

Factors Associated with Preference for Repeat Cesarean in Neyshabur Pregnant Women

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ABSTRACT

Background: Cesarean delivery is a surgery for deliver a baby. Women with previous cesarean delivery (CD) must often choose between a vaginal delivery (VD) and repeat CD. Our aim of this study was to investigate factors associated with preference for CD in Neyshabur pregnant women with previous CD.

Methods: A cross-sectional study was conducted on all pregnant women (who had previous caesarean delivery) from February 20, 2011 to March 20, 2011 in Northeast of Iran (Neyshabur). Logistic regression model was used to estimate odds ratios (ORs) and 95% confidence intervals (CIs).

Results: The mean age of pregnant women was 29.95 ± 4.94 years. In this study of the 292 pregnant women, 235 (80.5%) said they prefer CD. There was a statistically significant relation between preference for CD and the following variables: pregnant women's educational level ($P < 0.001$; OR = 3.86; 95% CI = 1.85-8.05) and doctor's advice ($P = 0.021$; OR = 3.55; 95% CI = 1.21-10.43). The pregnant women with a previous CD presented four-fold upper chance of choosing CD.

Conclusions: As observed in this study, most pregnant women with previous caesarean delivery prefer repeated caesarean delivery rather than VD in their subsequent pregnancy and educational level of pregnant women and doctor's advice were important factors that influenced this preference. This subject suggests the need to counsel pregnant women with an obstetrician before select delivery type.

Keywords: Caesarean delivery, preference, pregnant woman, vaginal delivery

INTRODUCTION

The World Health Organization advocates a caesarean section rate of up to 15%, as evidence indicates there is no reduction in maternal and neonatal mortality and morbidity when the rate exceeds this.^[1,2] During the last decade, there has been much interest in patient-demanded cesareans and the increasing caesarean delivery (CD) rates in industrialized countries.^[3-5] The choice of a particular method of birth delivery by the pregnant woman (PW) is a modern, complex, and controversial subject. "Caesarean by

request” has been implicated as one of the causes for the continual increase in CD rates.^[6] According to the results of Ecker study, CD by request probably occurs nearly 3% of all deliveries.^[7] The increasing trend is likely to be sustained because women with previous CDs are at higher risk of repeat caesarean,^[8] and there is a growing request for CD, especially in high-income countries.^[9-11] Only 8.2% of United State women with a previous CD attempted a vaginal birth in 2007, compared with 35.3% in 1997, despite evidence that 60-80% of vaginal births after cesareans (VBAC) are successful.^[12] A similar trend is apparent in Australia, where VBAC rates declined from 31% in 1998 to 19% in 2006.^[13] Although VBAC has been extensively validated as a safe option for most women with a previous CD,^[12] nonmedical factors are thought to be driving the decline in rates since medical factors have changed little over the years.^[14] Recently, with attention to the emphasis on women’s participation in their medical decision, women’s request for a CD has become one of the major causes for the surgical route of delivery.^[15-18] Preferences for cesarean are often associated with some factors such as previous CD, fear of birth, maternal age, maternal education, socioeconomic factors and so on.^[4,19-28] The purpose of this survey was to study the preference for CD among PW with previous CD in Northeast of Iran (Neyshabur), and to identify the factors associated with the choice of CD.

METHODS

This cross-sectional study was conducted on all PW with previous CD in Northeast of Iran (Neyshabur). The data were collected from February 20, 2011 to March 20, 2011. All participating subjects provided informed consent after being acquainted with the purpose of the study. In this study, questionnaires have been filled via face-to-face interview with PW who agreed to participate in this study and for enhance accuracy; all participants were informed that their responses would remain confidential. The questionnaires were completed for total PW with previous CD at all health centers in Neyshabur. A questionnaire was adapted and elaborated from questionnaires used in other studies^[6,26,27,29-37] that focused on preference toward mode of delivery and the etiology of these preferences in PW with

previous CD. The questionnaire was pilot tested at the health center in Neyshabur, and revisions were made to ensure validity of it. Inclusion criteria to study included: (a) Women who were pregnant at any time from February 20, 2011 to March 20, 2011 (b) residence in Neyshabur, (c) having previous CD, (d) women’s agreement. Preference for CD was considered as dependent variable. The other data collected were included age, educational level, occupation, gestation age, fear of delivery in PW and age, educational level, occupation in Spouse of PW as well as local residence, safety of the baby, doctor’s advice and planned pregnancy as independent variables. The data analysis was performed using the SPSS software for windows version 16.0 (SPSS Inc, Chicago, IL). Descriptive analyses performed, including frequencies, percentages, ranges, means, and standard deviations. Chi-square test and Logistic regression model were used to investigate the relation between women’s preference for CD and other variables. We reported odds ratio with 95% confidence interval. Various variables tested to have an association with preference for CD with $P < 0.05$.

