

ORIGINAL PAPER

ANALYSIS OF SELECTED DETERMINANTS OF INTENTION TO BREASTFEED

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Abstract

Aim: Breastfeeding and consumption of breast milk positively affect the health of children and mothers. The goal of this research was an analysis of intention to breastfeed in pregnant women and the impact of selected factors on intention to breastfeed. **Design:** Cross – sectional study. **Methods:** Research was conducted involving 176 women in the 5th– 9th month of pregnancy. We analyzed their intention to breastfeed using the Infant Feeding Intentions Scale (IFI). Among the analyzed factors we included: socio-demographic variables, smoking during pregnancy, women's attitudes to breastfeeding, and the body image of pregnant women (the Body Image States Scale – BISS). **Results:** The intention to breastfeed in pregnant women was very high ($M = 13.15$; $SD = 2.6$). In the 1st month after birth, 85.2% of women plan to breastfeed to the fullest extent, falling to 77.2% in the 3rd month, and 62.5% in the 6th month. Variables included in linear regression explain 30% of the variation in intention to breastfeed. By hierarchic linear regression, we identified the attitude of husband/partner towards breastfeeding ($\beta = 1.236$; $p = 0.001$), and impact of breastfeeding on women's health ($\beta = 0.354$; $p = 0.035$) and body image ($\beta = 0.497$; $p = 0.000$) as significant independent variables determining the intention to breastfeed. Women's satisfaction with their pregnant body explains 11% of the variation in all analyzed variables. **Conclusion:** Promoting the health of mothers and their children requires midwives and nurses to perform a range of activities that will engage the husbands/partners of the women, and which will also take account of the body perceptions of pregnant women.

Keywords: attitude of husband/partner towards breastfeeding, intention to breastfeed, pregnant woman.

Introduction

Breast milk is the preferred nutrition for newborns. The advantages of its consumption are diverse: nutritious, psychological, economic, ecological, and those connected to the convenience of mothers (Erick, 2018). Breastfeeding is associated with many benefits for children (for example, reduction of risk of infectious diarrhea and acute otitis media (ESPGHAN Committee et al., 2009), as well as for breastfeeding women (for example, protection against breast cancer, diabetes mellitus, hyperlipidaemia, and hypertension (Schwarz, Nothnagle, 2015). ESPGHAN recommends that babies should be breastfed exclusively for about six months (ESPGHAN Committee et al., 2009), or at least for the period of the first four months (Fewtrell et al., 2017).

Attitudes to breastfeeding in Slovak women are quite positive. In 2016, there were 78.6–86.3% breastfed

children at the end of their 1st month (according to region), and at the end of the 6th month it was 52.4%. Over the last few years, there has been an increase in fully breastfed children at the end of their 6th month – in 2009, there were 45.4% fully breastfed children (Národné centrum zdravotníckych informácií, 2017).

Review studies (Meedya, Fahy, Kable, 2010; de Jager et al., 2013) analyzing factors that influence breastfeeding, or full breastfeeding, have found that intention to breastfeed is a significant modifiable factor. In professional literature, studies in which intention to breastfeed is assessed postnatally largely dominate. To a lesser extent, this variable is analyzed in pregnant women. According to Vieira et al. (2016) (a systematic review integrating nine studies published in the period 1997–2011), significant factors determining the intention to breastfeed in pregnant women include: primiparity, higher level of education, higher age of mother, previous experience of breastfeeding, non – smoking, and living with a partner. Another commonly analyzed

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factor of intention to breastfeed is pregnant women's body image (Brown, Rance, Warren, 2015). In spite of the inconsistency of results of studies analyzing body image in pregnant women (Hodgkinson, Smith, Wittkowski, 2014; Meireles et al., 2015; Zaltzman, Falcon, Harrison, 2015), dissatisfaction with one's own body is a potential problem leading to inappropriate behavior in pregnant women, which subsequently affects both their own health and that of their babies.

Since intention to breastfeed, which is analyzed prenatally, positively impacts breastfeeding at the age of six months (Nommsen-Rivers, Dewey, 2009; Waits, Guo, Chien, 2018), it is appropriate to study the intention to breastfeed and its determinants during pregnancy.

Aim

The main goal of the research was an analysis of the intention to breastfeed in pregnant women in the last months of pregnancy, and the impact of selected factors (socio-demographic, psycho-social) on intention to breastfeed.

Methods

Design

Cross-sectional study.

Sample

The inclusion criteria for respondents in the survey were: 2nd–3rd trimester of pregnancy, age ≥ 19 years old, not of Roma ethnicity, and living in Prešov and its surroundings. The research sample comprised 176 respondents in the 5th to 9th month of pregnancy, living mainly in the city (60.2%). Respondents were aged 19 to 40 years old. Their mean age was 28 years old ($M = 28.26$; $SD = 4.72$). The majority of respondents had either successfully completed secondary education (40.9%), or university education (47.7%). 73.9% of pregnant women were married. Primiparas were 50.0% ($n = 88$) (Table 1).

