ranging from 15 years to 37 years. Antenatal care visits
were reported by 390 (97.5%) primigravida women with
271 (69.5%) having adequate antenatal care (i.e., 4 visits
and more) and 180 (46.2%) starting the visits during the
1st trimester of pregnancy. Anemia was diagnosed in 108
(27%) participants. One hundred twenty-three (30.8%)
primigravida women had cesarean section; 41 (33.3%) of
them were anemic and 30 (24.0%) were infertile.

The most common indications for the cesarean section
were cephalopelvic disproportion (21.1%) and fetal
distress (21.1%). Mother’s request for cesarean section
constituted 7.3% of all cesarean sections (Table 1).

Cesarean section was significantly associated with
increasing maternal age (P < 0.001) and history of
treatment for infertility (P = 0.027) as shown in Table 2.

There was a significant strong positive correlation
between cesarean section rates and the maternal age
(beta = 0.048; r = 0.84; P < 0.001), while a significant weak
positive correlation was detected between the cesarean
section rates and the gestational age (beta = 0.3746; r =
0.005; P < 0.001) as shown in Figures 1 and 2.

Discussion
The rate of cesarean section has increased remarkably
in Iraq in the recent years, particularly in the Kurdistan
region of Iraq (9). A retrospective study based on the
annual reports of Ministry of Health revealed an
increasing trend in the overall cesarean section rate in
public hospitals from 24.6% to 29.3% in 2012 and the
private hospitals from 74.8% in 2009 to 77.9% in 2012.
The overall rates of cesarean section in Erbil governorate
varied between 20.9% in 2008 and 37.6% in 2012. No
specific data on each of the public or private sectors were
available for Erbil governorate (10). The increased rates
of cesarean section in the private health care sector were
attributed to provider-induced demand (11). Presence of
a large number of private hospitals in Iraq might be
partially responsible for the increased rates of cesarean

Table 1: Indications for Cesarean Section of Study Sample, Maternity
Teaching Hospital in Erbil City, 2015, (n = 123)

<table>
<thead>
<tr>
<th>Indications</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cephalopelvic disproportion</td>
<td>26(21.1)</td>
</tr>
<tr>
<td>Fetal distress</td>
<td>26(21.1)</td>
</tr>
<tr>
<td>Fetal malpresentation</td>
<td>18(14.7)</td>
</tr>
<tr>
<td>Failure induction of labor</td>
<td>17(13.8)</td>
</tr>
<tr>
<td>Severe oligohydramnios</td>
<td>13(10.6)</td>
</tr>
<tr>
<td>Post date</td>
<td>9(7.3)</td>
</tr>
<tr>
<td>Mother request</td>
<td>9(7.3)</td>
</tr>
<tr>
<td>Placental causes</td>
<td>4(3.3)</td>
</tr>
<tr>
<td>Cord prolapse</td>
<td>1(0.8)</td>
</tr>
<tr>
<td>Total</td>
<td>123(100.0)</td>
</tr>
</tbody>
</table>

Table 2. Association of Cesarean Section With Certain Sociodemographic
and Obstetric Characteristics

<table>
<thead>
<tr>
<th>Variables</th>
<th>No.</th>
<th>CS</th>
<th>%</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age (y)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20</td>
<td>62</td>
<td>9</td>
<td>14.5</td>
<td></td>
</tr>
<tr>
<td>20-34</td>
<td>325</td>
<td>104</td>
<td>32.0</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>≥35</td>
<td>13</td>
<td>10</td>
<td>76.9</td>
<td></td>
</tr>
<tr>
<td>History of treatment for infertility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>72</td>
<td>30</td>
<td>41.7</td>
<td>0.027</td>
</tr>
<tr>
<td>No</td>
<td>328</td>
<td>93</td>
<td>28.4</td>
<td></td>
</tr>
<tr>
<td>Psychosocial stress</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>42</td>
<td>11</td>
<td>26.2</td>
<td>0.498</td>
</tr>
<tr>
<td>No</td>
<td>358</td>
<td>112</td>
<td>31.3</td>
<td></td>
</tr>
<tr>
<td>Number of ANC visits (n = 390)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;4</td>
<td>119</td>
<td>45</td>
<td>37.8</td>
<td>0.216</td>
</tr>
<tr>
<td>≥4</td>
<td>271</td>
<td>78</td>
<td>28.8</td>
<td></td>
</tr>
<tr>
<td>Time of first ANC visit (n = 390)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st trimester</td>
<td>180</td>
<td>46</td>
<td>25.6</td>
<td></td>
</tr>
<tr>
<td>2nd trimester</td>
<td>171</td>
<td>57</td>
<td>33.3</td>
<td>0.093</td>
</tr>
<tr>
<td>3rd trimester</td>
<td>39</td>
<td>16</td>
<td>41.0</td>
<td></td>
</tr>
<tr>
<td>Blood transfusion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11</td>
<td>7</td>
<td>63.6</td>
<td>0.040</td>
</tr>
<tr>
<td>No</td>
<td>389</td>
<td>116</td>
<td>29.8</td>
<td></td>
</tr>
<tr>
<td>Ferro-folic supplementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>353</td>
<td>106</td>
<td>30.0</td>
<td>0.391</td>
</tr>
<tr>
<td>No</td>
<td>47</td>
<td>17</td>
<td>36.2</td>
<td></td>
</tr>
<tr>
<td>Anemia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (Hb &lt; 11 g/dL)</td>
<td>108</td>
<td>41</td>
<td>38.0</td>
<td>0.057</td>
</tr>
<tr>
<td>No</td>
<td>292</td>
<td>82</td>
<td>28.1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>400</td>
<td>123</td>
<td>30.8</td>
<td></td>
</tr>
</tbody>
</table>
also for the relatively high proportion of the indications section and maternal request are other factors responsible obstetricians’ opinion about the urgent need for cesarean section, which cannot be avoided. However, the vast majority of the indications for a high rate of cesarean surgery (4,11). Improving (1). Identifying and addressing these risk factors is no evidence that maternal and neonatal mortality rates 10% and 15%, but when the rate goes above 10%, there that the “ideal rate” for cesarean section is to be between 41.9% was reported in Iran (13). This cesarean section rate revealed in this study was much higher than the optimal rate of 10% (1,14). The rate of cesarean section in the primigravida women was the rate typically increased at 41 and 42 weeks (21). The cesarean section rate in the United States was negatively associated with the increasing gestational age with the lowest rate being at 40 weeks of gestation. The rate typically increased at 41 and 42 weeks (21). This study has two main limitations. Firstly, selection of a convenient sample limits the representativeness of the sample to all women attending the hospital. Secondly, the inclusion of only one center in the study would affect the generalizability of the findings. Conclusions The cesarean section rate in the primigravida women was much higher than the “ideal rate” recommended by the WHO. Efforts should be undertaken to reduce the rate of cesarean delivery according to WHO recommendations. There is a need for a larger study sample to determine the association of other risk factors with pregnancy outcomes. Conflict of Interests Authors declare that they have no conflict of interests. Ethical Issues The study was reviewed and approved by the Research Ethics Committee of the author’s institution and the informed consent was obtained from the participants.
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References