

ORIGINAL PAPER**The Delivery Methods and the Factors Affecting Among Giving Birth in Hospitals in Yozgat, Turkey****Mahmut Kiliç, PhD**

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Corresponding Author: Mahmut Kiliç, Bozok Üniversitesi Sağlık Yüksekokulu, 66200-Yozgat Turkey Phone: GSM; +90542-7736196, Work; +90354-2121190 E-mail: mahmutkilig@yahoo.com**Abstract****Background:** The most of pregnant women can have normal vaginal birth. Recently, caesarean section rates are gradually increasing both worldwide, and in my country.**Objectives:** The aim of this study was to establish the delivery preferences among women giving birth in hospitals, and the factors affecting this preference.**Methodology:** This cross-sectional study was performed in state (n=674) and private (n=148) hospitals. Data were gathered by a questionnaire applied by an interviewer. 822 women who had given live birth and gave verbal consent to participate, were included into the study. The data were analyzed by binary logistic regression analysis.**Results:** Two-thirds of the live births were by caesarean section. According to the binary logistic regression analysis, the possibility of undergoing caesarean section increased when; mothers' age increased, they were short, they gave birth in a private hospital, they had social security, they were primigravida, they had a previous miscarriage/ curettage/ stillbirth, and the major factor was found to be, having had a previous delivery by caesarean section. Variables such as; pregnancy week, babies' weight, mothers' educational and occupational status, fathers' educational status, family type, residential area, economical status were found to be insignificant.**Conclusion:** The facts that 2/3 rds. of the deliveries were by caesarean section, and that all of those who had undergone a previous caesarean delivery had a consequent caesarean delivery, and that most of the primigravida (60.5%) that gave birth by caesarean section were due to doctor's medical indication, make us think that doctors prefer caesarean delivery.**Key words:** Delivery, Obstetric, Birth, Caesarean Section.**Introduction**

Caesarean delivery is an alternative delivery method performed in situations in which vaginal delivery is not possible or else carries a risk for the fetus or mother (Lawson & Bienstock, 2007; Joy & Contag, 2011). Recently, caesarean section rates are gradually increasing both worldwide, and in Turkey. According to the Turkey Demographic and Health Survey (TDHS) performed in the years 1998, 2003, and 2008, a gradual increase has been established in the caesarean delivery rates (14%, 21%, and 37% respectively), also in the United States, the rates have increased since 1996 (21% in 1996 and 32% in 2007) (TDHS, 1999; TDHS, 2009; Menacker & Hamilton, 2010; MacDorman, Menacker & Declercq, 2008). In Turkey, almost half of the deliveries performed in hospitals are by caesarean section (Güney et al., 2006; Yılmaz, İsaoglu & Kadanali, 2009). According to the World Health Organization (WHO), the caesarean delivery rate is 25.7% worldwide and 3.6% is performed without a

medical indication. It has also been established that in the caesarean deliveries performed with or without medical indication, death and serious complications were much more common compared to spontaneous vaginal deliveries (Souza et al., 2010). WHO suggests that caesarean delivery rates should not exceed 10-15% (WHO, 1985). WHO, estimates that in the year 2008, 6.2 million caesarean deliveries were performed unnecessarily, and that this had brought an economic cost of 2.32 billion American dollars (\$) (Gibbons et al., 2010). In most European countries (except Italy – 37.8%, Greece -33.6-42.9%, and Portugal -33.1%) the caesarean rates are below 30% (EURO-PERISTAT, 2008; Sapountzi-Krepia et al., 2008; Tsetsila E et al, 2010). In Greece, women would prefer for their next delivery, the vast majority (81.5%) chose vaginal delivery and 15% stated that they would prefer a CS (Sapountzi-Krepia et al., 2010). Inpatient bed capacity and human resources are usually sufficient in developed countries, and this usually has an increasing effect upon caesarean delivery

rates, on the other hand, in situations where the financial expenses are covered by public funds, the caesarean rates are usually lower (Lauer et al., 2010). Pregnant who underwent a caesarean delivery before, can be delivered by normal vaginal delivery. Studies indicate that approximately 60-80% of the pregnant women with a previous caesarean delivery, who were found to be appropriate for vaginal delivery, could have a vaginal delivery (Dodd & Crowther, 2004). The aim of this study was to establish the delivery preferences among women giving birth in hospitals and the factors affecting this preference.

