Brief Report

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The Frequency of Cesarean Section among Medical Experts Aware of the Side Effects

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ABSTRACT

BACKGROUND AND OBJECTIVE: Female physicians, especially gynecologists and pediatricians, have a comprehensive knowledge of the complications caused by Cesarean section. These specialists play a pivotal role in raising maternal awareness, providing prenatal care, performing screening tests and delivery of healthy infants. Given the significant correlation between the type of delivery and the mental development of neonates, this study aimed to compare the rate of Cesarean section among female gynecologists and pediatricians with other specialists.

METHODS: This cross-sectional study was conducted on 179 female physicians with at least one living, healthy child in 2012. Data were collected using questionnaires including the degree of specialty, mode of delivery and the reason (medical or non-medical), maternal age at birth time and the employment status of the subjects.

FINDINGS: In total, more than 60% of the studied specialists chose Cesarean delivery for non-medical reasons, and the rate of C-section among gynecologists and pediatricians was 2.36 times higher compared to other specialists. In addition, the possibility of C-section declined to 42% with the increasing number of childbirths, and the risk of C-section increased between 25-30% with the age. Gynecologists and pediatricians preferred C-section 4.2 times than other specialists, and no significant differences were observed between the employment status of the subjects (faculty members vs. Others) and the choice of delivery mode.

CONCLUSION: According to the results of this study, the preference of C-section for non-medical reasons was noticeably higher among gynecologists and pediatricians compared to other specialists. Therefore, these two groups could not be considered as a proper model to reduce the rate of C-section.

KEY WORDS: *Cesarean Delivery, Maternal Age, Gynecologist, Pediatrician.*

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Introduction

Cesarean section is defined as an incision made on the skin and uterus, which results inthe birth of an infant. Although C-sectionplays a pivotal role in the reduction of maternal mortality through pre and postmaternal care performed before and during childbirth,thismethod raises the cost of labor increasing the financial burden on the society (1).

The broad-spectrum evolution in anesthetic and surgical procedures is the main cause of the dramatic increase in the rateof C-section (4). According to recent studies, the rate of C-section surgeries has reducedmore noticeably in European countries compared to Iran;this reduction is mainly due to the new approaches developed in the field of childbirthover the past four decades.

Furthermore, inclination towards natural delivery has seen an upward trend among the providers of Cesarean services; however, the rate of C-section surgeries is considerably higher than the acceptable protocol ofthe World Health Organization (WHO) (5-15%) (5). According to unofficial statistics, the rate of C-section surgeries has increased by 80% in private hospitals of Tehran, which is remarkable in comparison to other European countries with the highest cesarean rate of 31.1% in 2005 (6).

For instance, the rate of C-section operations was reported to be 45.4% in Ardabil province in 2003 (7). In addition, a research conducted in the city of Gorgan, located in the North of Iran, reported the rate of C-section surgeries to be 49.8% in 2005 (8) whilein another study, Eftekhari et al. reported the rate to be 23.5% in the city of Kerman. In this study, no significant correlation was observed between the educational status and the rate of C-section surgeries (9).

In one study, Gibbons et al. investigated the rate of C-section surgeries in 114 countries including industrial, developing and third world countries. According to the results,the rate of C-section was less than 10% in 45 countries,and higher than 15% in 69 countries (10).

Among industrial countries, the United States and Australia had the highest rate of C-section surgeries (30.3%). As for the developing countries, this rate was reported to be 40% in Chile, 46% in Brazil and Korea, and it was between 25-40% in Iran, Pakistan, India and Turkey in 2012 (11). In another study, Yazdizadehet al.evaluated the rate of C-section surgeries in 2000-2005 in Iran, and they reporteda 5% increase, reaching 40% in 2005 from 35% in 2000 (12).

Complications caused by cesarean could increase maternal mortality 7 times than natural delivery; complications such as cardiac and pulmonary disorders, uterine infections, thrombo-embolism, postpartum hemorrhage, hip disorders and other surgical and obstetric problems have been a major concern of medical experts (4). Gynecologists have an extensive knowledge of different modes of delivery and the possible side effects, and pediatricians are initially in contact with the neonates born via either modes of childbirth.

Therefore, these two groups of specialists could play a key role in the reduction of C-section rate. Choice of delivery mode by the gynecologist or the pediatrician could remarkably affect the rate of C-section surgeries, while creatinga model for pregnant women; if these specialists opt for natural delivery, non-physicianswill also be encouraged to select this mode of childbirth. The present study aimed to evaluate the choice of C-section among the specialists who are aware of the possible risks and side effectsinvolved in this mode of delivery for the mother and the neonate.

