Factors associated with breastfeeding duration among women in Sarajevo Canton, Bosnia and Herzegovina

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Abstract
Breastfeeding is the optimal method of infant feeding bringing short-and long-term benefits for infants, mothers, environment, economy and the entire society. A variety of factors influence and determine breastfeeding duration, including characteristics of the mother, the child and the family, aspects of the health care system, public health and social policies, advertising and promotion of alternative feeding methods. This study aimed to investigate the factors which are associated with breastfeeding duration in a sample of mothers living in Sarajevo Canton, Bosnia and Herzegovina. This cross-sectional study was carried out at the Pediatric Outpatient Department of the Public Institution Primary Health Care Centre of Canton Sarajevo. The study evaluated 150 mothers in three groups according to breastfeeding duration of 50 each (i.e. less than 3 months, 3–5 months and 6 months and more). As an instrument for data collection a questionnaire was used to provide sociodemographic data, information about mother's health during pregnancy, delivery in baby-friendly hospital and breastfeeding duration. The results of logistic regression analysis showed that delivery in baby-friendly hospital had a significant association with breastfeeding duration of 6 months and more (p=0.023). Maternal age (p=0.873), marital status (p=0.628), maternal education level (p=0.228), maternal employment (p=0.949), self-perceived financial status (p=0.189), maternal health during pregnancy (p=0.874) were not significantly associated with breastfeeding duration of 6 months and more. These results support the importance of the hospital environment and health provider practices in breastfeeding promotion.

Keywords: Breastfeeding; Hospital; Mother; Social Class

1. Introduction
Breastfeeding is a gold standard for infants’ nutrition worldwide. The World Health Organization (WHO) recommend exclusive breastfeeding until infants reach 6 months of age, and continued breastfeeding along with supplemental feeding until at least 12 months [1].

It is indicated that once the decision to breastfeed is made, the physical and psychological health of the mother influence the duration of breastfeeding [2]. During pregnancy and the first weeks of postpartum, the physical and psychological health of the mother goes through considerable changes. Most mothers experience symptoms, which may influence mother’s quality of life (QOL) [3]. Chen et al. reported a significant difference in mother’s quality of life among the mothers who were breastfeeding for less than 1 month and those breastfeeding for equal to or more than 6 months. Compared to the other mothers, mothers who have breastfed for six months or longer had better quality of life [2].
Previous studies on breastfeeding in developed countries have shown that different demographic and social factors influence duration of breastfeeding. Mothers’ age and education level, family type and family income, and working status of the parents are among the main factors of influence [4-6].

The benefits of breastfeeding for mother and her infant are well-documented, however, these effects depend on its duration [7]. Some advantages of longer breast-feeding duration for mothers are improved bone strength and lower risk of breast cancer while better academic achievement and lower risk of obesity are some reported advantages for children who are breastfed [8-11].

Mothers and families need to be supported for their children to be optimally breastfed. Actions that help protect, promote, and support breastfeeding include implementation of the "Ten steps to successful breastfeeding" specified in the Baby-friendly hospital initiative.

The Baby-friendly hospital initiative launched in 1991 is a key component of the WHO/UNICEF Global strategy for infant and young child feeding [12].

As breastfeeding promotion still remains a priority, it is important to focus on factors associated with breastfeeding duration. Therefore, this study aimed to investigate the factors which are associated with breastfeeding duration in a sample of mothers living in Sarajevo Canton, Bosnia and Herzegovina.

2. Material and methods

2.1. Design and Sample

This cross-sectional study was carried out at the Pediatric Outpatient Department of the Public Institution Primary Health Care Centre of Canton Sarajevo, Bosnia and Herzegovina (B&H) in the period March – July 2018.

This study included 150 mothers. Mothers were recruited for this study when children were brought in for their health checkups in Health Care Centre. The inclusion criteria of the study were being a breastfeeding woman (adult) and being a mother of an infant or toddler aged 6–18 months. The exclusion criteria of the study were being pregnant, being a woman who has never breastfed, being the mother of infants aged <6 months or toddlers aged over 18 months.

The study was conducted according to the research ethics guidelines laid down in the Declaration of Helsinki [13]. A verbal informed consent for participation in the study was taken from all mothers before completing the self-administered questionnaire.

