The trend of caesarean delivery in the Islamic Republic of Iran

F. Bahadori,[1] S. Hakimi [2] M. Heidarzade[3]

اتجاهات الولادة بالعملية القيصرية في جمهورية إيران الإسلامية

فاطمة بَهَادوري، سيفيل حكيمي، محمد حيدرزادة

الخلاصة: شهدت جمهورية إيران الإسلامية زيادة حادة في عدد الولادات بالعملية القيصرية خلال العقدين الماضيين. وتظهر هذه الدراسة اتجاهات الولادة بالعملية القيصرية في البلاد، إذ تركز على إظهار الأسباب المحتملة وراء هذه الزيادة خلال الثلاثين عاما الماضية. وقد بلغ معدل الولادات بالعملية القيصرية 35٪ عام 2000 وزاد إلى 48٪ عام 2009. وتشير الدراسة إلى اتساع نطاق انتشار معدلات الولادة بالعملية القيصرية في البلد، وهو ما يشير إلى أن معظم الولادات بالعملية القيصرية بالبلاد لا توجد لها دواعٍ (استطبابات) طبية، برغم أن بعض المناطق قد لا يوجد بها إلا قليل من الولادات بالعملية القيصرية. وهناك حاجة ماسة إلى إجراء البحوث على الحَصائل الصحية الخاصة بالأمهات والولدان المرتبطة بالولادة بالعملية القيصرية بلا داع طبي أو توليدي. كما يتطلب الأمر إجراء دراسات أكثر تفصيلاً لسلوكيات الأمهات وشركات التأمين والمستشفيات ومقدمي الرعاية تجاه الولادات الاختيارية بالعملية القيصرية.

ABSTRACT The Islamic Republic of Iran has witnessed a sharp increase in the number of caesarean sections in the past two decades. This study shows the trend of caesarean sections in the country, focusing on the probable causes of the increase during the past 30 years. The caesarean section rate was 35% in 2000 and increased to 48% in 2009. The study shows that there is a very wide range of prevalence of caesarean section rates in the country. This would indicate that most caesarean sections in our country are not medically indicated, although perhaps in some areas there are not enough caesarean sections. There is a need for research on health outcomes for mothers and infants associated with caesarean delivery without a medical or obstetrical indication. A more detailed examination is needed of mother, insurer, hospital and provider attitudes toward elective caesareans.

Évolution des accouchements par césarienne en République islamique d'Iran

RÉSUMÉ En République islamique d'Iran, le nombre de césariennes a connu une forte augmentation ces vingt dernières années. La présente étude montre l'évolution des césariennes dans le pays et s'intéresse notamment aux causes probables de cette hausse depuis trente ans. Le taux de césarienne était de 35 % en 2000. Il a atteint 48 % en 2009. L'étude montre que la prévalence des taux de césarienne est très variable dans le pays. Ces éléments suggèrent que la plupart des césariennes pratiquées dans notre pays ne sont pas médicalement indiquées, bien que le nombre de césariennes dans certaines régions soit peut-être insuffisant. Il faut mener des recherches sur les résultats pour la santé des mères ayant accouché par césarienne et des nourrissons nés par césarienne en l'absence de justifications médicales ou obstétricales. Il convient d'examiner plus en détail les attitudes des mères, des assureurs, des hôpitaux et des dispensateurs de soins en ce qui concerne la césarienne élective.

[1]Reproductive Health Research Centre, Urmia University of Medical Sciences.
[2]Department of Midwifery, School of Nursing and Midwifery, Tabriz University of Medical Sciences.
[3]Neonatal Health Office, Ministry of Health and Medical Education (Correspondence to S. Hakimi: hakimisevil@gmail.com).

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Introduction

Caesarean section is one of the commonly performed surgical procedures in obstetrics and is certainly one of the oldest operations in surgery [1]. Caesarean section deliveries are typically performed in the presence of medical indicators which render vaginal delivery potentially harmful to the mother or baby [2]. The World Health Organization (WHO) puts the acceptable rate of caesarean section at between 10% and 15% of all births in developed countries [3]. However the rate has been increasing worldwide, and this is a growing concern in many countries. Once limited to Western countries, particularly the United States and United Kingdom, high rates of caesarean deliveries are now an international phenomenon, reflecting, in part, increased hospital-based delivery and access to healthcare. The rise of caesarean births has been the subject of continuing debate [4]. In the Islamic Republic of Iran, the past 2 decades have witnessed a sharp increase in the number of caesarean section operations [5]. This study shows trends of caesarean section in the Islamic Republic of Iran in recent years, focusing on probable causes of the increase.

