Caesarean Delivery and Breastfeeding Relationship: Evidence from 2013 Turkey Demographic and Health Survey

CURRENT STATUS: Accepted

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DOI: 10.21203/rs.2.16530/v1

SUBJECT AREAS
Maternal & Fetal Medicine

KEYWORDS
Caesarean Delivery; Breastfeeding; Cohort Study; Demographic Health Survey
Abstract
Background Mode of delivery is associated with the breastfeeding practices. High caesarean and low breastfeeding rates are an important public health problem for developing countries. This study aimed to measure the effect of caesarean delivery on early breastfeeding practices of primiparas.

Methods Data of primiparas with a singleton birth (n=777) of 2013 Turkey Demographic and Health Survey was used in this retrospective cohort study. Early initiation of breastfeeding within one hour of delivery and exclusive breastfeeding during the first three days after delivery were evaluated. Standardized incidence rate and standardized rate ratios of non-early initiation of breastfeeding and non-exclusive breastfeeding according to mode of delivery were calculated.

Results Late initiation of breastfeeding and non-exclusive breastfeeding incidence rates were 42.7% and 41.0% respectively. Standardized incidence rate of late initiation of breastfeeding in the vaginal deliveries was 35.34%, versus 50.49% in the caesareans. The standardized rate ratios for late initiation of breastfeeding and non-exclusive breastfeeding was 1.428 (95% Confidence Interval: 1.212, 1.683) and 1.468 (95% Confidence Interval: 1.236-1.762) respectively. Women who had caesarean delivery had higher risk of late initiation of breastfeeding and non-exclusive breastfeeding three days following delivery after controlling for socio-demographic and delivery related factors.

Conclusion This study provided evidence for strategies to prevent unnecessary caesarean deliveries, which negatively affects not only mothers’ health but also babies’ health as well. Promotion of mother friendly policies in health institutions and incorporating these policies with baby friendly strategies are essential.

Background
Breastfeeding is essential to the health of infants and young children. Colostrum is defined as the ‘perfect food’ for the newborn, and the World Health Organization (WHO) (1) recommends that breastfeeding should be initiated within one hour of delivery. In 2012, World Health Assembly (WHA) endorsed a plan to increase the rate of exclusive breastfeeding (EBF) during the six months after delivery to ≥ 50% by 2025 (2).

Demographic and Health Surveys (DHSs) are nationally representative surveys that provide
data on population, reproduction and child nutrition in a series of countries including Turkey. Trends for some indicators regarding breastfeeding in Turkey according to latest five TDHs are shown in the Figure 1. In 2013, 49.9% of newborns were put to the breast within one hour of delivery, 74.3% of newborns did not receive anything prior to breastfeeding, and exclusive breastfeeding rate during 4-5 month interval after delivery was only 9.5% (3).

Ministry of Health of Turkey (MoHT) initiated programs to improve maternal and child health. In Turkey, hospital deliveries have gradually increased from 91.3% in 2008 to 98.0% in 2013, along with the gradual increase in the number of Baby-Friendly Hospitals. Through the “Baby-Friendly Health Institutions Program” which have been implemented in Turkey since 1991, 53.2% of hospitals were certified as Baby-Friendly Hospital by 2008; percentage of certificated Baby-Friendly Hospitals reached to 72.2% in 2013 (4). The increase in hospital deliveries and implementation of policies that support breastfeeding in Turkey were expected to improve breastfeeding practices and breastfeeding-related indicators, but as seen in the Figure 1 breastfeeding indicators are inconsistent and far from the targets of 65th WHA on child nutrition (2). This situation indicates that multifactorial nature of breastfeeding behavior (5-6) should be focused in order to improve breastfeeding practices.

