

Iran's Struggling Health System: An Increase in Natural Childbirth: A Case Study

Abstract

Background: The 7th package of health reform in Iran has been implemented in May 15, 1393, is concerned with the "promotion of natural childbirth." It has been focusing on reducing cesarean section (CS) and promoting normal vaginal delivery (NVD) as broadly as possible. This study evaluated the changes in the vaginal delivery and cesarean before and after implementation of the 7th package of health reform in public and private hospitals of Isfahan Province in 2014. **Methods:** This was a quasi-experimental research. The population of this study contained all public and private hospitals in Isfahan Province covered by the Health Reform Program. It included 22 public and 6 private hospitals. The data collected from the vice chancellor of treatment in 6 months before and after the implementation of the program have been analyzed. SPSS software version 18.0 (SPSS Inc., Chicago, IL, USA) and independent *t*-test have been employed for data analysis. **Results:** It was demonstrated that the increasing rate of NVD ($P = 0.001$) and decreasing rate of CS in public hospitals ($P = 0.027$) after the implementation of the plan were significant. On the other hand, the increasing rate of CS in private hospitals was significant ($P = 0.026$). **Conclusions:** Although this scheme has achieved its targets in public hospitals of Isfahan Province, it has not met its objectives in private hospitals. It seems CS operations were shifted from public hospitals to private ones, which is conflict with the objectives of the health reform plan.

Keywords: Cesarean section, health reform, Iran, Isfahan, normal vaginal delivery

Introduction

Childbirth is a natural process which begins with some regulatory systematic changes and ends with the delivery of the child. In some cases due to medical reasons including malposition, malpresentation, umbilical cord prolapse, and severe preeclampsia, it is impossible to deliver the child through vaginal operation, so cesarean section (CS) is done.^[1-3] CS is a surgical incision for delivering a child by cutting through the wall of the mother's abdomen and uterus. Due to this fact that this method of delivery is invasive, it can only be used in some determinately certain cases.^[4] In general, it cannot be regarded as a preferred mode of delivery, since like any other surgical operations, it carries significant consequences and risks for both mother and her child.^[5]

According to the conducted research, CS carries numerous consequences including fever and infection, bleeding, aspiration, atelectasis, uterine inertia, tummy

adhesion, increasing risk of hysterectomy, increasing probability need to blood transfusion, cardiopulmonary disorders, thromboembolism, biliary diseases for the mother, the possibility of damage to the bladder and ureter, placenta previa, and psychological effects.^[6-8] Moreover, the mortality risk of mothers and infants involved in cesarean delivery is higher than that of natural delivery.^[9-13] One more complication of CS is respiratory problems in newborns.^[14]

In addition to these consequences due to the effects of surgery, proper nutrition through breastfeeding might be probably disturbed.^[15]

Despite numerous consequences and complications of cesarean deliveries as well as international organizations' confirmation on restriction of CS, the rate of cesarean delivery in developed and developing nations is significantly high.^[5]

In a study that was conducted by Shariat in 2002, the overall rates of CS over 20 years have increased from 5% to 25%.^[16]

How to cite this article: Yarmohammadian M, Jabbari A, Hadian M. Iran's Struggling Health System: An Increase in Natural Childbirth: A Case Study. *Int J Prev Med* 2018;9:47.

**Alireza Jabbari,
Mohammad Hossein
Yarmohammadian,
Marziye Hadian**

*Health Management and
Economics Research Centre,
Isfahan University of Medical
Sciences, Isfahan, Iran*

Address for correspondence:

Ms. Marziye Hadian,
Health Management and
Economics Research Centre,
Isfahan University of Medical
Sciences, Isfahan, Iran.
E-mail: m.hadian68@gmail.com

Access this article online

Website:
www.ijpvmjournal.net/www.ijpm.ir

DOI:
10.4103/ijpvm.IJPVM_82_16

Quick Response Code:



This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

Archive of SID

This increasing CS rate is also occurring in Iran. According to the studies, the percentage of CS in different cities of Iran is: Tehran 44%,^[17] Hamedan 50.2%,^[18] Damghan 51.7%,^[19] Gilan 64.3%,^[20] Gorgan 49.8%,^[21] and Shiraz 66.4%.^[22]

The increasing rate of CS in Iran has caused a concern for health-care system to decline cesarean delivery and promote natural vaginal delivery. This study was aimed to “promote normal delivery promotion instructions” to assess the impact on the rate of cesarean and normal delivery in public and private hospitals in Isfahan Province was conducted in 2014.

