

ANALYSIS OF SOCIODEMOGRAPHIC CHARACTERISTICS AS RISK FACTORS FOR CESAREAN DELIVERY IN INDUCED LABOR AT TERM

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Abstract

Background – Induction of labor is defined as iatrogenic stimulation of uterine contractions to cause the delivery of fetus before the onset of spontaneous labor. Since Labour induction is among the common and widely practiced obstetric interventions aiming at achieving the vaginal delivery, it is necessary to find out the factors responsible for cesarean delivery in induced labor at term, as risk factors in terms of sociodemographic characteristics of pregnant females.

Methods – Prospective analysis of 120 Study subjects who were having singleton live fetus in cephalic position and at gestational age equal to or more than 37 weeks were included in our study. A pre-formed written consent was also taken from study subjects.

Results – Sociodemographic factors of study subjects were the risk factors in cesarean delivery in induced labor at term, besides the obstetric risk factors. In patients undergoing labor induction, primiparity, urban residence, working women, higher socioeconomic status were found to associated with an elevated risk of cesarean delivery.

Key words – Induction of labor, sociodemographic risk factors, cesarean delivery

INTRODUCTION

Induction of labor is defined as iatrogenic stimulation of uterine contractions to cause the delivery of fetus before the onset of spontaneous labor. ^[1] It includes initiation of uterine contractions (after the period of viability) by any method (medical, surgical or combined) for the purpose of vaginal delivery.

Labour induction is among the common and widely practiced obstetric interventions aiming at achieving the vaginal delivery.

It can decrease frequency of still births, reduce risks of infection and lower cesarean section (CS) rates without increasing adverse pregnancy outcomes.

Labor inductions now exceed 20% of all births in many countries. [2, 3].

Numerous non-pharmacological methods are used such as dilators, laminaria tents, Foley's catheters and amniotomy and pharmacological methods such as prostaglandins and oxytocin. The use of prostaglandins, especially Prostaglandin E₂ has become a common practice. Sociodemographic factors are relating to, or involving a combination of social and demographic factors. The main factors are age, sex, religion, education, occupation, marital status, socio-economic status,

Major Indications for Induction of Labor includes Hypertensive disorder of Pregnancy, Gestational diabetes, Cholestasis of pregnancy, Oligohydramnios, Polyhydramnios, RH Negative Pregnancy and Intrauterine fetal demise.

Common contraindications for induction of labor are Contracted pelvis, Placenta previa, Transverse fetal lie, Prolapsed umbilical cord and Prior classical uterine incision.

OBJECTIVES

1. To study the sociodemographic profile of the patients as risk factors for cesarean delivery when labor is induced at term.
2. To study the Relationship Between cesarean delivery and Sociodemographic Risk factor.

MATERIAL AND METHODS

Our study was analytic type of Observational study carried out at Department of Obstetrics and Gynaecology, Index medical college hospital & Research Centre, Indore, between March 2021-December 2021.

Study subjects were 120 women who consented to be a part of the study with a singleton live fetus in cephalic position and induced at gestational age equal to or more than 37 weeks by cervical ripening with Prostaglandin E₂ gel.

The outcome, that is, cesarean section or vaginal delivery was analyzed on basis of sociodemographic factors of study subjects.

Medcalc 12.2.1.0 version software was used for all steps used in calculations.

Inclusion Criteria

All the cases with Singleton live fetus, Cephalic position and Gestational age equal to or more than 37 weeks.

Exclusion Criteria

Patients with Multiple live fetus, Face, Brow and Breech Presentation

Transverse Lie, gestational age less than 37 Weeks, Cephalo-pelvic disproportion and Placenta Previa