The mode of delivery is one of the many factors that influence breastfeeding. The studies reporting the negative consequences of caesarean delivery (CD) on the well-being and behavior of new mothers and the physiology of lactation in the early postpartum period continues to increase (7-11). CD is a major abdominal surgery and post operational procedures, which should be conducted for mothers, and routine procedures for newborns may delay the early initiation of breastfeeding (EIBF). After CD new mothers are expected to care for their newborns within a few hours of operation while simultaneously try to cope with the expected early signs of surgery such as post-op pain (12) which may affect the EIBF. The quality of support that a new mother receives following CD can help to facilitate breastfeeding to a degree, but the negative effects of surgery and the physiological effects of CD on lactation can persist.

The CD rate in Turkey was 48% according to TDHS data. (Figure 1) (3). In 2017, it has reached to 53.1%, and the percentage of primary CD rate was 25.79% (13). As CD rates remain high in many
countries, including Turkey, and lack of breastfeeding continues to be a major public health concern globally, the relationship between CD and breastfeeding requires further clarification.

**Methods**

The present study aimed to determine the attributable effect of CD on breastfeeding using data of the latest TDHS, while controlling for the effects of such other factors as socio-demographic and delivery-related characteristics.

This study was based on nationally representative data culled from the 2013 TDHS. TDHS data were analyzed by using a retrospective cohort design to identify relationships between mode of delivery and early breastfeeding practices. The data on delivery and breastfeeding practice of women covered the period between 2008 and 2013. In order to eliminate any possible effects of previous birth experiences, only data for women that gave birth to their first and only live child in the hospital within five years before the survey. The final subset of data was consisted of 777 women.

According to breastfeeding indicators developed by WHO (14) and used in the 2013 TDHS (3), early initiation of breastfeeding (EIBF; breastfeeding that begins within one hour of delivery) and exclusive breastfeeding (EBF; feeding only with breast milk) during the first three days post-delivery were used as the outcome variables. Accordingly, initiation of breastfeeding at one hour or later after delivery and no breastfeeding at all were classified as non-EIBF. Feeding newborns any other food in addition to breast milk for the first three days following birth was considered as non-EBF.

Independent variables were categorized as socio-demographic and delivery-related data. Socio-demographic data included maternal age, level of education, occupation, place of residence (rural or urban) and residential region (Northern, Southern, Eastern, and Western Anatolia), and socioeconomic status. Socioeconomic status was determined using a wealth index of household assets and was grouped into five ordinary categories. Delivery-related data included mode of delivery (vaginal delivery=VD; caesarean delivery=CD), place of delivery (public hospital or private hospital), and sex of newborn. The Chi-square test was used to evaluate relationships between independent and outcome variables. Binary logistic regression analysis was performed using data for the two main outcomes: non-EIBF and non-EBF. SPSS v.23.0 (SPSS, Inc. Chicago, IL) was used for analysis. The
focus of statistical analysis was to determine if mode of delivery had any effect on breastfeeding practices; therefore, the incidence of non-EIBF and non-EBF in the VD and CD groups were compared. Relative risks (RRs) were calculated as unadjusted measures of comparison, and then standardized incidence rates (SIRs) and standardized rate ratios (SRRs) were determined. Based on logistic regression analysis results, residential region and mothers’ level of education were used as control variables.

The direct standardization method was used for standardization. The non-EIBF and non-EBF incidence rates in the VD and CD groups were calculated for each combination of mothers’ level of education and residential region. The entire study group was used as the standard population. Maternal education level and region specific incidence rates were projected to the standard population, and SIRs in the CD and VD groups were calculated. Then, SRRs were calculated by dividing the SIRs in the CD group by the SIRs in the VD group. Statistical significance for all analysis was set at alpha < 0.05 and 95% Confidence Intervals (CI) were obtained using bivariate and multiple logistic regression.

Results
The mean age of the primiparas was 26.3 ± 5.3; 47.7% had education lower than secondary school and 17.4% of the women was in the poorest wealth group. Of the women, 77.9% was living in the urban areas, 26.4% was from the Eastern region, and 60.5% was working.