Methods

The national caesarean section rate was obtained from several data sources:

- caesarean section rates from routine data gathering systems from government health offices
- caesarean section rates reported in national surveys including the integrated monitoring and evaluation system
- caesarean section rates retrieved from the WHO database
- caesarean section rates published in the literature.

Results

Caesarean section rates by province are shown in Table 1. Figure 1 illustrates the trend of caesarean sections from 2000 till 2009. In 2005 an integrated

Table 1 Caesarean delivery rates by province, Islamic Republic of Iran, 2005–2009 and percentage point change

Location	2005 (%)	2007 (%)	2009 (%)	Percentage point change
Islamic Republic of Iran	38.4	45.0	47.9	+9.5
Gilan	64.3	70.0	73.4	+9.1
Mazandaran	46.3	61.5	63.7	+17.3
Tehran	53.5	60.0	74.3	+20.8
East Azerbaijan	42.2	54.0	62.1	+19.9
Isfahan	49.5	53.5	56.8	+8.1
Ardebil	43.1	52.0	52.7	+9.8
Qom	48.1	52.0	53.1	+5.2
Ghazvin	43.6	52.0	57.1	+13.5
Semnan	50.3	50.5	54.1	+4.3
Ilam	50.1	49.0	47.4	–2.7
Yazd	44.4	48.0	44.7	+0.3
Kermanshah	38.2	46.0	47.4	+9.2
Kerman	38.7	45.5	49.2	+10.5
Markazi	42.8	44.0	61.3	+18.5
Fars	31.2	43.3	41.3	+10.1
Golestan	38.6	43	55.3	+16.7
Chahar Mahaal	42.6	42	39.3	–3.3
Khuzestan	35.8	42	51.3	+15.5
Hamedan	32.2	40	44.3	+12.1
Khorasan Razavi	46.9	38.3	48.4	+1.5
Lorestan	36.1	39	49.6	+13.5
Bushehr	57.3	36	31.7	–25.6
West Azerbaijan	29.2	34	33.6	+4.4
Kohgiluyeh	22.5	34	42.6	+20.1
North Khorasan	23.4	33	34.0	+10.6
Kordestan	27.2	33	35.1	+7.9
South Khorasan	25.2	32	38.2	+13
Hormozgan	23.9	31	56.7	+32.8
Zanjan	28.4	25	33.1	+4.7
Sistan	9.1	23	22.4	+14.3

Source: Ministry of Health and Medical Education data and information centre, 2011.

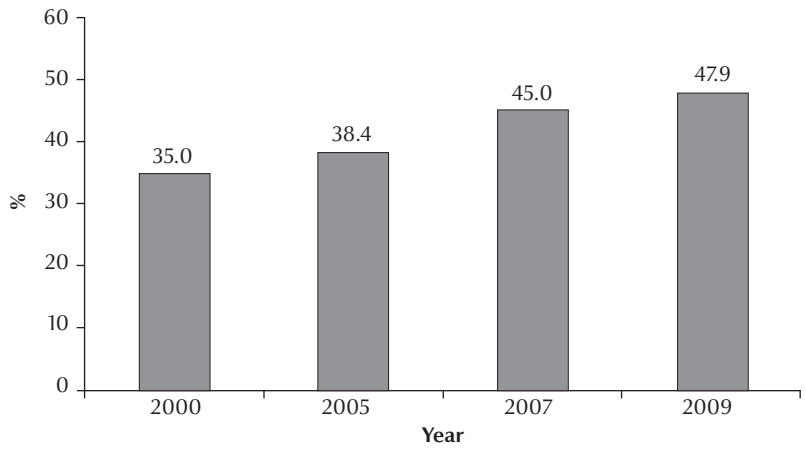

Figure 1 Trend in caesarean section rate, Islamic Republic of Iran, 2000–2009 (Source: [23])

monitoring and evaluation system survey was conducted throughout the country, and the caesarean section trend was estimated at 40.4%. The caesarean section rate in 2005 in private and public hospitals was 64.3% and 36.4% respectively. The caesarean section rate in urban areas in 2005 was 46.7% and in rural areas was 27.6%.

