



Effect of Social Factors on Cesarean Birth in Primiparous Women: A Cross Sectional Study (Social Factors and Cesarean Birth)

**Can ONER¹, Binali CATAK², Sevinç SÜTLÜ³, Selçuk KILINÇ³*

1. Dept. of Family Medicine, Dr Lutfi Kırdar Kartal Education and Training Hospital, Istanbul, Turkey
2. Dept. of Public Health, School of Medicine, Kafkas University, Kars, Turkey
3. Burdur Public Health Directorate, Yeni Mah, Eski Antalya Cad No 24 Yenice, Burdur, Turkey

***Corresponding Author:** Email: trcanoner@yahoo.com

(Received 23 Aug 2015; accepted 10 Nov 2015)

Abstract

Background: P Cesarean delivery rates have been increasing throughout the world. Parallel to the developments in the world the cesarean rate in Turkey has risen to 48.1% in 2013. Some of the social factors were related with cesarean births. The purpose of this study was to determine cesarean birth rates and to find out social factors affecting the cesarean birth in primiparous women.

Methods: This study was conducted in Burdur Province, Turkey between the dates of 1 Jan 2012–31 Dec 2012 on 223 primiparous women. The data was collected with data collection form prepared by the researchers by using face-to-face interview technique. In these analyses, chi-square and Backward Logistic regression analyses were used.

Results: In multivariate analyses, the place of delivery (OR: 11.2 [2.9-42.46] in private hospital and OR: 6.1 [2.6-14.1] in university hospital); time of the birth (OR: 7.1 [3.1-16.0]); doctor's effect (OR: 4.0 [1.8-8.95]) and husband's employment status (OR: 2.23 [1.0-4.7]) have been identified as factors affecting the caesarean delivery in primiparous women.

Conclusion: Although the results do not show all of the factors affecting the caesarean delivery in primiparous women, they reveal that medical reasons are not the only reason in this increase trend. Health policy makers and health professionals are required to identify the causes of this increase and to take measures.

Keywords: Cesarean sections, Primiparity, Social determinants, Epidemiology

Introduction

Cesarean delivery rates have been increasing in a fast manner throughout the world within past few decades (1). Although reasonable cesarean rates have been proposed as 5-10% by WHO, cesarean delivery rates across the world varies between 0.4% and 41% (2). While cesarean birth rates had reached 28% in USA, 21% in Canada, it is around 37% in Brazil, 39% in Mexico, 40% in China (2, 3). Cesarean birth rates are also increasing in Turkey in parallel to the developments in the world. While 6.0% of all births were realized by cesarean

section in 1998, this rate has risen to 48.1% in 2013 (4, 5).

The birth and postpartum processes can imply significant risks for both mother and infant health. One of the most important conditions, which have effect on these risks during the birth process is the way of delivery. Complications arising from cesarean births have important impacts on both mother and infant mortalities. These complications may include staying at intensive care unit, postpartum depression, infection, thrombosis, hysterectomy, bleeding, blood transfusion and

internal artery ligation related to maternal health, and iatrogenic prematurity, pulmonary hypertension, inability to breastfeeding, fetal respiratory syndrome in relation to newborn (6-8).

Cesarean delivery rates are influenced by many non-medical factors such as cultural factors, personal characteristics of the woman and socioeconomic features (9).

The purpose of this study was to determine cesarean birth rates and to find out social factors affecting the cesarean birth in primiparous women.

Materials & Methods

This study was conducted in Burdur Province, Turkey between the dates of 1 Jan 2012–31 Dec 2012. Total population of Burdur Province was 254.411 in the period of the study. There are 78 family health units and four general hospitals including three public, and one private sector in the province of the study.

Pregnancies and pregnancy outcomes (abortion, stillbirth and live birth) are reported to Provincial Public Health Directorate by the hospitals and family physicians. A total of 737 childbirths were realized between the dates of 1 Jan–31 Mar 2012. First deliveries comprised 223 (30.3%) of these childbirths. All infants were delivered in hospitals, and there are no home births.

Type, universe and sampling of the research

The universe of this cross-sectional type study was formed by 223 primiparous women. No sampling was selected and it was aimed to reach the entire universe. There was nobody refused to participate in the study. Ninety-six percent of the universe was reached (214/223). The most prominent reasons for inability to reach the women were absence at the address given (2 women), permanent migration out of the province (1 woman) and temporary visit to their parents residing in neighboring provinces (6 women).