RESULTS

During the study period, 1780 women were pregnant. Of them, 1488 women were excluded from the study; 76 because of disagreement to contribute in study and 1412 because of they don’t have previous CD. Finally, 292 PW remained for analysis; including 171 (58.6%) lived in urban areas and 121 (41.4%) lived in rural areas [Table 1]. The mean age of pregnant women was 29.95 ± 4.94 years (range: 16-42 years) and that of their spouses was 33.47 ± 5.69 years (range: 21-67 years). In total, 235 (80.5%) of the PW said that they preferred to have CD, whereas the other 57 (19.5%) wished to try for a vaginal delivery (VD). As was observed, the PW with a previous CD presented four-fold upper chance of choosing CD. After used of univariate logistic regression model we observed statistically significant relation between PW’s preference for CD and the following variables: PW’s educational level ($P < 0.001$), spouse educational level ($P = 0.039$), local residence ($P = 0.012$) and doctor’s advice ($P = 0.021$), but the relation between PW’s preference and the following variables was not statistically significant

Table 1: OR estimates of PW's preference for CD based on the Chi-square test

Variables	Type of preference delivery			OR (95% CI)
	Cesarean (n=235)	Vaginal (n=57)	Total (n=292)	
PW variables				
Age (years)				
≤35	202	47	249	Reference
>35	33	10	43	0.77 (0.34, 1.67)
Educational level				
<Diploma	131	47	178	Reference
≥Diploma	104	10	114	3.73 (1.8, 7.74)
Occupation				
Housewife	219	53	272	Reference
Employee	16	4	20	0.97 (0.31, 3.02)
Fear of VD/CD				
No	200	51	251	Reference
Yes	35	6	41	1.49 (0.59, 3.73)
Gestation age (week)				
<37	214	54	268	Reference
≥37	21	3	24	1.77 (0.51, 6.14)
Spouse of PW variables				
Age (years)				
≤35	156	43	199	Reference
>35	79	14	93	1.56 (0.8, 3.01)
Educational level				
<Diploma	134	41	175	Reference
≥Diploma	101	16	117	1.93 (1.03, 3.64)
Occupation				
Self-employed	204	51	255	Reference
Employee	31	6	37	1.29 (0.51, 3.26)
Other variables				
Local residence				
Rural	89	32	121	Reference
Urban	146	25	171	2.1 (1.17, 3.77)
Safety of the baby				
No	231	54	241	Reference
Yes	4	3	51	0.31 (0.068, 1.43)
Doctor's advice				
No	188	53	241	Reference
Yes	47	4	51	3.31 (1.14, 9.61)
Planned pregnancy*				
Planned	171	41	212	Reference
Unplanned	57	12	69	1.14 (0.56, 2.32)

*Data were missing for some subjects. OR=Odds ratio, PW=Pregnant woman, CD=Cesarean delivery, VD=Vaginal delivery, CI= Confidence interval

according to univariate logistic regression model: Age ($P = 0.503$), occupation ($P = 0.955$), fear of delivery ($P = 0.395$), gestation age ($P = 0.365$) in PW, age ($P = 0.188$), occupation ($P = 0.587$) in spouse of PW, safety of the baby ($P = 0.115$) and

planned pregnancy ($P = 0.719$) [Table 1]. At the end, we evaluated the relation between different variables and PW's preference using multivariate logistic regression model with forward method. Variables with significant relations were as follows:

PW's educational level ($P < 0.001$) and doctor's advice ($P = 0.021$) [Table 2].