2.2. Data Collection

The questionnaires were given to mothers while they were waiting for the appointment. The questionnaire included the sociodemographic data, information about mother’s health during pregnancy, delivery in baby-friendly hospital and breastfeeding duration.

In order to determine the association between maternal sociodemographic factors and breastfeeding duration, the respondents were divided into 2 groups according to age (20–30 years and 31–40 years old), into 3 groups according to the level of education (incomplete/completed elementary school, completed secondary school and completed university), into 3 groups according to the marital status (married, single and divorced), into 3 groups according to the self-perceived financial status (worse than average, average and better than average), into 2 groups according to maternal employment (employed, unemployed).

The mother’s self-reported general health during pregnancy was reported using a 5-point Likert scale. The score was recoded into dichotomous groups: good health and poor health, following previous literature [14,15].

The respondents were divided into 2 groups according to delivery in baby-friendly hospital: mothers who birthed in baby-friendly hospital and mothers who birthed in other hospitals.

The WHO has defined 3 types of breastfeeding: exclusive breastfeeding, breastfeeding, and predominant breastfeeding [16]. The main outcome measure of this study was the duration of any breastfeeding during the first 18 months of life. The duration of breastfeeding in months was calculated from the dates of babies’ birth and the dates of breastfeeding.
cessation as stated by the mothers. The respondents were divided into 3 groups according to breastfeeding duration: less than 3 months, from 3 to 5 months, and 6 months and longer.

2.3. Statistical analysis

Statistical analyses were performed using the Statistical Package for Social Sciences software (IBM, version 23.0). In the descriptive characteristic of categorical variables, the number of observations and the percentage of occurrences were considered. The differences in variables between groups were evaluated using a Chi-squared test. Using logistic regression models, we assessed the relationship between socio-demographic characteristics of mothers, maternal health during pregnancy, delivery in baby-friendly hospital and breastfeeding duration of 6 months and more. The level of significance was set at p<0.05.

3. Results

The study evaluated 150 mothers in three groups according to breastfeeding duration of 50 each (i.e. less than 3 months, 3–5 months and 6 months and more).

Table 1 The distribution of breastfeeding duration depending on the socio-demographic characteristics of mothers, maternal health status and delivery in baby-friendly hospital

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Breastfeeding duration</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than 3 months</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Maternal age, years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-30</td>
<td></td>
<td>6</td>
<td>11.1</td>
<td>9</td>
<td>19.6</td>
<td>7</td>
</tr>
<tr>
<td>31-40</td>
<td></td>
<td>48</td>
<td>88.9</td>
<td>37</td>
<td>80.4</td>
<td>43</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td></td>
<td>52</td>
<td>96.3</td>
<td>44</td>
<td>95.7</td>
<td>46</td>
</tr>
<tr>
<td>Single</td>
<td></td>
<td>1</td>
<td>1.9</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>Divorced</td>
<td></td>
<td>1</td>
<td>1.9</td>
<td>2</td>
<td>4.3</td>
<td>4</td>
</tr>
<tr>
<td>Maternal education level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incomplete/completed elementary school</td>
<td></td>
<td>2</td>
<td>3.7</td>
<td>1</td>
<td>2.2</td>
<td>4</td>
</tr>
<tr>
<td>Completed secondary school</td>
<td></td>
<td>32</td>
<td>59.3</td>
<td>20</td>
<td>43.5</td>
<td>12</td>
</tr>
<tr>
<td>Completed high school/university</td>
<td></td>
<td>20</td>
<td>37.0</td>
<td>25</td>
<td>54.3</td>
<td>34</td>
</tr>
<tr>
<td>Maternal employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>28</td>
<td>51.9</td>
<td>23</td>
<td>50.0</td>
<td>31</td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>26</td>
<td>48.1</td>
<td>23</td>
<td>50.0</td>
<td>19</td>
</tr>
<tr>
<td>Self-perceived financial status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worse than average</td>
<td></td>
<td>7</td>
<td>13.0</td>
<td>2</td>
<td>4.3</td>
<td>1</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>35</td>
<td>64.8</td>
<td>24</td>
<td>52.2</td>
<td>24</td>
</tr>
<tr>
<td>Better than average</td>
<td></td>
<td>12</td>
<td>22.2</td>
<td>20</td>
<td>43.5</td>
<td>25</td>
</tr>
<tr>
<td>Maternal health during pregnancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good health</td>
<td></td>
<td>46</td>
<td>85.2</td>
<td>45</td>
<td>97.8</td>
<td>49</td>
</tr>
<tr>
<td>Poor health</td>
<td></td>
<td>8</td>
<td>14.8</td>
<td>1</td>
<td>2.2</td>
<td>1</td>
</tr>
<tr>
<td>Delivery in baby-friendly hospital</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>10</td>
<td>18.5</td>
<td>12</td>
<td>26.1</td>
<td>23</td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>44</td>
<td>81.5</td>
<td>34</td>
<td>73.9</td>
<td>27</td>
</tr>
</tbody>
</table>
Table 1 shows the characteristics of the study groups according to the breastfeeding duration.