Among all the deliveries, 53.7% were via CD. The frequencies of non-EIBF and non-EBF were 42.7% and 41.0%, respectively (Table I).

The women with the lowest level of education were more likely to be non-EIBF than those the others (58.9%, versus 41.2% and 40.8%, respectively, P = 0.013). Conversely, the women who had the highest level of education were more likely to be non-EBF than the counterparts, although the relationship was not significant (45.3%, versus 38.0% and 36.1%, respectively, P = 0.096). The relationship between place of residence and non-EBF was significant and more of the non-EBF women had an urban residence (43.0%) (P = 0.033). There was no significant relationship between other socio-demographic variables and non-EIBF and non-EBF (P > 0.05) (Table II).
The women that had CD were more likely to be non-EIBF and non-EBF than those that had VD (48.4% vs. 36.1% [P < 0.001] and 48.4% vs. 32.3%; [P < 0.001]). There was no significant relationship between place of delivery, sex of newborn and non-EIBF and non-EBF practices of primiparas (Table III).

Logistic regression analysis results show that maternal level of education and residential region have relationship with non-EIBF. The women with the lowest level of education and those that lived in Eastern Anatolia had the highest risk of late initiation of breastfeeding (non-EIBF). Mode of delivery was the only variable that was significantly related to both non-EIBF and non-EBF. The risk of non-EIBF was 2.07-fold higher and the risk of non-EBF was 1.94-fold higher in the women that had CD (95% CI: 1.50, 2.87 [P < 0.001] and 95% CI: 1.40, 2.67 [P<0.001], respectively). None of the other study variables were significantly related to non-EBF (Table IV).

In order to determine the risk of non-EIBF and non-EBF associated with CD, the crude and adjusted incidences in the CD and VD groups were compared. The incidence of non-EIBF was higher in the CD group (48.4%) than in the VD group (36.1%) and CD significantly increased the risk of non-EIBF (RR: 1.341; 95% CI: 1.132, 1.589). On the other hand, the incidence of non-EBF was 48.4% in the CD group, versus 32.3% in the VD group (RR: 1.499; 95% CI: 1.253, 1.794). Based on direct standardization, the SRR for non-EIBF was 1.428 (95% CI: 1.212, 1.683), versus 1.468 for non-EBF (95% CI: 1.236, 1.762) (Table V).

Discussion
The present study’s findings show that women that had CD had a 1.428-fold higher risk of non-EIBF and a 1.468-fold higher risk of non-EBF, as compared to those that had VD while controlling for the effects of socio-demographic and delivery-related characteristics (Table V).

According to growing body of evidence, scientists stated “Never before in the history of science has so much been known about the complex importance of breastfeeding for both mothers and children” (15). Mode of delivery is one of the factors that play an important role in breastfeeding practices. CD can negatively affect the physiology of lactation, cause adverse events that hinder maternal contact with the neonate, result in intolerable post-surgical maternal pain, and increase the
level of need to intense care required by neonates, all of which can negatively affect breastfeeding (8,12,16-18). In this study, multivariate analysis showed that education, residential region, and mode of delivery were significantly related to non-EIBF and mode of delivery had significant relationship with non-EBF. In the literature, the education of the mother is evaluated in the most intimate level of determinants of breastfeeding behavior (19); however, findings related to the effect of maternal education on breastfeeding behavior are inconsistent. Findings from Iran (20) and Bahrain (21) show that as the maternal level of education increases the likelihood of breastfeeding decreases whereas in Argentina (22) and Italy (23) there was a positive association between the maternal level of education and the likelihood of breastfeeding. According to the present findings, we think that the benefits of colostrum were well known to the mothers with a high level of education due to their use of modern information resources (healthcare professionals, scientific books, and the Internet). Therefore, they highly cared to give the colostrum to their newborns and they cooperated well with health personnel when they were in-patient; however, their intention for exclusive breastfeeding in the following days might not continue. Results indicated that maternal level of education could be a potential confounder.