DISCUSSION

Pregnant woman must often select between a VD after prior cesarean and elective repeat CD.^[38] According to the results of this study, 80.5% of PW with previous CD said that they preferred to have CD at the end of the pregnancy period, while 19.5% of them preferred to have VD. In Karlstrom study observed that 79.5% of women with previous CDs preferred CD.^[24] In Faisal and pang studies observed a significant relation between women's preference for CD and previous CD.^[6,26] A study in Taiwan showed that the rate of VDs after CDs were from 3.9% to 4.5%.^[39] The rate of VD after a CD in the United State was 31% in 1998 and 12.7% in 2002.^[40,41] In a systematic review that was done in order to review the published literature on women's preferences for CD, observed that women with previous CDs reported more preference for CD (29.4%) in comparison to women without a previous CD (10.1%).^[42] As was observed, these outcomes were strongly associated with the previous type of delivery and women with previous CD presented a much lower chance of choosing VD. Concerns over uterine rupture and its attendant morbidity are associated with a decline in the trial of vaginal birth after CD.^[43,44] Before considering the other results, one of the limitations of the present study must be highlighted. This was a cross-sectional study which limits considerations regarding causality, because in cross-sectional study the choice was only assessed at the point of time. However one of the major advantages of this study was that we use of logistic regression model to control effect of confounding variables in the presence of other variables. In this study, after using of multivariate logistic regression model, we observed a strong positive relation between the PW's preference for CD and educational level of

them. As observed in Table 1, 91.23% of women with diploma and upper prefer CD, but only 73.6% of women with educational level less than diploma prefer CD. Studies from the United States by Dunsmoor-Su and king showed that a higher level of maternal education was an independent factor associated with upper cesarean births after caesareans.^[45,46] In Faisal and Fugenes studies, there was a positive relation between PW's preference for cesarean and their educational level.^[6,37] In Karlstrom and Hsu studies, women with lower educational levels had a higher preference to make cesarean (a negative relation).^[24,35] Some studies did not report any significant relation between women's preference for cesarean and their educational level.^[36,47-49] According to this study and some mentioned studies it seems that the educational level of women can probably be one of the factors that may affect the women's preference for CD, however this relation didn't observe in some studies. In this study, we observed a significant relationship between PW's preference for CD and doctor's advice. The results of pang study show that 5.8% of PW preferred cesarean because of doctor's advice CD.^[31] Furthermore in Mohammadpour study observed that doctor' advice is one of the reasons for selection of CD in studied PW.^[50] Maybe some doctors advice PW to perform CD (after previous CD) because risks of VBAC can be potentially catastrophic in the setting of uterine rupture, however in Landon study was observed that history of multiple CDs is not associated with an increased rate of uterine rupture in women attempting VD compared with those with a single prior CD.^[51] Most of PW with preference for CD probably do it in the future. For example in Horey study observed that 97.1% of those indicating preference for CD achieved it, while 64.8% of those planning VD achieved this mode of birth.^[52] Clinicians can change PW preference to cesarean with counsel to them, especially in women without clinical indications. The findings of this study may have implications for researchers as well as clinicians. With attention, this study that was cross-sectional and, therefore, direct causation is not known; we suggest that further studies be undertaken to examine factors influencing PW's childbirth preferences in more detail, on a larger scale, and prospectively; especially with use of Randomized controlled trials as recommended by Dodd study.^[53]

Table 2: OR estimates of PW's preference for CD based on the multivariate logistic regression model

Variables	β	OR	95% CI	P value
PW's educational level	1.35	3.86	1.85, 8.05	<0.001
Doctor's advice	1.27	3.55	1.21, 10.43	0.021

OR=Odds ratio, PW=Pregnant woman, CD=Cesarean delivery, CI=Confidence interval

CONCLUSIONS

In this study, most of PW (with previous CD) preferred to have a CD. Maybe various factors influenced PW to prefer CD but in this study PW's educational level and doctor's advice were important factors. The much upper rate of CD preference after previous CD in this study suggests the need to counsel PW, who must choose between a VD and a repeated CD after a prior CD.