Methodology

This study was performed in Yozgat Bozok Obstetrics & Gynecology and Children Hospital, in which 82.4% of the deliveries in the province of Yozgat is performed, and in Yozgat Private Şifa Hospital responsible for 17.6% of the deliveries. The administrative permission was taken from Yozgat Governorship and ethical approval from Yozgat Government Hospital Ethical Committee. Before the application of the questionnaire, participants were informed about the purpose of the study, they were told that the participation was voluntary; they were assured that their anonymity would be retained and they were asked to give their verbal consent. Women who agreed to participate were asked to fill the questionnaire.

This study is a cross-sectional study. 822 women, who gave live birth and were resting and in condition to answer the questionnaire, were included into the study after verbal consent. Data were gathered by filling a questionnaire prepared by the investigator, with the help of interviewers. Interviewers were chosen from third and fourth grade nursing school students that were educated by the investigator. The questionnaire was piloted to 20 mothers following a briefing and some corrections. The statistical analysis of the data was done by independent samples test and binary logistic regression (Forward LR) analysis. Vaginal delivery=0, and caesarean section delivery=1, were included into logistic regression analysis as dependent variables. Mother's age (year), height (cm), delivery week (week), and newborn's weight (gr) were taken as scale independent variables, and the place of delivery, the educational and occupational status of the mother, the educational status of the father, mother's social security, family type, residence place, economical status, and the previous delivery mode

were taken as categorical variables. Economical status was established by scoring according to the number of people living in the family, characteristics of the house, being the owner of the house, owning a car, self-perception of economical status, and the self-stated income. Score range was between 6-20, and economical status was specified as low, medium and high by differences of 5 points.

Table 1. Mode of delivery according to different characteristics of the women.

Health institution	n	Mode of delivery %		
		Caesarean	Vaginal	Total
Total	822	67.3	32.7	100.0
State hospital	674	64.4	35.6	82.0
Private hospital	148	80.4	19.6	18.0
Age groups	822			
15-19	121	57.9	42.1	14.7
20-24	271	64.2	35.8	33.0
25-29	225	68.0	32.0	27.4
30-34	127	77.2	22.8	15.5
35 and over	78	74.4	25.6	9.5
Height (cm)	767			
150 cm and less	61	77.0	23.0	8.0
151 – 155 cm	119	71.4	28.6	15.5
156 – 165 cm	440	68.2	31.8	57.4
166 cm and over	147	57.8	42.2	19.2
Mode of previous pregnancy termination	822			
Primigravida	304	68.1	31.9	37.0
Miscarriage/curettage/still birth	92	69.6	30.4	11.2
Normal vaginal birth	281	48.8	51.2	34.2
Caesarean delivery^a	145	100.0	0.0	17.6
Social security coverage	820			
No	75	53.3	46.7	9.1
Yes	745	68.6	31.4	90.9

^a 12 women who have had a previous miscarriage were included into this group because their last deliveries were by caesarean section.

Factors found important in the Forward LR model were included into the table. Omnibus tests

($p < 0.05$) were used to establish the importance of the model, and Hosmer and Lemeshow tests ($p > 0.05$) for goodness of fit (Meyers, Gamst & Guarino, 2006).

Results

Thirty-three point one percent of the women who participated into the study were living in the province center, 35.4% in the county towns, and 31.5% in the villages, 53.8% were nuclear family, the average household number was 5.1 ± 2.2 , age average was 25.7 ± 5.8 ; youngest 15, and the eldest 47. 2.1% of the deliveries were twins, the average weight of the newborns was 3265.4 ± 544.8 gr, and the average pregnancy week at delivery was 38.8 ± 2.1 .