Data collection

Data collection was conducted between March 2017 and November 2017, with the approval of the Ethics committee of the hospital. Questionnaires were distributed to pregnant women in prenatal care in a hospital facility. Return of questionnaires was 78.8%.

In the questionnaire we analyzed the intention to breastfeed, the body-image of pregnant women, the attitude of pregnant woman to breastfeeding, socio-demographic variables, and factors related to pregnancy.

Infant Feeding Intentions (IFI) scale (Nommsen-Rivers, Dewey, 2009). The IFI is a simple tool for assessing the strength of the intention to start breastfeeding and to continue breastfeeding in the 1st, 3rd and 6th month after birth. It integrates five items (5-level Likert scale). The total score ranges from 0 (very strong intention not to breastfeed your baby at all) to 16 (very strong intention to fully breastfeed your baby during the first six months). Cronbach alpha in this study was 0.783.

Table 1 Socio-demographic and clinical characteristic of respondents

Parameter	n (%)
Age	
M (SD)	28.26 (4.72)
minimum and maximum range	19–40
Residence	
village	70 (39.8)
city	106 (60.2)
Education of pregnant women	
primary education	10 (5.7)
apprenticeship education	8 (4.5)
secondary education	2 (1.1)
secondary education completed	72 (40.9)
university	84 (47.7)
Education of children's fathers	
primary education	10 (5.7)
apprenticeship education	6 (3.4)
secondary education	12 (6.8)
secondary education completed	72 (40.9)
university	76 (43.2)
Status	
cohabiting with partner	24 (13.6)
divorced	2 (1.1)
single	20 (11.4)
married	130 (73.9)
Number of children	
without children	88 (50.0)
1 child	56 (31.8)
2 children	22 (12.5)
3 children	8 (4.5)
4 children	2 (1.1)
Month of pregnancy	
5 th	44 (25.0)
6 th	52 (29.5)
7 th	18 (10.2)
8 th	34 (19.3)
9 th	28 (15.9)
Smoking during pregnancy	
yes	10 (5.7)
no	166 (94.3)

The Body Image State Scale (BISS) (Cash et al., 2002). This six-item tool allows analysis of an individual's view of his/her physical appearance at a particular moment. Possible average score is from 1 to 9, with the higher score reflecting a more positive

attitude towards one's body. Cronbach alpha in this study was 0.895.

The IFI and BISS were used with the consent of the authors, and a translation was carried out by two independent translators.

Attitude of pregnant woman to selected aspects of breastfeeding

We formulated seven items (5-level Likert scale), based on certain sections of the Iowa Infant Feeding Attitude Scale by Mora et al. (1999). These questions assessed the extent to which pregnant women's attitudes towards breastfeeding are determined by the following phenomena:

- attitudes of husbands/partners towards breastfeeding (husbands' attitudes)
- the impact of breast milk on babies' health (breastfeeding and babies' health)
- the impact of breastfeeding on the health of breastfeeding women (breastfeeding and women's health)
- the physical burden on breastfeeding women in comparison with preparation and feeding with milk formula (breastfeeding and physical burden on women)
- the price advantage of breast milk compared with milk formula (breastfeeding and cost)
- convenience of breastfeeding in comparison with milk formula (breastfeeding and convenience for woman)
- time benefit of breastfeeding compared to feeding with milk formula (breastfeeding and time benefit).

Cronbach alpha in these items was 0.687. In socio-demographic variables and variables related to pregnancy we included: age, residence (0 = village; 1 = city), status, number of children, education of women, education of husbands/partners, month of pregnancy, smoking during pregnancy (0 = no; 1 = yes).

Data analysis

The software SPSS 19.0 was used for research data analysis. For descriptive statistics, we used the mean (M), standard deviation (SD), sum total (n), and percentage (%). We analyzed the normality of the data distribution (Skewness test), and then used parametric methods. When evaluating differences in mean values, we used an independent t-test or ANOVA test. We used multiregression linear regression in testing the influence of selected independent variables of intention to breastfeed (dependent variable). First, we analyzed the relationships between the various areas of women's attitudes towards breastfeeding and intention to

breastfeed by Pearson's correlation. Since most of the variables in the "attitude towards breastfeeding" domain were significant, we performed a preliminary multiregression analysis in the next step, in which the individual areas of attitude to breastfeeding were independent variables and intention to breastfeed a dependent variable. In the subsequent hierarchical multiregression analysis we included only significant variables in the "attitude to breastfeeding" domain. In the hierarchical regression we proceeded as follows: in the first step we included socio-demographic variables, in the second step we included pregnancy-related factors, in the third step we included the significant variables in the "attitude to breastfeeding" domain, and in the fourth step body image was recorded. When evaluating multicollinearity, we used the VIF parameter (1.025–1.232) and the tolerance parameter (0.812–0.975). To evaluate statistical significance, a significance level of $p < 0.05$ was applied.