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REFERENCES

1. Althabe F, Belizán JM. Caesarean section: The paradox. *Lancet* 2006;368:1472-3.
2. Wagner M. Choosing caesarean section. *Lancet* 2000;356:1677-80.
3. Jackson NV, Irvine LM. The influence of maternal request on the elective caesarean section rate. *J Obstet Gynaecol* 1998;18:115-9.
4. McCourt C, Weaver J, Statham H, Beake S, Gamble J, Creedy DK. Elective cesarean section and decision making: A critical review of the literature. *Birth* 2007;34:65-79.
5. Quinlivan JA. Patient preference the leading indication for elective cesarean section in public patients-results of a 2-year prospective audit in a teaching hospital. *Aust N Z J Obstet Gynaecol* 1999;39:207-14.
6. Faisal-Cury A, Menezes PR. Factors associated with preference for cesarean delivery. *Rev Saude Publica* 2006;40:226-32.
7. Ecker J. Elective cesarean delivery on maternal request. *JAMA* 2013 8;309:1930-6.
8. Rosen MG, Dickinson JC, Westhoff CL. Vaginal birth after cesarean: A meta-analysis of morbidity and mortality. *Obstet Gynecol* 1991;77:465-70.
9. Pang MW, Leung TN, Lau TK, Hang Chung TK. Impact of first childbirth on changes in women's preference for mode of delivery: Follow-up of a longitudinal observational study. *Birth* 2008;35:121-8.
10. Florica M, Stephansson O, Nordström L. Indications associated with increased cesarean section rates in a Swedish hospital. *Int J Gynaecol Obstet* 2006;92:181-5.
11. Morrison J, MacKenzie IZ. Cesarean section on demand. *Semin Perinatol* 2003;27:20-33.
12. MacDorman M, Declercq E, Menacker F. Recent trends and patterns in cesarean and vaginal birth after cesarean (VBAC) deliveries in the United States. *Clin Perinatol* 2011;38:179-92.
13. Homer CS, Johnston R, Foureur MJ. Birth after caesarean section: Changes over a nine-year period in one Australian state 2011;27:165-9.
14. Cragin EB. Conservatism in obstetrics. *NY Med J* 1916;104:1-3.
15. Efeckhar K, Steer P. Caesarean section controversy. Women choose caesarean section. *BMJ* 2000;320:1073.
16. Mould TA, Chong S, Spencer JA, Gallivan S. Women's involvement with the decision preceding their caesarean section and their degree of satisfaction. *Br J Obstet Gynaecol* 1996;103:1074-7.
17. Cotzias CS, Paterson-Brown S, Fisk NM. Obstetricians say yes to maternal request for elective caesarean section: A survey of current opinion. *Eur J Obstet Gynecol Reprod Biol* 2001;97:15-6.
18. Paterson-Brown S. Should doctors perform an elective caesarean section on request? Yes, as long as the woman is fully informed. *BMJ* 1998;317:462-3.
19. Waldenström U, Hildingsson I, Ryding EL. Antenatal fear of childbirth and its association with subsequent caesarean section and experience of childbirth. *BJOG* 2006;113:638-46.
20. Wiklund I, Edman G, Ryding EL, Andolf E. Expectation and experiences of childbirth in primiparae with caesarean section. *BJOG* 2008;115:324-31.
21. Nieminen K, Stephansson O, Ryding EL. Women's fear of childbirth and preference for cesarean section - A cross-sectional study at various stages of pregnancy in Sweden. *Acta Obstet Gynecol Scand* 2009;88:807-13.
22. Hildingsson I, Rådestad I, Rubertsson C, Waldenström U. Few women wish to be delivered by caesarean section. *BJOG* 2002;109:618-23.
23. Kringeland T, Daltveit AK, Møller A. What characterizes women in Norway who wish to have a caesarean section? *Scand J Public Health* 2009;37:364-71.
24. Karlström A, Nystedt A, Johansson M, Hildingsson I. Behind the myth - Few women prefer caesarean section in the absence of medical or obstetrical factors. *Midwifery* 2011;27:620-7.
25. Wiklund I, Edman G, Andolf E. Cesarean section on maternal request: Reasons for the request, self-estimated health, expectations, experience of birth and signs of depression among first-time mothers. *Acta Obstet Gynecol Scand* 2007;86:451-6.
26. Pang SM, Leung DT, Leung TY, Lai CY, Lau TK, Chung TK. Determinants of preference for elective caesarean section in Hong Kong Chinese pregnant women. *Hong Kong Med J* 2007;13:100-5.
27. Mancuso A, De Vivo A, Fanara G, Settineri S, Triolo O, Giacobbe A. Women's preference on mode of