Variables of the research

The data was collected with data collection form prepared by the researchers. Data collection form was made up of the questionnaire containing

women's sociodemographic, biodemographic, birth characteristics and babies' gender and weight. The dependent variable of the study is cesarean delivery, and independent variables are the factors related to women's sociodemographic, socioeconomic, health features, health behavior and violence.

Collection of research data

The data was collected using face-to-face interview technique after getting verbal consent from the woman, by midwives working in Community Health Center between the dates of 15 Apr–31 May 2012 after necessary permissions were obtained from Public Health Directorate. The midwives who would collect data were provided 3-h training, which includes the aim of the study, what each of questions targeted and the circumstances required to be considered at the stage of data collection in order to ensure standardization before data collection.

Statistical Analyses

The data was analyzed in SPSS 20 (Chicago, IL, USA) packaged software. In these analyses, chi-square and Backward LR logistic regression analyses were used, Odds ratio and confidence interval was calculated. The independent variables ($P<0.05$) which resulted as statistically significant in chi-square analyses, have been taken into Backward logistic regression analyses.

Results

The relationship between sociodemographic features and delivery mode is shown in Table 1. When the table is monitored, it is seen that there is statistically significant relationship between the delivery mode and the place of residence, women's age, women's family type and her husband's employment status and presence of health insurance. When it is examined in terms of birth and infants' characteristics, a significant relationship was shown between the delivery mode with doctor's influence in taking decision and the place of birth (Table 2).

Table 1: Sociodemographic features of women

Sociodemographic features		Normal	Cesarean	Total	P
		% (n=94)	% (n=120)	% (n=214)	
Residence	Village/Town	36.2	21.6	28.0	0.019
	City	63.8	78.4	72.0	
Age	≤ 19	24.4	13.3	18.2	0.017
	20–29	69.1	70.0	69.6	
	≥ 30	6.5	16.7	12.2	
Family type	Nuclear family	73.4	85.8	80.3	0.023
	Extended family	26.6	14.2	19.7	
Household count	≤ 4	87.2	93.3	90.6	0.128
	≥ 5	12.8	6.7	9.4	
Consanguinity	Yes	4.3	6.7	5.7	0.447
	No	95.7	93.3	94.3	
Formal marriage	Yes	99.0	96.7	97.7	0.275
	No	1.0	3.3	2.3	
Women's Education	Elementary or below	13.8	10.0	11.6	0.387
	Secondary school or above	86.2	90.0	88.4	
Husband's education	Elementary or below	17.0	11.6	14.0	0.263
	Secondary school or above	83.0	88.4	86.0	
Health insurance	No	11.7	3.3	7.0	0.017
	Yes	88.3	96.7	93.0	
Husband's occupation	Unemployed	8.5	4.1	6.0	0.020
	Public/private sector	54.2	72.5	64.4	
	For own	37.3	23.4	29.6	
Women's occupation	Employed	15.9	20.8	18.7	0.364
	Unemployed	84.1	79.2	81.3	

Table 2: Birth and infant features

Variable		Normal	Cesarean	Total	P
		%,(n=94)	%,(n=120)	%,(n=214)	
Knowing problems associated with normal delivery	Yes	6.3	13.3	14.9	0.097
	No	93.7	86.7	85.1	
Knowing problems associated with cesarean delivery	Yes	14.8	14.1	14.0	0.744
	No	85.2	85.9	86.0	
Informed about delivery types	Non-informed	60.6	49.1	54.6	0.095
	Informed	39.4	50.9	45.4	
Physician affect the delivery type	Yes	55.3	84.1	71.4	0.001
	No	44.7	15.9	28.6	
Gestational week	≤ 37 wk	14.8	19.1	17.2	0.412
	≥ 38 wk	85.2	80.9	82.8	
Birth place	University hospital	3.1	20.0	12.6	0.001
	Private hospital	14.8	35.8	26.6	
	State hospital	82.1	44.1	60.7	
Sex of infant	Female	48.9	51.6	50.4	0.692
	Male	51.1	48.4	49.6	
Weight of infant &	≤ 2500 gr	8.5	12.5	10.7	0.350
	≥ 2500 gr	91.5	87.5	89.3	

& 3 data is missing in cesarean group

The factors affecting caesarean deliveries are seen in Table 3. Accordingly, when public hospitals are taken as reference, caesarean deliveries were increased by 11.2 fold in the event of the delivery in private hospital; 6.1 fold in the event of the delivery in university hospital. Again with reference to the conditions of woman's husband work on her own account, working in private sector or

public sector increases 2.2 fold the caesarean birth. Doctor's guidance increases the caesarean 4.0 times with reference to those who say doctor had no impact on the delivery mode. When the deliveries made between 17:00-07:59 are taken as reference, caesarean deliveries are increased by 7.1 times between 08:00 -16:59.