There were 68% of the mothers with a university education among those who breastfed longer than 6 months and only 37% among the mothers who breastfed for less than 3 months.

Twice as many mothers with the financial status which was better than average were among those who breastfed longer than 6 months, 25 (50%), than among the mothers who breastfed for less than 3 months, 12 (22.2%).

There were significantly more mothers who reported poor health status during pregnancy in the group of the shortest breastfeeding duration (14.8%) in comparison with the group of the longest breastfeeding duration (2%).

More mothers who birthed in baby-friendly hospital were among those who breastfed longer than 6 months than among the mothers who breastfed for less than 3 months (46.0% and 18.5%, respectively).

There was no statistically significant difference between the 3 study groups in terms of mother's age, marital status and maternal employment.

Table 2 shows association between socio-demographic characteristics of mothers, maternal health during pregnancy, delivery in baby-friendly hospital and breastfeeding duration of 6 months and more.

The results of logistic regression analysis showed that delivery in baby-friendly hospital had a significant association with breastfeeding duration of 6 months and more.

Maternal age, marital status, maternal education level, maternal employment, self-perceived financial status, maternal health during pregnancy were not significantly associated with breastfeeding duration of 6 months and more.

Table 2 Factors associated with breastfeeding duration of 6 months and more

<table>
<thead>
<tr>
<th>Variables</th>
<th>β</th>
<th>SE</th>
<th>Wald</th>
<th>df</th>
<th>p</th>
<th>Exp(β)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child born in baby-friendly hospital</td>
<td>-1.074</td>
<td>0.474</td>
<td>5.138</td>
<td>1</td>
<td>0.023</td>
<td>0.342</td>
</tr>
<tr>
<td>Self-perceived financial status</td>
<td>0.542</td>
<td>0.412</td>
<td>1.726</td>
<td>1</td>
<td>0.189</td>
<td>1.719</td>
</tr>
<tr>
<td>Maternal education level</td>
<td>0.530</td>
<td>0.439</td>
<td>1.455</td>
<td>1</td>
<td>0.228</td>
<td>1.698</td>
</tr>
<tr>
<td>Lives alone</td>
<td>-0.811</td>
<td>1.158</td>
<td>0.491</td>
<td>1</td>
<td>0.484</td>
<td>0.444</td>
</tr>
<tr>
<td>Marital status</td>
<td>0.318</td>
<td>0.657</td>
<td>0.235</td>
<td>1</td>
<td>0.628</td>
<td>1.375</td>
</tr>
<tr>
<td>Maternal age</td>
<td>-0.107</td>
<td>0.665</td>
<td>0.026</td>
<td>1</td>
<td>0.873</td>
<td>0.899</td>
</tr>
<tr>
<td>Maternal health status during pregnancy</td>
<td>0.055</td>
<td>0.344</td>
<td>0.025</td>
<td>1</td>
<td>0.874</td>
<td>1.056</td>
</tr>
<tr>
<td>Maternal employment</td>
<td>-0.030</td>
<td>0.466</td>
<td>0.004</td>
<td>1</td>
<td>0.949</td>
<td>0.971</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.409</td>
<td>4.452</td>
<td>0.008</td>
<td>1</td>
<td>0.927</td>
<td>0.664</td>
</tr>
</tbody>
</table>

4. Discussion

This study investigated the factors associated with breastfeeding duration among women in Sarajevo Canton, Bosnia and Herzegovina.