Bivariate analysis showed that there was a significant relationship between place of residence and non-EBF (43.0% with non-EBF lived in urban areas, versus 33.9% in rural areas [P = 0.033]) while there was no significant relationship between place of residence and non-EIBF (Table II). Adewuyi et al. (17) and Pandey et al. (24) reported that the non-EIBF rate was lower in rural settings based on DHSs. The significance of the relationship between place of residence and non-EBF in the present study disappeared in multivariate analysis. As such, we think that place of residence alone did not have a significant effect on breastfeeding practices of the women that delivered in hospitals. The non-EIBF rate (51.2%) was highest in those from Eastern Anatolia, which is the least developed region of Turkey, whereas the non-EIBF rate was highest (51.2%) in those from Western Anatolia (Table II). The difference in ORs between these two regions was significant based on regression analysis (Table IV), indicating that residential region could potentially be consider as another confounder.
In the present study the risk of non-EIBF and non-EBF was calculated, and was observed to be related to CD. The relative risk of non-EIBF was 1.341 (95% CI, 1.132-1.589); when the CD and VD groups were compared without adjustments. After controlling for maternal education and residential region, the SIR was 1.428 based on the adjusted incidence rates for non-EIBF. This meant that the risk of non-EIBF in the women that had CD was 1.428-fold higher (95% CI, 1.212-1.683) than in those that had VD. The risk of non-EBF in the women that had CD three days after delivery was 1.468-fold higher (95% CI, 1.233-1.748) after adjusting for maternal education and residential region.

According to secondary analysis of World Health Organization Global Survey (25) data from several countries, the adjusted odds ratio for EIBF was 0.28 (95% CI: 0.22-0.37; P < 0.0001) for CD, indicating an evidently high risk of non-EIBF risk in cases of CD. Prior et al. (7) also observed that the EIBF rate in cases of CD was low; their calculated pooled OR was 0.57 (95% CI: 0.50, 0.64; P < 0.00001). Regan et al. (26) reported that women that had successful VD were 1.42-fold more likely to EIBF than women that had a planned CD after a previous CD (95% CI: 1.30-1.56) and those that had CD after unsuccessful attempted VD were 1.15-fold more likely to EIBF than women that had a planned CD after a previous CD (95% CI: 1.01, 1.31).

It is possible that hospital policies that direct women to CD unnecessarily according to the interventionist approach to childbirth do not promote breastfeeding or the provision of sufficient breastfeeding counseling, and might even encourage mothers to feed their newborns nutritional sources other than breast milk. The present study was based solely on data obtained from the 2013 TDHS; therefore, factors associated with breastfeeding not included in the survey were not analyzed. As such, it is possible that mode of delivery and breastfeeding are correlated with the characteristics of hospitals (such as type, region, size etc.) in which the women had delivery; however, the TDHS data was not sufficient for evaluating this possibility. The data could not be used to determine if any of the women delivered babies in hospitals that were not baby-friendly. Moreover, the 2013 TDHS did not collect data about the women’s pre-delivery intentions to breastfeed. It is possible that some of the women intended not to breastfeed or not to use ideal breastfeeding practices before delivery; and TDHS data did not provide information on this issue. The number of deliveries that could be
considered unnecessary CD was not known and it could not be determined if any of the women had real barriers to breastfeeding. The survey also did not include any data concerning the number of women that had instrumental or anesthetic VD, which can cause a delay in mother-baby contact, the findings clearly showed that the dataset was sufficient for determining the effects of CD on the breastfeeding practices of women in Turkey.

Conclusions
The present study using a retrospective cohort design; and controlling for potential confounders of breastfeeding practices showed the relationship between the method of delivery (CD versus VD) and incidences of breastfeeding practices (EIBF and EBF). These findings indicate that children and women health-oriented programs should not be administered separately. The promotion of the policies centering women who experience pregnancy, childbirth and breastfeeding and the incorporation of mother-friendly policies in baby-friendly hospital strategies are essential.

