

Cesarean Delivery on Maternal Request in Zanjan, Iran

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Abstract: Background and Purposes: Despite the national programs to reduce the rate of cesarean delivery, but it is increasing. Part of the increase in the cesarean delivery rate seems to be due to an increase in cesarean delivery requested by mothers in the absence of any medical or obstetric indications. This study aimed to determine factors affecting the rate of cesarean delivery on maternal request in Zanjan, Iran. **Materials and Methods:** In this cross-sectional study, a total of 1300 medical files of women referred to maternity hospitals in Zanjan in 2009 were randomly selected. Data were collected using a self-structured questionnaire via medical files recordings and interviewing with the women. Data were analyzed using the Chi-squared test, t-test, ANOVA and multivariate logistic regression. **Findings:** The results show that 42% of cesarean sections were elective. Most of the women (43.3%) had chosen the cesarean delivery due to fear of pain. The elective cesarean section was significantly correlated with the educational attainment, day of delivery, first birth, women's age, repeated cesarean section, and women's job ($P < 0.001$). **Conclusion:** Promoting public awareness and efforts towards applying cesarean sections only in necessary occasions can reduce unnecessary cesarean sections and its possible side-effects.

[Shakeri M., Shakibazade E., Arami R., Soleimani M. **Cesarean Delivery on Maternal Request in Zanjan, Iran.** *Life Sci J* 2013;10(1):1308-1311] (ISSN:1097-8135). <http://www.lifesciencesite.com>. 198

Keywords: Cesarean delivery on maternal request, Elective, Caesarean, Birth

1. Introduction:

The rate of the Cesarean section (C-section) is considered as an index of healthcare coverage. According to the World Health Organization (WHO) report in 1985, the 15% rate is as an acceptable rate for performing C-section [1]. However, recent figures released by the WHO in 2009, revealed that the rate of the cesarean delivery has risen over the past few decades, worldwide [1].

In Iran, the rate of the C-section has reached to a risky level which needs more attention as an important issue [2]. The Demographic and Health Survey (DHS) conducted in Iran in 2000 reported the C-section rate in the country to be as high as 35% [3]. The 'Integrated Monitoring Evaluation System Survey' (IMES) conducted on women aged 10-49 years old also reported the rate of C-section to be as high as 40% [4]. In a study conducted by Shakeri et al (2009) to assess the rate of the C-section in Zanjan, they reported the rate of C-section is high (43%) [5]. The rate in Iran is higher than the rate reported in developed countries such as the US (30.2%) and England (22%) [4]. It is noteworthy that the C-section rate in the neighbouring developing countries varies from 4.7% in Azerbaijan to 27.6% in Egypt [6]. The high prevalence of this condition in Iran reveals that the procedure is performed without any medical indication in many cases which may be contributed to higher rates of complications in both mother and neonate [7].

The cesarean delivery on maternal request (CDMR) may be a main reason for increasing the rate of the C-section. The CDMR is the cesarean delivery requested by mothers in the absence of any medical or obstetric indications [8].

The CDMR ranges are from 4–18% of all cesarean deliveries [9], a rate that seems to be increasing [10] worldwide. The reasons that pregnant women request cesarean delivery are extreme tocophobia, or fear of child birth [11], a previous C-section, and previous negative birth experience [12] as well as smaller family size and insurance liability concerns [13].

Elective delivery may increase the risk of maternal mortality more than 3-times [14]. The risks of elective cesarean delivery to the mother are increased morbidity and mortality associated with surgery and possible complications in subsequent pregnancies (e.g. uterine rupture, placenta previa, and placenta accreta) [15]. An elective cesarean delivery may also increase the fetal risks of respiratory distress syndrome, persistent pulmonary hypertension, and fetal lacerations [15]. Some researchers have shown that a significant decrease in the cesarean rate can be achieved without an increase in mortality and prenatal complications [16].

There are no population-based data in Iran on the CDMR. This study aimed to examine the rate of CDMR in Zanjan, Iran.