Methods

This is a quasi-experimental research before and after implementation of the 7th package of health reform in public and private hospitals of Isfahan Province in 2014. Its population consists of public and private hospitals. Although public hospitals are concerned with “natural childbirth promotion instruction,” private hospitals have also been selected to make a better assessment about the effects of the mentioned instruction. With regard to restrictions in population study, census method was used. All the hospitals affiliated to Isfahan University of Medical Sciences and private hospitals were included in this study. It included 22 public and 6 private hospitals. Public

hospitals with English letters A to V specified and private hospitals with Greek letters I to VI shown. After a formal permission from vice chancellor with number of 394,594, refer to vice chancellor of treatment of Isfahan University of Medical Sciences and Statistics related to normal delivery and cesarean in targeted hospitals can be derived. SPSS software version 18.0 (SPSS Inc., Chicago, IL, USA) and independent *t*-test were used for data analysis.

Results

Overall 22 public hospitals investigated in this study. The highest and lowest numbers of vaginal delivery in 6 months before the implementation of the health-care reform plan in A hospital were 935 cases and in P hospital 5 cases and in the same 6 months after the implementation of the health-care reform plan the numbers of vaginal delivery after 6 months in A hospital was 1173 cases and in V hospital was 2 cases. The highest and lowest numbers of cesarean deliveries in 6 months before implementing the instruction in A hospital were 1469 cases and in P hospital no cesarean deliveries were reported. Alternatively, the numbers of cesarean deliveries after 6 months in A hospital were 1313 cases and in V and P hospitals no cesarean deliveries were reported. The paired *t*-test demonstrated that the fluctuations in the rates of cesarean and vaginal deliveries were significant [Table 1].

Table 1: The numbers of vaginal and cesarean deliveries in 6 months before and after implementing the instruction in public hospitals of Isfahan Province

Row	Hospital	The first 6 months 2013 (before the implementing the instruction)			The first 6 months 2014 (after the implementing the instruction)			Independent <i>t</i> -test
		The number of NVD	The number of CS	Total	The number of NVD	The number of CS	Total	
1	A	935	1469	2404	1173	1313	2486	<i>P</i> =0.001 - NVD
2	B	272	689	961	321	594	915	<i>P</i> =0.027 - CS
3	C	231	458	716	557	360	917	
4	D	286	458	744	412	472	884	
5	E	310	947	1257	535	757	1294	
6	F	144	96	240	103	86	189	
7	G	279	206	485	244	206	450	
8	H	396	305	701	450	342	792	
9	I	76	179	255	82	130	212	
10	J	383	217	600	451	264	715	
11	K	414	521	935	456	361	817	
12	L	156	115	271	198	114	312	
13	M	79	128	207	94	102	196	
14	N	584	618	1202	710	511	1221	
15	O	288	304	592	295	210	550	
16	P	5	-	5	18	0	18	
17	Q	54	107	161	59	84	143	
18	R	325	404	729	403	382	785	
19	S	870	632	1502	914	450	1454	
20	T	168	157	325	205	152	357	
21	U	396	487	883	428	435	863	
22	V	144	96	240	2	0	2	

NVD=Normal vaginal delivery, CS=Cesarean section

Archive of SID

In private hospitals studied, the highest and lowest numbers of vaginal delivery in 6 months before implementing the “natural childbirth promotion instruction” in I hospital were 368 cases and in V hospital 69 cases. Alternatively, the numbers of cesarean delivery after 6 months in VI hospital were the highest number of 2257 and lowest number of 174 in V hospital. The paired *t*-test proved that the rate of cesarean delivery after implementing the plan was significant [Table 2].

In addition, the ratio of vaginal delivery in public hospitals after implementation of the 7th package of health reform increased compared to the previous of the 7th package of health reform. This is the opposite in private hospitals [Table 3].

Discussion

The high rate of cesarean delivery in Iran convinced health-care system to decrease the high rate of CS. The findings of the present study have indicated that the natural childbirth promotion instruction has positively influenced this issue in public hospitals 6 months after implementing the plan. Moreover, according to Table 2, it has significantly increased the rate of normal vaginal delivery ($P = 0.001$). Apparently, it can be regarded as an encouraging point. Another encouraging point is that according to statistics, the plan has caused a significant reduction in rate of cesarean delivery in public hospitals ($P = 0.027$).