Abbreviations
MoHT: Ministry of health of Turkey
TDHS: Turkey Demographic Health Survey
EIBF: Early initiation of breastfeeding
EBF: Exclusive breastfeeding
VD: Vaginal delivery
CD: Caesarean delivery
CI: Confidence Interval

Declarations

Ethics approval and consent to participate
The Ethics Commission of Senate of Hacettepe University approved the questionnaires and data collection procedures of the 2013 TDHS (No: 88600825/433-389). No new ethics approval was needed. This study was secondary analysis of TDHS dataset.

Consent for publication
Not applicable.

Availability of data and materials
The data was belonged to 2013 Turkey Demographic and Health Survey and can be accessed through formal application submitted to Hacettepe University Institute of Population Studies via their official website at http://www.hips.hacettepe.edu.tr/tnsa/download.php.

Competing interests
The authors declare that they have no competing interests, financial interest or benefit arising from this research.

Funding
The authors declared that they have no any financial support.

Authors’ contributions
NPE contributed to the hypothesis conception and conducted the literature review, manuscript drafting and write-up; TE contributed to the hypothesis conception conducted the analysis and contributed with critical revisions of the paper. All authors read and approved the final version of the manuscript submitted for publication.

Acknowledgement
This study was realized by the official permission of the Hacettepe University Institute of Population Studies to use the 2013 Turkey DHS Data.

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Tables
Table I. Delivery and breastfeeding features of primparas of the 2013 Turkey Demographic and Health Survey

| Delivery-related features          | N  |
|-----------------------------------|----|
| Place of delivery                 |    |
| Public hospital                   | 458|
| Private hospital                  | 319|
| Mode of delivery                  |    |
| VD                                | 360|
| CD                                | 417|
| Sex of newborn                    |    |
| Male                              | 438|
| Female                            | 339|
| Breastfeeding practices           |    |
| In one hour after delivery        |    |
| EIBF                              | 445|
| Non-EIBF\(^1\)                    | 332|
| In first three days after delivery (n = 776) |    |
| EBF                               | 458|
| Non-EBF\(^2\)                     | 318|

\(^1\) *Non-EIBF category includes those that initiated breastfeeding at one hour or later after delivery or never breastfed.*

\(^2\) *“Non-EBF category includes those that provided any food other than breast milk during the first three days after delivery or never breastfed.*

Table II. Bivariate analysis of sociodemographic and breastfeeding practices of primparas of the 2013 Turkey Demographic and Health Survey
| Sociodemographic features | Breastfeeding practices | Total | Non-EBF<sup>2</sup> |
|---------------------------|-------------------------|-------|---------------------|
|                           | Non-EIBF<sup>1</sup>    |       |                     |
|                           | (n=777)                 |       | (n=776)             |
| **Age groups (years)**    |                        |       |                     |
| 15-19                     | 43.4                    | 53    | 34.6                | 52 |
| 20-24                     | 43.7                    | 270   | 38.9                | 270 |
| 25-29                     | 40.4                    | 255   | 37.6                | 255 |
| 30-34                     | 46.7                    | 135   | 51.1                | 135 |
| 35-39                     | 45.1                    | 51    | 45.1                | 51 |
| 40-49                     | 15.4                    | 13    | 53.8                | 13 |
| **Education**             |                        |       |                     |
| No education and some     | 58.9                    | 73    | 36.1                | 72 |
| primary school            |                         |       |                     |
| Primary and some secondary school | 41.2          | 371   | 38.0                | 371 |
| Secondary and university  | 40.8                    | 333   | 45.3                | 333 |
| **Wealth index**          |                        |       |                     |
| Poorest                   | 48.9                    | 135   | 30.4                | 135 |
| Poorer                    | 46.5                    | 172   | 40.9                | 171 |
| Middle                    | 37.0                    | 165   | 42.4                | 165 |
| Richer                    | 40.0                    | 150   | 44.7                | 150 |
| Richest                   | 41.9                    | 155   | 45.2                | 155 |
| **Residence**             |                        |       |                     |
| Urban                     | 41.5                    | 605   | 43.0                | 605 |
| Rural                     | 47.1                    | 172   | 33.9                | 171 |
| **Region**                |                        |       |                     |
| West                      | 37.9                    | 190   | 42.6                | 190 |
| South                     | 38.4                    | 99    | 36.4                | 99 |
| Central                   | 40.0                    | 160   | 40.6                | 160 |
| North                     | 43.1                    | 123   | 46.3                | 123 |
| East                      | 51.2                    | 205   | 38.7                | 204 |
| **Occupation**            |                        |       |                     |
| Working                   | 41.9                    | 470   | 42.1                | 470 |
| Not working               | 44.0                    | 307   | 39.2                | 306 |