2. Materials and Methods:

In this cross-sectional study, 1300 pregnant women's medical files were selected from

two maternity hospitals in Zanjan (533 medical files from Valiasr hospital and 767 medical files from Imam Hosein hospital) in 2009. These two hospitals are the main maternity hospitals in the city in which near 10000 deliveries occurs annually. The inclusion criteria for definition of the cesarean delivery on maternal request were singleton gestation, cesarean delivery based on "woman's request", live fetus prior to delivery, gestational age at 38 weeks or later, and C-section before onset of spontaneous or induced labor [17]; and the exclusion criteria were previous cesarean delivery, malpresentations, placenta previa, antepartum placenta abruption, antepartum severe preeclampsia/eclampsia, abnormal fetal heart rate before labor, suspected fetal growth restriction, and suspected large-for-gestational-age fetus [17]. Regarding the number of the clients of two maternity hospitals in Zanjan, the quota for each maternity hospital was determined. Then, we used proportional simple random sampling to select medical files.

Appropriate data were gathered using a self-structured questionnaire including personal characteristics of the women (14 items), reasons for elective C-section from women's view (6 items), and other reasons for elective C-section (19 items). The questionnaire was completed using the medical files records and telephone interviews with the women.

The content validity and reliability of the questionnaire was confirmed using the expert opinions (five obstetricians), and the split-half method and the Cronbach's alpha (89%), respectively. The study was reviewed and approved by the ethics committee of the Zanjan University of Medical Sciences.

Data were analyzed using the Chi-squared test, t-test, ANOVA, and multivariate logistic regression in the SPSS. Those variables which separately had significant relationships with the elective cesarean delivery in one-variable analysis were specified; then using logistic regression, a multivariate analysis was performed in order to evaluate the impacts of the variables together in the presence of each other.

3. Findings:

A total of 1300 medical files were included in this study. The results of the study showed that most of the pregnant women (38%) were aged 20-24 years. Moreover, 29% of their spouses were aged 25-29 years. Most of the women (83%) were housewives. Most of the women (67%) and their spouses (58%) did not complete their high school diploma. Near half of the women in the study (48%) were nulliparous women and 39% of them had experienced a previous normal delivery. Most of the women in the study (68%) had wanted pregnancies

and 3% had a history of abortion in their previous pregnancies.

As shown in Table 1, 43% (n=559) of the elective C-sections were performed on the maternal request. Most of the elective C-sections on maternal request (43.3%) were only due to fear of labor pain.

Table 1 - Reasons for elective cesarean sections (n=559) in maternity hospitals in Zanjan 2009.

Reason for C-section	Number of elective C-sections	Percent
Woman's request		
Fear of labor pain	243	43.3
Stress and Anxiety	82	14.7
Concerns about baby's health	186	33.4
Tubal ligation	9	1.6
Other Medical reasons	39	7
	741	57
Total	1300	100

The C-section showed significant relationships with the infertility history; 64% of mothers with a history of infertility (compared to 34% of mothers with no history of infertility) underwent C-section ($P<0.001$). The C-section also showed a significant relationship with history of stillbirth ($P<0.001$). Other maternity reasons for elective C-section - such as lack of progress of labor, multiple births, abnormal position, and cystocele- showed no significant relationships with the elective C-section.

There was a significant relationship between the educational attainment with C-section; the rate of the C-section increased in women with higher educational attainments ($P<0.001$). There was a significant relationship between the day of delivery with C-section; the rate of C-sections increased in weekends and holidays ($P<0.001$). Also, there were significant relationships between the first birth (CI 0.85-7.64; OR: 2.17; $P<0.001$), women's age over 30 (CI 4.07- 73.85; OR: 14; $P<0.001$), repeated cesarean (CI 6.8-120; OR: 20.91; $P<0.001$), and women's job (CI 5.4-70.6; OR: 3.03; $P<0.001$) with the elective C-section (Table 2).

Table 2- Factors affecting pregnancy termination with elective caesarean

Variables	Confidence Limits		P-value	OR
	Upper	Lower		
First birth	7.64	0.85	<0.001	2.17
Education Higher than high school	5.31	0.058	<0.001	3.76
Age over 30 years	73.8	4.07	<0.002	14
Repeated cesarean	120	6.8	<0.001	20.91
Mother's job	70.6	5.4	<0.004	3.03

There were no significant relationships between the spouse's jobs and previous unwanted pregnancies with the C-section.

4. Discussion:

Factors affecting the rate of cesarean delivery on maternal request in Zanjan were studied. Results showed that most of the elective C-sections were due to the maternal request and most of the women had chosen the cesarean delivery due to the fear of pain. The elective C-sections was significantly correlated with the educational attainment, day of delivery, first birth, women's age, repeated C-section, and women's job.