The results of this study showed that delivery in baby-friendly hospital had a significant association with breastfeeding duration of 6 months and more. Similar to our finding, Merten et al. found that children born in a baby-friendly health facility are more likely to be breastfed for a longer time [17]. The exact mechanisms by which baby-friendly practices extend the breastfeeding duration, however, are still unclear. Zhang et al suggest that higher compliance with baby-friendly practices may have a positive impact on breastfeeding duration and, in particular, promote the implementation of breastfeeding on demand and breastfeeding during hospitalization [18].

Demographic variables that may influence breastfeeding duration are well established and include maternal education, mothers’ financial status, marital status and maternal age.
Most of the previous literature reported a positive association between maternal education and breastfeeding duration. Studies conducted in Nepal, the United States and Italy showed that higher maternal education level was related to better breastfeeding practices [19-21]. An increase in educational attainment may increase maternal knowledge on the infant health benefits of breastfeeding, which influences their intention to continue breastfeeding [22]. However, studies in Ethiopia and Bangladesh observed a negative association between breastfeeding duration and maternal education [23,24]. The results of this study showed that maternal education level had not a significant association with breastfeeding duration of 6 months and more. This is in accordance with the study conducted by Nayeri et al. among Iranian infants [25].

Research data have shown that low-income women have decreased duration of breastfeeding [26,27]. As a result, infants from lower-income families are more likely to fall ill and be hospitalized, and thus further increasing the health inequalities [28,29]. The results of this study showed that mothers’ self-perceived financial status had not a significant association with breastfeeding duration of 6 months and more. This finding is consistent with the results of study conducted by Riva et al. among Italian infants [30].

Data from research studies have shown that married women breastfeed longer than single or living with a partner [31]. Callen and Pinelli compared the differences in duration of breastfeeding across Canada, the United States, Europe, and Australia. They found that married women had a higher duration of breastfeeding [32]. In this study marital status was not significantly associated with breastfeeding duration of 6 months and more. This is in accordance with the study conducted by Agboado et al. in Eastern Lancashire [33].

Information from a comprehensive literature review that included multivariate analysis of data on breastfeeding duration demonstrated a strong and consistent association between duration of breastfeeding and maternal age [34]. However, the results of the studies have been contradictor. Colombo et al. reported increasing of maternal age is a risk factor for the cessation of breastfeeding in Italy [35], but in Leventakou’s et al. study, mothers were more likely to breastfeed their child longer if they were older [36]. Previous studies suggest that older women may be in better circumstances, have higher education, be more financially secure, and may have prior breastfeeding experience, while younger mothers may be less knowledgeable about breastfeeding [37,38]. In this study maternal age was not significantly associated with breastfeeding duration of 6 months and more.

Maternal work outside the home is a social variable with a potentially strong influence on breastfeeding duration. In some studies, the mother’s job was one of the main factors affecting breastfeeding duration and employment of mothers outside the home, especially full-time employment, had a negative influence on the duration of breastfeeding [39,40]. Kimbro found that working in an administrative or manual job was associated with one-third higher odds of quitting breastfeeding than not working, while he found no significant differences between not working and the other occupations [41]. In this study maternal employment was not significantly associated with breastfeeding duration of 6 months and more.

5. Conclusion

This study has some limitations. Factors related to the long-term health status of the mother, such as nutritional intake and acute or chronic infections during the breastfeeding period, were not measured; thus, these factors may affect the study findings.

This study provides valuable insight into the determinants of breastfeeding duration for up to 6 months among mothers in Sarajevo Canton, Bosnia and Herzegovina. The key predictors of breastfeeding duration was delivery in baby-friendly hospital. Children born in a baby-friendly health facility are more likely to be breastfed for a longer time. These results further support the importance of the hospital environment and health provider practices in breastfeeding promotion. Reinforcing the accreditation of hospitals as baby-friendly and investing in compliance are the best ways to reach and maintain long duration of breastfeeding.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest
The authors declare that they have no competing interests.

Statement of informed consent
Informed consent was obtained from all individual participants included in this study.

References