Methods

This cross-sectional study was conducted in 2012 on a study population consisting of 179 female gynecologists and pediatricians, other specialists working in different hospitals of Kerman, and professionals participating in medical conferences and seminars in Kerman, Iran. Data were collected using questionnaires including the specialty of the physicians, mode of delivery,age at the time of birth, number of children and employment status (i.e. faculty vs. non-faculty) in married specialists with at least one healthy child. Specialists who were not married, had no children or were with disabled children were excluded from this study.

Since gynecologists and pediatriciansare normally in close contact with pregnant women as well as the neonates, and they also have a comprehensive knowledge of the possible complications caused by different modes of

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delivery, these specialists were enrolled in the present study. Data analysis was performedusing logistic regression and SPSS, and $p<0.05$ was considered as statistically significant. In addition, four tests were conducted based on the objectives of the study; the number of children and maternal age were considered as independent variables in all the four tests, and the tests were categorized according to the specialty and employment status of the subjects.

The four tests were performed based on the differentiation between the patients undergoing C-section for medical reasonsand those who had natural delivery, and between the patients undergoing C-section for non-medical reasons and those who had natural delivery.

Findings

In total, 179 femal ephysicians, 60 gynecologists and 60 pediatricians (30 faculty members and 30 non-faculty members in each group), and 59 specialists in other medical fields were enrolled in this study. Among these subjects, 78 cases (43.6%) were with one child, 74 (41.3%) had two children and 27 cases (15.1%) had three children. The mean age of the subjects at the time of the first, second and third childbirth was 25.6±3.98, 32.2±3.56 and 34.7±2.76, respectively. In addition, 106 subjects (59.2%) had chosen C-section for their first delivery and out of 101 subjects with at least two children, 54 cases (53.5%) had opted for natural delivery for their second childbirth.

Moreover, 16 cases (57.5%) out of 27 subjects with a third child chose natural delivery for their third childbirth (table 1). Overall, more than 60% of the subjects undergoing C-section had selected this mode for non-medical reasons (table 2)

Table 1. The frequency of delivery models among the specialists in the s

Mode of Delivery / Number of Delivery	Natural N(%)	Cesarean N(%)
First	73(41.8)	106(59.2)
Second	54(53.3)	47(46.5)
Third	16(57.7)	11(42.3)

Table 2. The frequency of c-section reasons among the specialists in the study

Reason for Cesarean / Number of Delivery	Medical N (%)	Non-medical N (%)
First	41(38.7)	65(61.3)
Second	18(38.3)	29(61.7)
Third	4(36.4)	7(36.6)

The comparison of the gynecologists and pediatricians with other groups of medical experts indicated that the number of children and the specialty of the subjects had a significant correlation with the chosen mode of delivery. Accordingly, the rate of C-section in gynecologists and pediatricians was 2.36 times higher compared to other specialists, and an increase in the number of children was observed to reduce the rate of C-section by 42%.

With regard to the employment status, no statistically significant correlation was observed between faculty and non-faculty members in terms of the rate of C-section. However, the number of children was observed to have a protective effect on the prevalence of C-section while maternal age was found to increase the rate. Furthermore, the obtained results of the third test were indicative of a higher tendency to undergo C-section among gynecologists and pediatricians (2.4 times more than other specialists) (table 3).

Table 3. Comparison of the selection of natural delivery and c-section for non-medical reasons among medical experts

Variable	CI-95%	OR	P-value
Number of children	0.23-0.83	0.518	0.007
Age	0.99-1.19	1.086	0.088
Gynecologists and pediatricians	1.14-4.78	2.36	0.02
Number of children	0.33-0.83	0.526	0.006
Age	0.26-1.05	1.15	0.002
Faculty members	0.39-1.84	0.842	0.665
Number of children	0.34-0.85	0.54	0.008
Age	1.01-1.21	1.108	0.024
Gynecologists and pediatricians	1.19-4.7	2.37	0.014

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In all the performed tests, the variables of maternal age and number of children were observed to increase and decrease the rate of C-section, respectively. In other words, the prevalence of cesarean section declined by 70% with an increase in the number of children, while maternal age was observed to increase the possibility of cesarean delivery by 25-30%. Regarding the employment status of the studied subjects (faculty vs. others, specialists vs. others, andgynecologists and pediatricians vs. others), no statistically significant correlation was observed in terms of the chosen delivery mode (C-section for medical reasons vs. natural delivery) between these groups (table 4).

