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Abstract

Background: The rise in caesarean deliveries constitutes a major public health concern in low- and middle-income countries (LMICs). Evidence on the influence of caesarean delivery on breastfeeding practices in LMICs is currently lacking.

Aims: To examine the association between mode of delivery and breastfeeding initiation and prelacteal feeding practices in a nationally representative sample of Egyptian women.

Methods: A cross-sectional study was carried out on 3773 women from the 2014 Egypt Demographic and Health Survey. The outcomes of interest were the timing of breastfeeding initiation and prelacteal feeding practices. Descriptive statistics and multivariable logistic regression models were performed.

Results: Overall, 25.1% of mothers initiated breastfeeding within 1 hour of birth and 63.5% practised prelacteal feeding within 3 days of birth. Mothers who had caesarean delivery had higher odds of delayed breastfeeding initiation [adjusted odds ratio (AOR) 2.25; 95% confidence interval (CI): 1.84–2.74] and were more likely to engage in prelacteal feeding (AOR: 1.44; 95% CI, 1.19–1.74). Moreover, the relationship between caesarean delivery and delayed breastfeeding initiation varied by parity with stronger association among multiparous (AOR: 2.57; 95% CI, 2.04–3.24) compared with primiparous mothers (AOR: 1.52; 95% CI, 1.03–2.25).

Conclusion: Caesarean delivery significantly increased the likelihood of delayed breastfeeding initiation and increased prelacteal feeding practices. Breastfeeding support and guidance should target women considering caesarean delivery.

Keywords: feeding practices, breastfeeding initiation, caesarean delivery, Egyptian women

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Introduction

During the early years of life nutrition is fundamental for child health and development (1). Scaling up breastfeeding to near universal level (90–95%) might prevent approximately 823 000 deaths in low and middle-income countries (LMICs) (2). Suboptimal breastfeeding substantially contributes to under-5 mortality due to neonatal infections (45%), diarrhoea (30%) or acute respiratory infections (30%) (3). Beyond survival, breastfeeding boosts brain development in children and protects against overweight and obesity. Mothers also reap significant health benefits from breastfeeding, including decreased risk of breast cancer, ovarian cancer and type 2 diabetes (4). Additionally, it aids in birth spacing (5). The World Health Organization (WHO) recommend breastfeeding initiation within an hour of birth, exclusive breastfeeding for the first 6 months of life and breastfeeding continuation thereafter (3).

It is recognized that LMICs are disproportionately affected by suboptimal breastfeeding practices (6): only 37% of infants aged

Timely breastfeeding initiation stimulates oxytocin production which enhances uterine

contractions and reduces post-partum haemorrhage. The release of colostrum, the first human milk, which contains nutritious and immunity factors, is facilitated by early breast suckling (8). Delayed breastfeeding initiation raises the possibility of neonatal mortality and is more likely related to provision of prelacteal feeds and the withholding of colostrum (9).

The provision of prelacteal feeds, a key contributor to suboptimal breastfeeding, is also prevalent in many LMICs (9). Practising prelacteal feeding implies that an infant is not exclusively breastfed. Prelacteal feeding affects stimulation of human milk production, infant's suckling, and maternal–infant bonding. It exposes the infant to the risk of infection, especially it is introduced before the infant has received colostrum (10).

Evidence has shown a variety of factors that influence breastfeeding practices in early infant life (11,12). Of particular concern is the possible influence of caesarean section on the initiation of breastfeeding and provision of prelacteal feeds (13,14). Further exploration of this complicated relationship is crucial due to the increasing prevalence of caesarean deliveries in LMICs, with a 6.7% increase from 1990 to 2014 (15). In Egypt, rates of caesarean delivery increased from 10.3% in 2000 to 27.6% in 2008 (7) and 51.8% in 2014 (16).

The influence of caesarean delivery on infant feeding practices has not been examined in Egypt. Improved understanding of such a relationship could help to develop interventions for promoting optimal breastfeeding. Therefore, the aim of the current study was to explore the relationship between mode of delivery and infant feeding indicators among nationally representative women of reproductive age in Egypt. We hypothesized that the mothers who had caesarean delivery would be more likely to delay breastfeeding initiation and would be more likely to practise prelacteal feeding.