1 Non-EIBF category includes those that initiated breastfeeding at one hour or later after delivery or never breastfed.

2 Non-EBF category includes those that provided any food other than breast milk during the first three days after delivery or never breastfed.

3 P value for non-EIBF.

4 P value for non-EBF.

Table III. Breastfeeding practices of primiparas according to delivery related features of the 2013 Turkey Demographic and Health Survey
| Delivery related features                  | Breastfeeding practices |   |   |   |   |   |
|-------------------------------------------|-------------------------|---|--|--|--|--|
|                                           | Non-EIBF\(^1\)          | Total | Non-EBF\(^2\) | Total |   |   |
|                                           | (n=777)                 | (n=776) |               |        |   |   |
| Mode of delivery                          |                         |       |               |        |   |   |
| VD                                        |                         | 36.1  | 360           | 32.3   | 359 |   |
| CD                                        |                         | 48.4  | 417           | 48.4   | 417 |   |
| Place of delivery                         |                         |       |               |        |   |   |
| Public hospital                           |                         | 43.4  | 458           | 40.0   | 457 |   |
| Private hospital                          |                         | 41.7  | 319           | 42.3   | 319 |   |
| Sex of newborn                            |                         |       |               |        |   |   |
| Male                                      |                         | 43.6  | 438           | 42.1   | 437 |   |
| Female                                    |                         | 41.6  | 339           | 39.5   | 339 |   |

\(^1\) Non-EIBF category includes those that initiated breastfeeding at one hour or later after delivery or never breastfed.

\(^2\) “Non-EBF category includes those that provided any food other than breast milk during the first three days after delivery or never breastfed.

\(^3\) \(P\) value for non-EIBF.

\(^4\) \(P\) value for non-EBF.