Table 4. Comparison of the selection of natural delivery and c-section for medical reasons

Variable	CI-95%	OR	P-value
Number of children	0.16-0.5	0.283	<0.001
Age	0.12-1.41	1.258	<0.001
Gynecologists and pediatricians	0.83-4.35	1.896	0.132
Number of children	0.18-0.52	0.305	<0.001
Age	1.16-1.45	1.298	<0.001
Faculty members	0.39-2.37	0.965	0.937
Other	-	-	-
Number of children	0.18-0.54	0.312	<0.001
Age	1.12-1.4	1.251	<0.001
Gynecologists and pediatricians	0.98-5.18	2.249	0.057

Discussion

According to the results of this study, the tendency to undergo C-section for non-medical reasons was higher among gynecologists and pediatricians compared to other study groups; however, no significant difference was observed between gynecologists and pediatricians and other specialists in this regard. Furthermore, a significant difference was observed among Iranian gynecologists and pediatricians, who are effective in determining the rate of caesarean in the society, in terms of the tendency to choose C-sectionin comparison to other countries.It is also noteworthy that the estimated rate of caesarean section on maternal request is about 2.6% in Iran (12). According to the statistics of WHO, the rate of caesarean delivery has risen to more than 15% in recent years (13). Nowadays, factors such as heavy workload, shortage of active medical staff andlack of physicaland emotional support of the mother at the time of childbirth could affect the mother's sense of security at the time of delivery. Therefore, offering comfort and support to pregnant women could result in the possibility of childbirth through natural delivery in most cases. In addition, providing suitable conditions for labor at the residence of pregnant women might promote natural delivery as an efficient mode of childbirth. According to several studies, there is a remarkable tendency to replace common delivery modes with new methods among expecting mothers (14,15). Moreover, adequate education about efficient modes of delivery is lacking amongthe medical staff of health care services. Thus, awareness needs to be raised on the subject of childbirth and delivery so as to eliminate the common misconceptions among medical experts in this regard (16).

In one study, maternal health and improvement in the Apgar scores of neonates were reported to be the most common reasons for the preference of natural delivery. On the other hand, the most important reason for choosing cesarean delivery wasclaimed to be the fear of long-term postpartum complications, such as urinary incontinence (17). In another study by Ghadimi et al., fear of labor was found to be the main reason for choosing C-section over natural delivery (18). According to their findings, 11.7% of the studied patients believed that cesarean could improve the Apgar score of the neonates.Furthermore, they assumed that during natural labor, the fetal head might tolerate pressure through the birth canal, which could affect the IQ of the neonate.This common misconception could be due to the lack of information on the mechanisms of natural delivery, since in this mode, the cervical dilation and effacement enable the fetal head to pass easily through the birth canal, and it is rarely associated with low Apgar scores or any severe complications (with the exception of neonates with Macrocephaly).

The aforementioned findings signify the erroneousknowledge and attitude of patients towards natural childbirth;several recent studies have revealed that C-section is not able to improve the Apgar score in comparison to natural delivery (19). This finding emphasizes the pivotal role of gynecologists and pediatriciansin helping pregnant women select the most efficient mode of

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delivery.One of the common reasons for choosing cesarean delivery is the fear of labor; in this regard, applying the Patients' Right Charter as to provide pain-relieving methods during childbirthis of paramount importance. Given the advances in anesthetic procedures and access to adequate medical staff, promotion ofnatural delivery becomes possible through the management of the fear of pregnant women.

In modern medicine, non-pharmacological methods such as giving back massages to the expecting mother in order to relieve pain,and scheduling programmed visualization could be employed to overcome the pain and fear of childbirth in pregnant women. In addition to the fact that non-pharmacological approaches are cost-efficient, they have been widely acknowledged by expecting mothersin different parts of the world (20). Moreover, immediate legislation in different parts of the world should not be a justification for the choice of easier delivery modes on behalf of the physician,which could pose substantial risks to pregnant women (21). According to several studies, natural delivery is preferable to repeated cesarean for expecting mothers (22-24). On the other hand, proper education plays a key role in the correct choice of the delivery mode,and the implementation of "Family Physician" as a new healthcare planin Iran is also likely to raise awareness about the benefits of natural delivery. In the current study, although medical experts, such as gynecologists and pediatricians, were expected to opt for natural delivery in most cases,the tendency to perform C-section for non-medical reasons was higher among these groups of specialists. Nevertheless,no significant differenceswere observed between gynecologists and pediatricians with other medical experts in terms of the rate of natural delivery and C-section.

In conclusion, the obtained results of this study regarding the specialists who were aware of the side effects and complications caused by C-section could not be considered as the appropriate model for reducing the rate of cesarean in the city of Kerman

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