- delivery in Southern Italy. *Acta Obstet Gynecol Scand* 2006;85:694-9.
28. Dursun P, Yanik FB, Zeyneloglu HB, Baser E, Kuscü E, Ayhan A. Why women request cesarean section without medical indication? *J Matern Fetal Neonatal Med* 2011;24:1133-7.
 29. Chigbu CO, Ezeome IV, Iloabachie GC. Cesarean section on request in a developing country. *Int J Gynaecol Obstet* 2007;96:54-6.
 30. Lin HC, Xirasagar S. Maternal age and the likelihood of a maternal request for cesarean delivery: A 5-year population-based study. *Am J Obstet Gynecol* 2005;192:848-55.
 31. Pang MW, Lee TS, Leung AK, Leung TY, Lau TK, Leung TN. A longitudinal observational study of preference for elective caesarean section among nulliparous Hong Kong Chinese women. *BJOG* 2007;114:623-9.
 32. Gamble JA, Creedy DK. Women's preference for a cesarean section: Incidence and associated factors. *Birth* 2001;28:101-10.
 33. Lin HC, Sheen TC, Tang CH, Kao S. Association between maternal age and the likelihood of a cesarean section: A population-based multivariate logistic regression analysis. *Acta Obstet Gynecol Scand* 2004;83:1178-83.
 34. Roman H, Blondel B, Bréart G, Goffinet F. Do risk factors for elective cesarean section differ from those of cesarean section during labor in low risk pregnancies? *J Perinat Med* 2008;36:297-305.
 35. Hsu KH, Liao PJ, Hwang CJ. Factors affecting Taiwanese women's choice of Cesarean section. *Soc Sci Med* 2008;66:201-9.
 36. Chu KH, Tai CJ, Hsu CS, Yeh MC, Chien LY. Women's preference for cesarean delivery and differences between Taiwanese women undergoing different modes of delivery. *BMC Health Serv Res* 2010;10:138.
 37. Fuglenes D, Aas E, Botten G, Øian P, Kristiansen IS. Why do some pregnant women prefer cesarean? The influence of parity, delivery experiences, and fear. *Am J Obstet Gynecol* 2011;205:45.e1-9.
 38. Patel RM, Jain L. Delivery after previous cesarean: Short-term perinatal outcomes. *Semin Perinatol* 2010;34:272-80.
 39. Department of Health, Taiwan: Birth Registry 2008. Available from: <http://www.bhp.doh.gov.tw/download/themeParkId=542/970808/1.11a.pdf>. [Last accessed on 2010 May 26].
 40. Hamilton BE, Martin JA, Sutton PD, U.S. Department of health and human services centers for disease control and prevention. Births: Preliminary data for 2002. *Natl Vital Stat Rep* 2003;51:1-20.
 41. Menacker F, Curtin SC. Trends in cesarean birth and vaginal birth after previous cesarean, 1991-99. *Natl Vital Stat Rep* 2001;49:1-16.
 42. Mazzoni A, Althabe F, Liu NH, Bonotti AM, Gibbons L, Sánchez AJ, *et al.* Women's preference for caesarean section: A systematic review and meta-analysis of observational studies. *BJOG* 2011;118:391-9.
 43. Bujold E, Gauthier RJ, Hamilton E. Maternal and perinatal outcomes associated with a trial of labor after prior cesarean delivery. *New Engl J Med* 2004;351:2581-9.
 44. Liu SC, Li HJ, Lee SH. The experiences of multipara who chose to undergo vaginal birth after cesarean. *J Evid Based Nurs* 2006;2:242-9.
 45. Dunsmoor-Su R, Sammel M, Stevens E, Peipert JL, Macones G. Impact of sociodemographic and hospital factors on attempts at vaginal birth after cesarean delivery. *Obstet Gynecol* 2003;102:1358-65.
 46. King DE, Lahiri K. Socioeconomic factors and the odds of vaginal birth after cesarean delivery. *JAMA* 1994;272:524-9.
 47. Angeja AC, Washington AE, Vargas JE, Gomez R, Rojas I, Caughey AB. Chilean women's preferences regarding mode of delivery: Which do they prefer and why? *BJOG* 2006;113:1253-8.
 48. Chong ES, Mongelli M. Attitudes of Singapore women toward cesarean and vaginal deliveries. *Int J Gynaecol Obstet* 2003;80:189-94.
 49. Hildingsson I. How much influence do women in Sweden have on caesarean section? A follow-up study of women's preferences in early pregnancy. *Midwifery* 2008;24:46-54.
 50. Mohammadpouras A, Asgharian P, Rostami F, Azizi A, Akbari H. Investigating the choice of delivery method type and its related factors in pregnant women in maragheh. *Knowl Health* 2009;4:36-9.
 51. Landon MB, Spong CY, Thom E, Hauth JC, Bloom SL, Varner MW, *et al.* Risk of uterine rupture with a trial of labor in women with multiple and single prior cesarean delivery. *Obstet Gynecol* 2006;108:12-20.
 52. Horey D, Kealy M, Davey MA, Small R, Crowther CA. Interventions for supporting pregnant women's decision-making about mode of birth after a cesarean. *Cochrane Database Syst Rev* 2013;7:CD010041.
 53. Dodd JM, Crowther CA, Huertas E, Guise JM, Horey D. Planned elective repeat caesarean section versus planned vaginal birth for women with a previous caesarean birth. *Cochrane Database Syst Rev* 2013;12:CD004224.

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