Studies in foreign countries in promoting natural childbirth are based more on hospital programs, and governments or health systems do not play a role. In other words, hospitals themselves attempted to plan to decrease the rate of cesarean delivery, so health-care system would not interfere directly in this process. Hence, no study was found to prove the direct interference of health-care system in each scheme. A case in point is the one conducted by Northwestern Memorial Hospital. This hospital embarked on a 5-year project to decline CS rate by instructing pregnant women, measuring CS rate, and evaluating the performance of medical staff. The results of this study led to falling in CS rate in nulliparous women from 27.3% to 18.2%.^[23] Another study was conducted in one of the teaching hospitals of

Florida. This hospital embarked on a 4-year project based on instructing pregnant women and specialists. Eventually, it could decrease cesarean delivery from 28 to 11 out of 100 cases.^[24] The results of Robinson study proved that if there is a regular audit cycle for performed CSs, the fear of legitimate consequences prevents the specialists to deliver the child through cesarean without indication. Therefore, it might decrease cesarean delivery rate.^[25] As it was noted, the above-mentioned instruction has so far been effective on the rate of cesarean and vaginal deliveries in the first 6 months of its implementation. The vaginal delivery rate in public hospitals has raised, and cesarean delivery rate has fallen. On the other hand, cesarean delivery rate in private hospitals has increased. Obviously, in accordance to studies carried out in other countries, it is concluded that they fruitfully have controlled cesarean rate by focusing on series of instructional actions. These specific actions have not been noticed in the 7th package of health reform in Iran. These practices include instructing pregnant women, instructing medical staff, establishing preventable regulations, and so forth. According to the results of this study, the refusal of performing cesarean and leading pregnant women to private sections might be considered as a cause in falling cesarean delivery rate in public hospitals which cannot be considered as a favorable outcome. Preferentially, to enhance the effects of the above-mentioned instruction, some arrangements have to be taken in account. To illustrate, educating society, establishing regular plans, and employing mass media are some instances which would be helpful to achieve satisfactory results in the long run.

Conclusion

Finally, it can be conclude that promoting vaginal delivery and reducing the rate of cesarean require comprehensive measures in different dimensions including instruction, raising awareness, enlightening, and establishing regulations. Hence, in this way, the rate of vaginal delivery might be effectively increased ($P = 0.001$). The results of this study revealed that the above-mentioned instruction has so far been efficient to increase vaginal delivery in public hospitals of Isfahan Province. Nonetheless, the increased cesarean rate has been significantly noticed in

Table 2: The numbers of vaginal and cesarean deliveries in 6 months before and after implementing the instruction in private hospitals of Isfahan Province

Row	Hospital	The first 6 months 2013 (before the implementing the instruction)			The first 6 months 2014 (after the implementing the instruction)			Independent <i>t</i> -test
		The number of NVD	The number of CS	Total	The number of NVD	The number of CS	Total	
1	I	368	2347	2715	278	2029	2307	$P=0.412$ - NVD
2	II	151	1164	1315	149	1423	1572	$P=0.026$ - CS
3	III	312	814	1126	293	973	1266	
4	IV	313	1022	1325	314	1113	1427	
5	V	69	118	187	58	417	232	
6	VI	262	1672	1889	364	2257	2621	

NVD=Normal vaginal delivery, CS=Cesarean section

Archive of SID

Table 3: The percentage of vaginal and cesarean deliveries in 6 months before and after implementing the instruction in public and private hospitals of Isfahan Province

Kind of hospital	Type of delivery	Percentage
Public		
6 months before implementation of the health-care reform plan	Vaginal	44.16
	Cesarean	55.84
6 months after implementation of the health-care reform plan	Vaginal	52.54
	Cesarean	47.46
Private		
6 months before implementation of the health-care reform plan	Vaginal	17.13
	Cesarean	82.87
6 months after implementation of the health-care reform plan	Vaginal	15.06
	Cesarean	84.94

private hospitals which must be taken into consideration. To carry out a more appropriate evaluation and make a better judgment about this instruction, more comprehensive studies have to be conducted under certain circumstances.

Acknowledgments

This study was supported by Vice Chancellor for Research and Technology, Isfahan, Iran (Grant Number 394594). We would like to thank Dr. Azade Alavi for his administrative support to undertake this project.

Financial support and sponsorship

This study was supported by Vice Chancellor for Research and Technology, Isfahan, Iran.

Conflicts of interest

There are no conflicts of interest.