Caesarean section is not a preferred method of delivery, because like any other surgery, it may have many complications and risks for mother and baby. The risk of maternal death in elective C-section is reported to be eight times more than the vaginal delivery [18]. Despite the fact, the rate of C-section is increasing in Iran. The results of this study indicated that 43% of the C-sections were done electively, and from those, 43% were done due to women's request. In a study by Jackson et al. (2008) in London, they estimated the frequency of elective C-sections as 9.1% of which 38% were CDMR [19]. The results of a study conducted by Belizan et al. in 19 Latin American countries showed that C-section rate varied between 16.8 to 40 percent. They reported that over 850,000 unnecessary C-sections were performed annually in Latin America [20]. Guo et al (2000) reviewed 857 cesarean deliveries in two medical university-affiliated hospitals. Fifty-four percent of cesarean deliveries had appropriate indications, whereas the rest had inadequate indications (46%). The latter included no trial of labor for suitable patients, inappropriate timing and method of induction, insufficient time for trial of labor, and inappropriate diagnosis resulting in cesarean delivery. Twenty percent were attributed to the physicians, and 26% were requested by the women [21]. Fu et al. reviewed the rates of cesarean delivery and cesarean delivery for difficult labor in a university-affiliated hospital in China from 1989 to 2001. The overall cesarean rate increased from 17% to 63% in a decade. Among women who were diagnosed as having difficult labor, cesarean delivery was performed from 40% to 94% of the time, whereas use of forceps dropped from 52% to 4%. Vacuum was rarely used [22].

Regarding the reasons for the CDMR, the results of this study showed that 43.3% of mothers were willing to undergo cesarean delivery due to fear of labor pain and normal delivery complications. Other studies have also shown that negative attitudes and wrong beliefs determine the type of delivery [23].

In a study conducted in Brazil, Nurtall found that causes of the mother's request for elective C-section were fear of labor pain, and fear of harm to the fetus [24]. Social and cultural factors are main contributor to the high cesarean delivery rate in many countries [17, 25]. Nowadays, women in urban settings, desire a perfect baby having little tolerance for risk [17]. Furthermore, women are often inadequately informed about child birth. Some women fear labor pain and lack confidence in their ability to go through vaginal birth [25-26]. For example, Zhu et al. surveyed 50 pregnant women. Half of them were not informed of the birth process, 70% were not confident, and 65% thought that cesarean delivery was less painful and would not affect body shape [27]. Negative attitudes may influence women's or families' decisions regarding mode of delivery. The followings are some statements women made through interviews: "A baby delivered by cesarean delivery is smarter; the head is better shaped" and "Women's body shape and pelvic floor will be better protected by cesarean delivery." [17, 22, 25]. All these factors increase the demand for cesarean delivery despite the fact that the cost of a cesarean delivery is almost twice that of a vaginal delivery on average.

Regarding obstetric causes of elective C-section, the results of our study showed that most women (57.8%) had C-sections due to the repeated C-sections. Nowadays vaginal birth after cesarean delivery is recommended in many maternity centers worldwide. It is believed that a previous history of C-section is not a good reason to repeat it in the subsequent deliveries; and if the transverse cesarean incision is low and also there is no problem of obstetric indications in the recent pregnancy, a vaginal birth after cesarean delivery could be done, provided that sufficient expertise and appropriate facilities and equipment exist [28].

There were significant relationships between some individual characteristics with elective C-section. Murphy et al. suggested that as the mother's education level increases, willingness to cesarean and request for cesarean increase [29].

It should be noted that the rate of CDMR in our study is likely to be underestimated still. The "other" indications category for cesarean delivery is vogue and we were unable to identify it separately. Our findings can be generalized to other similar cities of the country.

Some reasons such as mothers' willingness to C-section and fear of legal issues have changed the nature of cesarean operation and have converted it into a tool for escaping from labor pain regardless of its complications and negative points. Therefore, policy makers should adopt strategies to reduce unnecessary cesareans using appropriate strategies

such as rising mothers' awareness about pregnancy termination methods and reducing the possible complications of C-section and encouraging mothers to choose the preferred delivery method.

Acknowledgements:

This study was founded by the Research Deputy of Zanjan University of Medical Sciences. We thank the personnel of the maternity hospitals in Zanjan for their cooperation. The authors declare that there is no conflict of interests.

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