Table 3: Factors related with caesarean delivery

Dependent variable: Delivery type		Odd's Ratio	95% CI
Independent variable			
Birth place	Private hospital	11.259	2.985–42.469
	University hospital	6.137	2.635–14.295
	State hospital	1 (Reference)	
Husband occupation	Unemployed	0,758	0.163–3.514
	Public/private sector	2.233	1.054–4.732
	For own	1 (Reference)	
Physician affect the delivery	Yes	4.039	1.821–8.958
	No	1 (Reference)	
Birth time	08:00–17:29	7.140	3.187–16.000
	17:31–07:59	1 (Reference)	

Discussion

In our study, many factors affecting caesarean delivery were discussed in primiparous women. Women's place of residence, age, presence of health insurance, family type, husband's job, the place of birth, the birth hour and doctor's intervention to delivery mode have been identified as factors affecting the caesarean section delivery in univariate analyses performed. Meanwhile in multivariate analyses, the place of delivery, time of the birth, doctor's effect, and husband's employment status have been identified as factors affecting the caesarean delivery among these factors.

Caesarean deliveries realized 11.2 times more in private hospitals and 6.1 times more in university hospitals in primiparous with reference to public hospitals in the study conducted. It was demonstrated that caesarean deliveries were increased by 12.7 times in university and top level hospitals with reference to deliveries of primiparous women in second-line hospitals in a study conducted (3). Caesarean deliveries are particularly among

the preferable methods in terms of avoiding the complications associated with the childbirth. Caesarean deliveries are preferred especially for pregnant women at risk due to possible complications in terms of mother and infant during delivery, cephalopelvic disproportion or high birth weight infants. In such cases, if pregnant women are followed at 3rd step health institutions or are guided for delivery by 2nd step institutions, then it may increase caesarean deliveries in these institutions.

One of the surprising aspects of the study was the 11.2 fold increase in caesarean delivery rates at private hospitals in spite of its equivalent adequacy with 2nd step health institutions in terms of the equipment with reference to public hospitals. Caesarean delivery rates in private hospitals are significantly more than public hospitals in the studies performed (10, 11). This increment is rooted in social and economic factors as well as medical reasons.

In our study, working female ratio is around 50% both in case and control groups. And a very

small portion of the husbands are unemployed. The employed status of the husband regardless of private or public or his own account, means the woman is also under the insurance coverage. On the other hand, employed status of the husband suggests the socioeconomic status of the family is better. Caesarean deliveries are more in the women with any health insurance compared to those without insurance in all studies conducted (3, 12, 13). This situation should be considered in conjunction with the finding of caesarean deliveries in private hospitals are, more which is another finding of the study.

Caesarean deliveries within working hours are 7.4 times more with reference to out of working hours (18:00-08:00) in our study. Caesarean operations increased on Fridays and between 06:00 a.m. and 06:00 p.m. with respect to primiparous (14). Meanwhile in another study, a relationship was shown between the time of caesarean section and insurance status. While the time of caesarean shows dispersed within a day in Kaiser Type insured women, there was an increase between 4 in the morning and 6 in the evening in other type insured women having caesarean. The caesarean section rate is the lowest between 10 at night and 6 in the morning in all insured groups (15).

Caesarean deliveries are also the operations performed with the patient's consent in line with physician's clinical evaluations and conviction just like in all other medical procedures. Physicians can offer particular options about delivery mode even though a specific preference is expressed for the patient. If the caesarean delivery is planned, caesarean delivery will take place, however if the plan is vaginal delivery then the delivery may be realized through vaginal or caesarean section (16). "Elective caesarean" concept appears in front of us when caesarean births are discussed in primiparous. Elective caesarean deliveries are estimated to be around 4-18% of all caesarean sections and 2% of all deliveries (17). 31.1% of the women who gave birth through caesarean section have decided caesarean delivery without doctor's influence in the study.

On the other hand, caesarean delivery rates increase by 4.03 times with reference to those with-

out doctor's effect for the determination of delivery mode. We believe that the increase with doctor's effect in caesarean deliveries occurs in two ways. Even if the woman herself decides the delivery mode, beforehand women are informed by physicians about benefits or risks of caesarean delivery (16) or physicians directly affect the patient's decision-making process in caesarean practices due to the knowledge asymmetry between the patient and the physician (14). Caesarean deliveries are preferred because of physicians' habits, caesarean deliveries bring more income and vaginal births take more time and defensive medicine application due to the fear of malpractice and complication during birth or pregnancy (18).