Received: 26 Feb 16 **Accepted:** 13 Nov 16

Published: 16 May 18

References

- Sauls DJ. Effects of labor support on mothers, babies, and birth outcomes. *J Obstet Gynecol Neonatal Nurs* 2002;31:733-41.
- Lavender T, Hofmeyr GJ, Neilson JP, Kingdon C, Gyte GM. Cesarean section for non-medical reasons at term. *Cochrane Libr* 2012;3:434.
- Goldenberg RL, Culhane JF, Iams JD, Romero R. Epidemiology and causes of preterm birth. *Lancet* 2008;371:75-84.
- Karami K, Najafian M, Shahri P, Faizi S, Noorifard Z. Comparison of frequency vaginal and cesarean deliveries. *Iran J Public Health* 2009;38:97-102.
- Rivlin ME, Martin RW. *Manual of clinical problems in obstetrics and gynecology*. 4th ed. Little Brown and Company; London: 1999. p. 510.
- Khani S, Shabankhani B. Can the cesarean rate be reduced in Mazandaran. *J Mazandaran Univ Med Sci* 2004;14:43-51.
- Firoozi M, Hadizadeh Talasaz F. The survey of attitude of gynecologists and midwives about vaginal birth after cesarean delivery and barriers from their views. *Ofoh Danesh J* 2006;12:26-33.
- Karlström A, Lindgren H, Hildingsson I. Maternal and infant outcome after caesarean section without recorded medical indication: Findings from a Swedish case-control study. *BJOG* 2013;120:479-86.
- Kilsztajn S, Carmo MS, Machado LC Jr., Lopes ES, Lima LZ. Cesarean sections and maternal mortality in Sao Paulo. *Eur J Obstet Gynecol Reprod Biol* 2007;132:64-9.
- Rahimikian F, Mirmohamadali M, Mehran A, Aboozari Ghforoodi K, Salmaani Barough N. Effect of education designed based on health belief model on choosing delivery mode. *Hayat* 2009;14:25-32.
- Landon MB, Hauth JC, Leveno KJ, Spong CY, Leindecker S, Varner MW, *et al.* Maternal and perinatal outcomes associated with a trial of labor after prior cesarean delivery. *N Engl J Med* 2004;351:2581-9.
- Boskabadi H, Zakerihamidi M, Bagheri F. Outcomes of vaginal delivery and cesarean in Mashhad Ghaem University Hospital. *Tehran Univ Med J* 2014;71:807-15.
- Pallasmaa N, Ekblad U, Gissler M. Severe maternal morbidity and the mode of delivery. *Acta Obstet Gynecol Scand* 2008;87:662-8.
- Hansen AK, Wisborg K, Uldbjerg N, Henriksen TB. Risk of respiratory morbidity in term infants delivered by elective caesarean section: Cohort study. *BMJ* 2008;336:85-7.
- DiGirolamo AM, Grummer-Strawn LM, Fein SB. Effect of maternity-care practices on breastfeeding. *Pediatrics* 2008;122 Suppl 2:S43-9.
- Shariat M. Rate of cesarean and factors related to that in Maternity of Tehran. *Payesh J* 2002;3:1.
- Mohammadi TS, Kiani AA, Heydari M. The survey on tendencies of primiparous women for selecting the mode of delivery. *Journal of Babol University of Medical Sciences* 2009;3:54-9.
- Moeini B, Allahverdipour H, Mahjoub H, Bashirian S. Assessing pregnant women's beliefs, behavioral intention and predictive factors for cesarean section in Hamadan. *Iranian Journal of Obstetrics, Gynecology and Infertility* 2011;14:37-44.
- Bahonar A, Shaebani A, Aghajani M. Determinants of cesarean and its trend in damghan, Iran. *Iran J Epidemiol* 2010;6:33-8.
- Moayed MS, Sohrabi Z. The trend analysis of cesarean section\ rate in a hospital, Tehran, Iran. *Payesh* 2011;10:261-4.
- Tabandeh A, Kashani E. The prevalence of cesarean among employed educated women of medical science groups in Gorgan. *Journal of Gorgan University of Medical Sciences Summer* 2007;9:67-70.
- Mohammad BA, Tabatabaei S, Mohammad SN, Yazdani M. Factors influencing cesarean delivery method in Shiraz hospitals. *IJN* 2009;21:37-45.
- Socol ML, Garcia PM, Peaceman AM, Dooley SL. Reducing cesarean births at a primarily private university hospital. *Am J Obstet Gynecol* 1993;168:1748-58.
- Sanchez-Ramos L, Kaunitz AM, Peterson HB, Martinez-Schnell B, Thompson RJ. Reducing cesarean sections at a teaching hospital. *Am J Obstet Gynecol* 1990;163:1081-8.
- Robson MS, Scudamore IW, Walsh SM. Using the medical audit cycle to reduce cesarean section rates. *Am J Obstet Gynecol* 1996;174:199-205.