Table 2. The logistic regression analysis of the probable variables that might affect delivery by caesarean section

Variables ^a	β	Sig.	Exp (B)	95.0% C.I.for EXP(B)	
				Lower	Upper
Health institution (Ref. State hospital)	.801	.001	2.228	1.402	3.538
Mother's age (year)	.052	.000	1.053	1.023	1.084
Mother's height (cm)	-.034	.008	.966	.942	.991
Social security coverage (Ref. No)	.553	.035	1.739	1.039	2.910
Constant	4.276	.046	71.967		

^a Variables: Place of delivery, mother's age (year), height (cm), delivery week (week), and newborn's weight (gr), educational and occupational status of the mother, the educational status of the father, mother's social security, family type, residence place, economical status.

The delivery week average was similar in both normal vaginal deliveries (38.8 ± 2.3) and caesarean deliveries (38.7 ± 2.0) ($t = 0.8$ $p > 0.05$). All of the twin deliveries (17 women) were by caesarean section.

14.7% of the women had delivered before the accepted risky age of 20, and 9.5% at age 35 and above. 9.15% of the women who participated into the study did not have any kind of social security, and 91.9% did not work. In general, the social

security status of the women depended on their husbands (Table 1).

When the probable variables that could affect caesarean delivery were analyzed by logistic regression, it was found that; the possibility of delivering by caesarean section was 2.23 times higher in those that delivered in private hospitals compared to the state hospitals; 1.74 times higher in those with a health insurance; that the mother's age and short-height increased the risk of caesarean section, and that pregnancy week, birth weight, mother's educational and occupational status, father's educational status, family type, place of residence and economical status had no effect upon caesarean delivery (Table 2). When the previous mode of delivery was included into the regression model, besides the factors mentioned above, it was found that; caesarean rates were 3.86 times higher in primigravida women, compared to those who had a previous normal vaginal birth, 3.14 times higher in those with a previous miscarriage/curettage/still birth, and much more higher in those who had a previous caesarean section (Table 3).

Table 3. The logistic regression analysis of the probable variables that might affect delivery by caesarean section

Variables ^a	β	Sig.	Exp (B)	95.0% C.I.for EXP(B)	
				Lower	Upper
Health institution (Ref. State hospital)	.626	.014	1.871	1.135	3.082
Mother's age (year)	.094	.000	1.099	1.059	1.140
Mother's height (cm)	-.036	.011	.965	.938	.992
Social security coverage (Ref. No)	.613	.037	1.845	1.038	3.278
Mode of previous Pregnancy termination		.000			
Vaginal birth	Ref.		1		
Primigravida	1.351	.000	3.861	2.468	6.040
Miscarriage/ curettage/still birth	1.145	.000	3.141	1.776	5.557
Caesarean delivery	21.341	.995	1854884	.000	.
Constant	2.452	.303	11.609		

^a Variables: Place of delivery, mother's age (year), height (cm), delivery week (week), and newborn's weight (gr), educational and occupational status of the mother, the educational status of the father, mother's social security, family type, residence place, economical status, mode of previous pregnancy termination.

Due to the fact that all of the women (n=145) who had a previous caesarean delivery, delivered by caesarean section, a binary logistic regression analysis was performed excluding this group and the same variables found in table 2 and 3 were found to be significant.

13.2% of the women who underwent caesarean section delivery stated that they had caesarean deliveries without medical indication, only due to the doctor's advice or self/spouse's preference. The presence of a previous caesarean section is usually seen as an indication for the next delivery to be by caesarean section. It is seen that 91.3% of the caesarean deliveries are due to the doctors' advice or medical indication (Table 4).