RESULTS

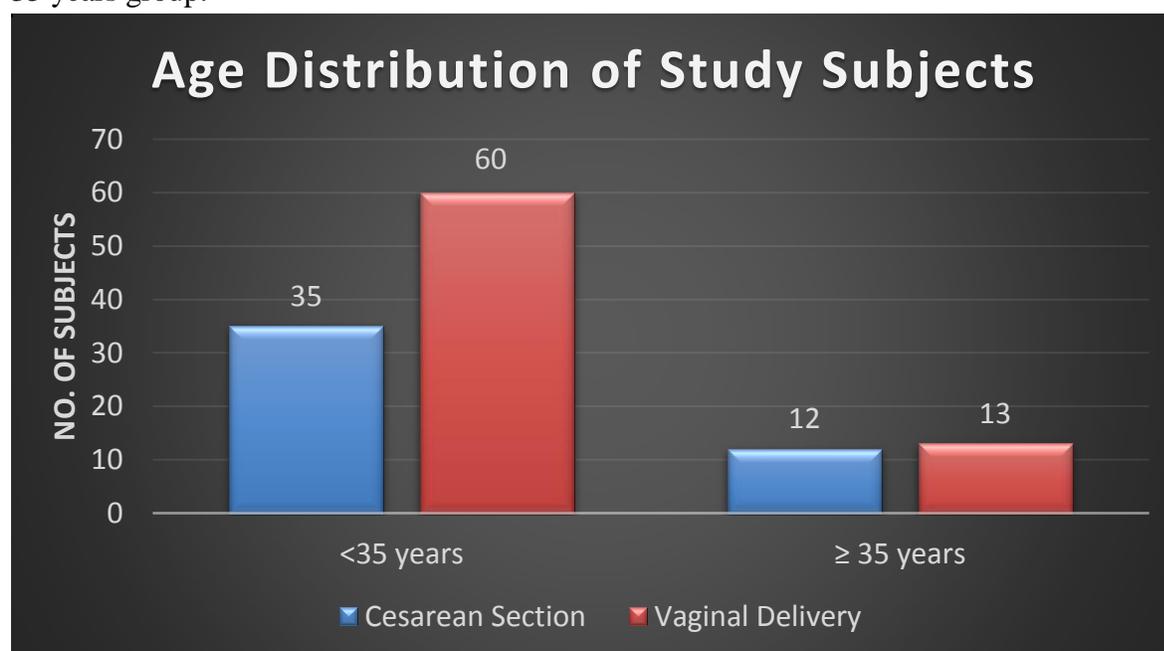
In the study which was conducted over a span of 9 months from March 2021 to December 2021, total 120 pregnant women were studied. The observations of the study were as follows:

Table 1: Distribution of Study Subjects in relation to Maternal Age

| Maternal age (years) | Cesarean Section | | Vaginal Delivery | | Total |
|----------------------|------------------|-------|------------------|-------|-------|
| | N | % | N | % | |
| ≥ 35 years | 12 | 25.5 | 13 | 17.8 | 25 |
| <35 years | 35 | 74.5 | 60 | 82.2 | 95 |
| Total | 47 | 100.0 | 73 | 100.0 | 120 |

Odds Ratio = 1.582

Risk of Cesarean section was found to be 1.58 times higher in ≥ 35 years group as compared to < 35 years group.

**Table 2: Distribution of Study Subjects in relation to their Residence**

| Residence | Cesarean Section | | Vaginal Delivery | | Total |
|--------------|------------------|------|------------------|------|-------|
| | N | % | N | % | |
| Urban | 33 | 70.2 | 45 | 61.6 | 78 |

| | | | | | |
|--------------|----|-------|----|-------|-----|
| Rural | 14 | 29.8 | 28 | 38.4 | 42 |
| Total | 47 | 100.0 | 73 | 100.0 | 120 |

Odds ratio = 1.46

The cesarean delivery rate was increased (Odds Ratio=1.46) in population who resided in urban areas

Table 3: Distribution of Study Subjects in relation to their Religion

| Religion | Cesarean Section | | Vaginal Delivery | | Total |
|--------------------------|-------------------------|-------|-------------------------|-------|--------------|
| | N | % | N | % | |
| Hindu | 32 | 68.1 | 39 | 53.4 | 71 |
| Muslim and others | 15 | 31.9 | 34 | 46.6 | 49 |
| Total | 47 | 100.0 | 73 | 100.0 | 120 |

Odds ratio = 1.860

From above observation it was found that there was 1.860 times increased incidence of cesarean section in Hindu population as compared to Muslim and others in our study.