Discussion

The result of this research showed that the prevalence of caesarean section in Islamic Republic of Iran is very high. In both urban and rural areas the figures were much greater than the ceiling (15%) recommended by WHO [6]. It is argued that over the past 25 years there has been a sustained rise in caesarean section rates around the world, both in developed and developing countries [7–9]. Rutkow reported that caesarean section delivery accounted for 21% of all live births in the United States in 1984; this rate increased up to 24.4% in 2001 as reported by Martin et al. and reached 30.3% in 2008 . In 1980, the rate in the UK was 9%, increasing to 21.3% in 2000 and 22% in 2008 [3,10]. The percentage of caesarean sections in Islamic Republic of Iran has increased sharply in recent years. A study of over 600 000 births that took place in a public hospital in Tehran found a mean caesarean section rate of 3.1% for the 15-year period 1967–1983 [11]. The caesarean section rate was 35% in 2000 and reached 47.9 in 2009 [12,13]. The caesarean section rates in Islamic Republic of Iran seem to be as high as those reported from Brazil (41.3%) and China (40.5%) [3] and not comparable with caesarean section rates in other Eastern Mediterranean Region countries. The caesarean section rate varies from 9.3% in Morocco to 27% in Egypt [14,15]. Data gathered from hospital information systems showed the caesarean section rate to be 38.4% in 2005, yet caesarean section prevalence extracted from the integrated monitoring and evaluation system survey was 40.4% in 2005. Overall, it seems that two percentage points of error is acceptable for a national survey, and misreports/underreports in mode of birth are not significant. The prevalence of caesarean sections in urban areas is significantly higher to that in rural areas. Our findings are in line with Kukura's research [16]. Maybe women who live in rural areas have fewer delivery mode options and limited financial resources.

The caesarean section rate in private hospitals is nearly twice that of public hospitals because government-run hospitals do not allow elective caesarean sections, and caesarean section without medical indication is not on the insurance list. All hospitals with rates of caesarean section higher than 70% were in the private sector. The provinces plus Tehran city differed markedly in terms of caesarean section rates (Table 1). The rate of caesarean section in Tehran is higher than 70% and in Sistan province is less than 30%. The prevalence of caesarean section is significantly higher in developed provinces. Unfortunately we could not report how many caesarean sections were elective because patient choice is not documented in medical records. We found in this research evidence that shows the large proportion of caesarean section cases in our country are not medical indicated, and meaningful differences in rates between provinces and between rural and urban areas confirm the hypothesis of unnecessary caesarean sections in the Iranian health system.

There are several factors that may have contributed to the increase in caesarean deliveries. Discussions of the reasons for the growth in caesareans have centred on changing attitudes concerning caesareans among physicians and mothers [17,18]. Leitch and Walker concluded that indications for caesarean did not change much over time [19] and nonmedical factors affect caesarean section prevalence. Similar to other studies in developing countries such as Brazil, Mexico and Thailand, nonmedical factors were found to be more important than medical ones in the decision to deliver by caesarean section [20]. One major reason for this increase is the increased perception among women of these procedures as safe, despite the associated risks and increased costs. Lack of confidence, fear of pain and the experience of previous negative birth outcomes leads women to select caesarean section [2,21]. Maternal age rising at the time of first delivery is another reason for increasing numbers of caesarean sections [22]. Yazdizadeh and colleagues in their qualitative study, in which participants were selected from all of country, found that

many obstetricians prefer caesarean sections because of fear of litigation. Economic issues were considered as one of the most important barriers faced by specialists. Many of the specialists believed the lower tariff set for specialists in charge of vaginal delivery increased their tendency towards performing caesarean sections. Some of them also claimed that the fee paid for vaginal delivery is not worth the time consumed and stress endured during such a procedure [23]. One the other hand there is an increased the tendency towards using caesarean sections in self-governing hospitals where user fees and insurance payments are the main sources of income. The cost of caesarean section in government-run hospitals is approximately 1.5–2 times as much as that of vaginal delivery [24].

Obstetricians have long believed that caesarean delivery substantially increases the risk of maternal death, and there are extensive data to support that belief; the risk of death with caesarean delivery has been estimated to be several times that associated with vaginal delivery. Operative complications including infection, haemorrhage and visceral injury are important considerations. Infections have been noted to occur in up to 10% of patients after caesarean delivery, even when prophylactic antibiotics are used, although rates are lower among women who have caesarean deliveries that are not preceded by labour or the rupture of membranes [24]. Repeat caesarean deliveries are associated with significantly higher maternal and neonatal morbidity and mortality compared with caesarean or vaginal deliveries for women who have not had a prior caesarean [17].

There is a clear need for research on health outcomes for mothers and infants associated with caesarean delivery without a medical or obstetrical indication. A more detailed examination is needed of mother, insurer, hospital and provider attitudes toward elective caesareans. More studies, both quantitative and qualitative, of how mothers and clinicians view the birth process and the interaction between mothers and providers could assist in resolving some of these issues. Research on the economic implications of the rising caesarean rate for hospitals, providers, insurers and parents is also essential.

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