Table 4. Reasons of delivering by caesarean section

	Number	%
Advised by the doctor	25	4.5
Previous caesarean delivery	145	26.3
Medical indication from the doctor	334	60.5
Spouse's preference	48	8.7
Total	552	100.0

Discussion

In this study, the delivery preference of women giving birth in the private and government hospitals in the province of Yozgat and the affecting factors were investigated.

It was found that two thirds of the women participating in the study had undergone caesarean section. This rate is much higher than the worldwide caesarean delivery rates (25.7%) (Souza et al., 2010), the rates suggested by WHO (10-15%) (WHO, 1985), the rates (3.6%) of Greece that is similar country (Sapountzi-Krepia et al., 2008), and the rates from developed countries (%23.8) (Bragg et al., 2010). On the other hand, the caesarean delivery rates differ greatly in Turkey, depending on the hospital. While in a university hospital (2007) this rate was found to be 51% (Yılmaz, İsaoglu & Kadanalı), in another university hospital (2005), this rate was 85.3% (Güney et al., 2006).

A woman can give birth naturally following a caesarean section. Studies have shown that, among the pregnant women found to be appropriate for Vaginal Birth After Caesarean

Section (VBAC), 60-80% can deliver normally (Dodd & Crowther, 2004). While in our study all of the women who had a previous caesarean delivery delivered by caesarean section, this rate varies between 45- 91% in European countries (EURO-PERISTAT, 2008). In a study performed in Turkey, it has been reported that among the women who had been found to be appropriate to undergo a normal delivery following a caesarean section, and who accepted to participate in the study, 84.2% delivered vaginally. This study shows us that 31.4% of the pregnant can deliver VBAC (Akçay et al., 2001).

Excluding the outcome of previous pregnancies, the analysis of the probable factors affecting caesarean rates by binary logistic regression shows that the probability of delivering by caesarean section increases; 2.23 times in those delivering in private hospitals compared to those in government hospitals, 1.74 times in those with a health insurance, in short women compared to tall, and in the elder pregnant. Factors such as pregnancy week at time of delivery, newborn's weight, mother's educational and occupational status, spouse's educational status, family type, place of residence and economical status were found to be insignificant (Table 2). The increase seen in caesarean delivery rates parallel to the increase in age can be explained by the general increase in caesarean delivery rates. On the other hand the higher rate seen in short women can be due to the increase in the caesarean delivery indication of cephalopelvic disproportion. When "the outcome of previous pregnancy" was included into the binary logistic analysis, together with the other factors, the probability of a caesarean delivery was found to be high again in those delivering in private hospitals, in those with a health security, in elder and shorter mothers, also, in primigravidas, in cases with previous pregnancies that had terminated with miscarriage-curettage-stillbirth, and those with previous caesarean delivery, compared to the cases who had a previous normal vaginal delivery (Table 3). In our study the majority (91.3%) of the cases stated that they had a caesarean delivery following the physician's advice or indication (Table 4), in another study from Turkey, this rate was reported as 72.4% (Ceylan et al., 2011). The fact that caesarean rates are high, and also physicians' medical indication rates are high, brings to mind that physicians do not give their indications according to objective medical criteria. The fact that 8.7% of the cases had undergone caesarean delivery by their own or their spouse's choice,

shows that most of the women do not actually prefer caesarean delivery. In a study, it was reported that 64.9% of the cases that had delivered by caesarean section were content with their mode of delivery, and the major contentment were that they did not suffer any labor pain (49.2%), and they had no additional problems (17.8%) (Ceylan et al., 2011).

In conclusion, 2/3 rds of the deliveries in our study were by caesarean section, all of the cases with a previous caesarean delivery, and again most of the first-time deliveries (60.5%) were by caesarean section due to doctors' indication. These results give us the impression that physicians prefer caesarean deliveries. In order to decrease the caesarean rates, training and guiding physicians regarding caesarean and normal vaginal delivery indications, and VBAC can be of help.

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