Table IV. Logistic Regression Analysis of Breastfeeding, Sociodemographic and Delivery Features of the 2013 Turkey Demographic and Health Survey
| Sociodemographics                        | Non-EIBF | Non-EBF |
|------------------------------------------|----------|---------|
|                                          | OR       | 95% CI  | P      | OR       | 95% CI  |
| Age                                      | 0.96     | 0.74-1.44 | 0.548  | 1.08     | 0.93-1.25 |
| Level of education                       | OR       | 95% CI  | P      | OR       | 95% CI  |
| No education and some primary            | 1        | Reference | 1      | Reference |         |
| Primary school and some sec.             | 0.56     | 0.33-0.97 | 0.038  | 1.00     | 0.57-1.76 |
| Secondary school and university          | 0.53     | 0.29-0.99 | 0.047  | 1.08     | 0.57-2.03 |
| Wealth index                             | 0.636    |         |       |         |         |
| Poorest                                  | 1        | Reference | 1      | Reference |         |
| Poorer                                   | 1.05     | 0.63-1.75 | 0.848  | 1.40     | 0.82-2.38 |
| Middle                                   | 0.74     | 0.41-1.32 | 0.301  | 1.35     | 0.74-2.45 |
| Richer                                   | 0.93     | 0.49-1.77 | 0.835  | 1.46     | 0.76-2.80 |
| Richest                                  | 0.94     | 0.47-1.89 | 0.864  | 1.31     | 0.64-2.66 |
| Place of residence                       | OR       | 95% CI  | P      | OR       | 95% CI  |
| Rural                                    | 1        | Reference | 1      | Reference |         |
| Urban                                    | 0.91     | 0.60-1.40 | 0.670  | 1.20     | 0.78-1.85 |
| Residential region                       | 0.145    |         |       |         |         |
| West                                     | 1        | Reference | 1      | Reference |         |
| South                                    | 0.93     | 0.55-1.56 | 0.799  | 0.81     | 0.47-1.37 |
| Central                                  | 1.07     | 0.67-1.70 | 0.782  | 1.00     | 0.63-1.58 |
| North                                    | 1.24     | 0.77-2.01 | 0.379  | 1.19     | 0.74-1.92 |
| East                                     | 1.62     | 1.03-2.57 | 0.038  | 1.09     | 0.69-1.73 |
| Occupation                               | OR       | 95% CI  | P      | OR       | 95% CI  |
| Working                                  | 1        | Reference | 1      | Reference |         |
| Not working                              | 1.03     | 0.74-1.44 | 0.864  | 1.07     | 0.76-1.50 |
| Delivery-related features                 | OR       | 95% CI  | P      | OR       | 95% CI  |
| Place of delivery                        | 1        | Reference | 1      | Reference |         |
| Public hospital                          | 0.93     | 0.66-1.30 | 0.664  | 0.83     | 0.59-1.16 |
| Private hospital                         |         |         |       |         |         |
| Mode of delivery                         | OR       | 95% CI  | P      | OR       | 95% CI  |
| VD                                       | 1        | Reference | 1      | Reference |         |
| CD                                       | 2.07     | 1.50-2.87 | <0.001 | 1.94     | 1.40-2.67 |
| Sex of newborn                           | OR       | 95% CI  | P      | OR       | 95% CI  |
| Female                                   | 1        | Reference | 1      | Reference |         |
| Male                                     | 1.12     | 0.83-1.50 | 0.472  | 1.16     | 0.86-1.56 |

Table V. Unadjusted Relative Risk (RR), Standardized Incidence Rate (SIR) and Standardized Relative Ratio (SRR) for non-EIBF and non-EBF according to mode of delivery of the 2013 Turkey Demographic
| Breastfeeding practices | Unadjusted incidence rate (%) | Unadjusted RR for CDs | SIR\(^3\) (%) |
|--------------------------|-------------------------------|-----------------------|---------------|
|                          | VD   | CD   | VD   | CD   | VD   | CD   | 95% CI | VD   | CD   | 95% CI | VD   | CD   | 95% CI |
| Non-EIBF\(^2\)          | 36.111 | 48.441 | 1.341 | 35.343 | 50.485 | (1.132-1.589) | (30.307-0.379) | (45.659-5.310) |
| Non-EBF\(^3\)          | 32.312 | 48.441 | 1.499 | 33.405 | 49.044 | (1.253-1.794) | (28.332-8.478) | (44.082-54.007) |

1 Standardized rates and ratios were calculated by controlling for residential region and level of education. The entire sample (n = 777 for non-EIBF and n = 776 for non-EBF) was used as the reference population for standardization.

2 Non-EIBF refers to initiation of breastfeeding at one hour or later after delivery or never breastfeeding.

3 Non-EBF refers to providing any food other than breast milk during the first three days after delivery or never breastfeeding.
Breastfeeding trends and related indicators in Turkey, according to TDHSs. Note: TDHSs’ reports are available at http://www.hips.hacettepe.edu.tr/eng/publications.shtml. In English.