Table 4: Distribution of Study Subjects in relation to Maternal Education

| Maternal Education | Cesarean Section | | Vaginal Delivery | | Total |
|----------------------------|-------------------------|-------|-------------------------|-------|--------------|
| | N | % | N | % | |
| Graduate and above | 23 | 48.9 | 26 | 35.6 | 49 |
| Secondary and below | 24 | 51.1 | 47 | 64.4 | 71 |
| Total | 47 | 100.0 | 73 | 100.0 | 120 |

Odds ratio = 1.732

From table 4 we infer that cesarean delivery is 1.732 times more in educated population (Graduate and above) as compared to their less educated counterparts.

Table 5: Distribution of Study Subjects in relation to Maternal Occupation

| Maternal occupation | Cesarean Section | | Vaginal Delivery | | Total |
|----------------------|------------------|-------|------------------|-------|-------|
| | N | % | N | % | |
| Working women | 12 | 25.5 | 8 | 11.0 | 20 |
| Homemaker | 35 | 74.5 | 65 | 89.0 | 100 |
| Total | 47 | 100.0 | 73 | 100.0 | 120 |

Odds ratio = 2.786

It was observed that the cesarean delivery rate was 2.786 times more in working women as compared to women who were homemakers.

Table 6: Distribution of Study Subjects in relation to Socio-economic Status

| SES | Cesarean Section | | Vaginal Delivery | | Total |
|---------------|------------------|-------|------------------|-------|-------|
| | N | % | N | % | |
| Lower | 9 | 19.1 | 14 | 19.2 | 23 |
| Middle | 33 | 70.2 | 58 | 79.5 | 91 |
| Upper | 5 | 10.6 | 1 | 1.4 | 6 |
| Total | 47 | 100.0 | 73 | 100.0 | 120 |

Odds Ratio for Upper to Middle class: 88.03

Odds Ratio for Upper to Lower class: 7.78

It was found that the population from upper class was more likely to have cesarean section as compared to those belonging to middle and lower class.

DISCUSSION

In the present study, it was observed that the cesarean delivery rate was higher in women with advanced maternal age. This is because with age the anatomical and physiological changes in pelvis and musculature take place which are not favourable for vaginal delivery. A lot of these women are infertility treated as well. The obstetrician has a more cautious attitude towards such patients, hence, increased cesarean delivery rate.

Maslow AS, Sweeny AL^[4] conducted a study in Washington which showed that increasing maternal age increased the risk of cesarean delivery after induction of labor particularly among nulliparous. In a case-control study conducted by Nilesh Mahske et al^[5] in 2014 on

277 women, the women with age more than 35 years were 8.68 times more likely to have cesarean section after induction of labor than women who were younger than 35 years. Liam Dunn et al ^[6] in 2017 conducted a study in women with advanced maternal age and who were induced at term and concluded that following induction of labor, advanced maternal age was associated with a two-fold increased likelihood of birth by cesarean. There is increased cesarean delivery rate in urban population. This is probably because of the sedentary lifestyle, obesity and medical disorders being more common among these women. This is in contrast to the study by Abdulkadir Y et al ^[7] who found increased cesarean rate in rural population. This is due to differences in social, cultural and demographic profile of the population. The cesarean delivery rate was higher in Hindu population as compared to Muslims and other religions. This is because the age of marriage is later in Hindu population. In Muslims, early childbearing and multiparity favours vaginal delivery. The cesarean delivery rate is higher in working women and women with higher seduction and socio-economic class. The reason for increased cesarean delivery rate is probably the psychology of the women. These women have poor bearing down efforts and have a poor attitude towards vaginal delivery. It is said, 'tense mind- tense cervix'. Besides, this class of women have increased at age first childbearing, sedentary lifestyle and other medical disorders which make them prone to cesarean section after induction of labor.

CONCLUSION

Sociodemographic factors are risk factors in cesarean delivery in induced labor at term besides the obstetric risk factors. In patients undergoing labor induction, primiparity, high birthweight, post dates and urban residence were found to associate with an elevated risk of cesarean delivery.

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CONFLICT OF INTEREST None

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