Conclusion

Although the results do not show all of the factors affecting the caesarean delivery in primiparous, they also reveal that medical reasons are not the only reason in this increase trend. Health policy makers and health professionals are required to identify the causes of this increase and to take measures. The strong side of the study is taking only the women who gave first birth in the study and reaching the complete universe of the study. On the other hand, indetermination and non-exclusion of caesarean sections with medical causes in study questions makes it difficult to generalize the results.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Acknowledgement

We thank all Community Health Center midwives who made contribution to the compilation of study data. The authors declare that there is no conflict of interests.

References

1. World Health Organization (1985). Appropriate technology for birth. *Lancet*, 2:436–437.
2. Betrán A, Meriáldi M, Lauer JA, Bing-Shun W, Thomas J, Van Look P et al. (2007). Rates of caesarean section: analysis of global, regional and national estimates. *Paediatr Perinat Epidemiol*, 21(2):98-113.
3. Klemetti R, Che X, Gao Y, Raven J, Wu Z, Tang S et al. (2010). Cesarean section delivery among primiparous women in rural China: an emerging epidemic. *Am J Obstet Gynecol*, 202(1): 65.e1-6.
4. Hacettepe Üniversitesi Nüfus Etütleri Enstitüsü (1999). Türkiye Nüfus ve Sağlık Araştırması, 1998. Hacettepe Üniversitesi Nüfus Etütleri Enstitüsü, Sağlık Bakanlığı Ana Çocuk Sağlığı ve Aile Planlaması Genel Müdürlüğü, Başbakanlık Devlet Planlama Teşkilatı Müsteşarlığı ve TÜBİTAK, Ankara, Türkiye.
5. Hacettepe University Institute of Population Studies (2014), “2013 Turkey Demographic and Health Survey”. Hacettepe University Institute of Population Studies. T.R. Ministry of Development and TÜBİTAK, Ankara, Turkey.
6. Villar J, Valladeres E, Wojdyla D, Zavaleta N, Carolli G, Velazco A, et al. (2006). Cesarean delivery rates and pregnancy outcomes: The 2005 WHO Global Survey on maternal and perinatal health in Latin America. *Lancet*, 367:1819-1829.
7. Deneux-Tharoux C, Carmona E, Bouvier-Colle MH, Breart G (2006). Postpartum maternal mortality and cesarean delivery. *Obstet Gynecol*, 108:541-548.
8. Villar J, Caroroli G, Zavaleta N, Donner A, Wojdyla D, Faundes A et al.(2007). Maternal and neonatal individual risks and benefits associated with cesarean delivery: Multicentre prospective study. *BMJ*, 335:1025.
9. Lee LY, Holroyd E, Ng CY (2001). Exploring factors influencing Chinese women’s decision to have elective caesarean surgery. *Midwifery*, 17(4):314-22.
10. Khawaja M, Kabakian T, Jurdi R (2004). Determinants of caesarian section in Egypt: Evidence from the demographic and health survey. *Health Policy*, 69(3):273-81.
11. Mastaki JK (2011). Social predictors of caesarean section births in Italy. *Afr Health Sci*, 11(4): 560-565.
12. Tamim H, El-Chemaly SY, Nassar AH, Aaraj AM, Campbell OM, Kaddour AA, et al. (2007). Cesarean delivery among nulliparous women in Beirut: Assessing predictors in nine hospitals. *Birth*, 34(1):14-20.
13. Bertollini R, DiLallo D, Spadea T, Peruci C (1992). Cesarean section rates in Italy by hospital payment mode; an analysis based on birth certificates. *Am J Public Health*, 82 (2):257-261.
14. Burns LR, Geller SE, Wholey DR (1995). The effect of physician factors on the cesarean section decision. *Med Care*, 33(4):365-382.
15. Spetz J, Smith WM, Enis SF (2001). Physician incentives and the timing of cesarean sections: Evidence from California. *Med Care*, 39(6):536-550.
16. Kaimal AJ, Kuppermann M (2012). Decision making for primary cesarean delivery: the role of patients and provider preferences. *Semin Perinatol*, 36(5):384-389. DOI: 10.1053/j.semperi.2012.04.024
17. Wax JR, Cartin A, Pinette MG, Blackstone J (2004). Patient choice cesarean: An evidence based review. *Obstet Gynecol Surv*, 59(8):601-616.
18. Lo JC (2003). Patients' attitudes vs physicians' determination implications for cesarean sections. *Soc Sci Med*, 57(1):91-96.