Methods

Study design

The present study is based on a secondary analysis of data from the 2014 Egypt Demographic and Health Survey. A detailed description of the sampling techniques and other related methodology for the 2014 survey is available elsewhere (16).

In brief, the survey was designed to provide up-to-date demographic and health indicators with special emphasis on maternal and child health. A probability-based, stratified, multi-stage cluster sampling technique was used to select participants that were representative of the Egyptian population. Data were collected with approval from the Ministry of Health and

Population (MoHP) (16). Informed consent was obtained from all the respondents before their participation in the survey. Out of the 21 903 eligible women, 21 762 were successfully interviewed, representing a response rate of 99.4% (16).

Study population and sample size

The sampling frame for the current analysis was restricted to mothers with last-born, ever breastfed children born within 2 years preceding the 2014 Egypt Demographic and Health Survey (n = 6130). Mothers with missing data on mode of delivery or any of the other covariates determined in the current study were excluded (n = 2357), leaving a final sample of 3773 mothers.

Operational definitions and study variables
Outcome variables

The main outcomes were infant feeding indicators reflecting breastfeeding practices during early life, i.e. timing of breastfeeding initiation and introduction of prelacteal feeds. In the Egypt Demographic and Health Survey individual questionnaire, mothers were asked how long following delivery they initiated breastfeeding. Answers were recorded in hours and days (16). The timing of breastfeeding initiation was then classified as early initiation if breastfeeding was initiated within an hour of birth and delayed initiation if breastfeeding was initiated more than one hour following delivery. The Egypt Demographic and Health Survey defined the introduction of prelacteal feeds as giving anything other than human milk to an infant during the first 3 days after birth. (16). This was coded as 1 if mother provided prelacteal feeds, and 0 otherwise.

Exposure variable

Mode of delivery of the index child was the exposure of interest in the current study, whether delivery was caesarean section or vaginal.

Covariates

Several confounding variables were involved in the current analysis depending on prior studies (11,12) such as mother's age at time of birth, mother's education, mother's occupation (no, yes), residence, number of household members, wealth index and parity. Sex of the child, birth weight and birth status were also considered. Maternal health service-related factors were also included such as the number of antenatal care (ANC) visits, place of delivery and attendance of a skilled provider at delivery.

The mother's age at birth was obtained by subtracting date of birth of the child from the mother's

birth date. The wealth index was used to estimate the cumulative living standard of households. It was precalculated in the Egypt Demographic and Health Survey based on having of specific assets such as TVs and bicycles, construction materials, water sources, and sanitation. Each household was then classified into 1 of 5 groups; ranging from first quantile (poorest) to fifth quintile (richest) (16). In the current study, mothers were categorized as poor if they belonged to the first or second quintile, middle if they belonged to the third quantile, and rich if they belonged to the fourth and fifth quintiles.

Children weighing 4200 g were categorized as macrosomia, otherwise they were considered normal birth weight. A mother was considered to have had regular ANC visits if she attended at least 4 visits throughout pregnancy (17). A skilled provider at delivery was determined when the delivery was facilitated by a doctor or trained nurse/midwife (16).

Statistical analysis

Frequencies and proportions were used to describe the characteristics of the study participants. The Rao-Scott chi-square test was performed to analyse the study participants according to their breastfeeding practices. Two fully adjusted logistic regression models were created to assess the association between mode of delivery and infant feeding indicators. Pairwise interactions between mode of delivery and each covariate were performed to explore if a third variable influenced the association between mode of delivery and infant feeding indicators. A multivariable adjusted logistic regression model was then created to examine the association between mode of delivery and timing of breastfeeding initiation. All the confounding variables were entered simultaneously into all regression models.

A complex sample design analysis that took into consideration the cluster sampling design, sample weight and strata was performed to provide generalizable and accurate estimates for the population parameters. Thus, weighted percentages were presented. The potential presence of multicollinearity was examined and ruled out using a variance inflation factor. Statistical tests were performed using SAS, University Edition. Two-tailed P-value