Results

Intention to breastfeed, socio-demographic factors and pregnancy factors

Intention to breastfeed in pregnant women was very high ($M = 13.15$; $SD = 2.66$; median = 14; range 7–16). In the 1st month of the child's age 85.2% of the women planned to fully breastfeed, 77.2% in the 3rd month and 62.5% in the 6th month. Intention to breastfeed was not statistically different with regard to the month of pregnancy [$F(4.171) = 1.284$; $p = 0.278$]. Lowest intention to breastfeed was found in women in the 8th month ($M = 12.29$), and the highest in the 7th month ($M = 13.67$).

We found no significant differences in intention to breastfeed in women with regard to their age [$F(2.173) = 0.009$; $p = 0.991$], and their status [$t(174) = 1.658$; $p = 0.099$].

For respondents with one child, we found significantly higher intention to breastfeed ($M = 13.61$) in comparison with respondents with more children ($M = 12.19$) [$t(86) = 2.337$; $p = 0.022$].

For women living in the city ($M = 13.70$), we identified higher levels of intention to breastfeed compared to women living outside the city ($M = 12.31$) [$t(174) = -3.484$; $p = 0.001$].

The education of pregnant women ($p = 0.022$), as well as their husband's/partner's education ($p = 0.001$), appear to be important determinants of intention to breastfeed. Highest intention to breastfeed was identified in university educated. Subsequent post-hoc analysis (Bonferroni) showed that significant differences in intention to breastfeed

exist between mothers with medium (mean difference: -1.012) and higher levels of education ($p = 0.049$). Regarding education of fathers, post-hoc analysis revealed significant differences between lower and middle levels of education (mean difference: -1.667; $p = 0.012$), and between lower and higher levels of education (mean difference: -2.237; $p = 0.000$), but not between medium and higher levels of education ($p = 0.533$).

In women who smoked during pregnancy, we found significantly lower intention to breastfeed ($M = 11.40$) compared to non-smokers ($M = 13.25$) ($p = 0.032$).

The attitude of women towards breastfeeding

In Table 2 we present the correlations between the items in the “pregnant women’s attitude towards breastfeeding” domain. We have identified positive, significant, moderate to strong coefficients in most of the studied associations; thus analyzed parameters are positively determined. We can observe a strong correlation between the attitude of fathers to breastfeeding and the impact of breastfeeding on the health of the child ($r = 0.468$), between the physical burden associated with breastfeeding and convenience for women ($r = 0.427$), and, in particular, between the convenience for women and the time benefit that breastfeeding provides ($r = 0.662$).

Table 2 Correlations between individual items analyzing the attitude of women towards breastfeeding

	1	2	3	4	5	6	7
1. Husbands’ attitudes	-	0.468**	0.224**	0.184*	0.064	0.216**	0.169*
2. Breastfeeding and babies’ health	0.468**	-	0.378**	0.095	-0.030	0.114	0.164*
3. Breastfeeding and women’s health	0.224**	0.378**	-	0.073	0.200**	0.200**	0.275**
4. Breastfeeding and physical burden on women	0.184*	0.095	0.073	-	0.170*	0.427**	0.261**
5. Breastfeeding and cost	0.064	-0.030	0.200**	0.170*	-	0.423**	0.330**
6. Breastfeeding and convenience for woman	0.216**	0.114	0.200**	0.427**	0.423**	-	0.662**
7. Breastfeeding and time benefit	0.169*	0.164*	0.275**	0.261**	0.330**	0.662**	-

*Correlation is significant at level 0.05 (2-tailed); **Correlation is significant at level 0.01 (2-tailed)

Body image and intention to breastfeed

The average value of body perception (BISS) in pregnant women was 5.27 (SD = 1.92; ranges 1–8). The correlation between body image and intention to breastfeed points to a significant, moderate association between these variables ($r = 0.391$; $p = 0.000$). Therefore, better body perception in pregnant women is associated with higher intention to breastfeed.

Predictors of intention to breastfeed

Correlations between areas evaluating the attitude of pregnant women towards breastfeeding and IFI showed positive, significant, low to moderate associations between the analyzed variables. We identified the strongest correlation coefficients in fathers’ attitudes towards breastfeeding ($r = 0.297$),

and in the impact of breastfeeding on women’s health ($r = 0.276$) (Table 3).

Preliminary regression analysis (Table 4), in which intention to breastfeed was a dependent variable and the individual areas of attitudes towards breastfeeding were independent variables, showed that fathers’ attitudes towards breastfeeding ($p = 0.008$), and the perception of breastfeeding as a form of support for women’s health ($p = 0.029$) independently correlate with the intention to breastfeed. Therefore, these two areas were integrated into a subsequent hierarchical regression analysis performed in four steps (Table 5).

Socio-demographic variables (Model 1) and smoking during pregnancy (Model 2) explain a 12% variation in the intention to breastfeed ($p = 0.000$). We found

Table 3 Correlations between IFI and factors determining the breastfeeding

	IFI
Husbands’ attitudes	0.297**
Breastfeeding and babies’ health	0.159*
Breastfeeding and women’s health	0.276**
Breastfeeding and physical burden on women	0.236**
Breastfeeding and cost	0.208**
Breastfeeding and convenience for woman	0.269**
Breastfeeding and time benefit	0.230**

*Correlation is significant at level 0.05 (2-tailed); **Correlation is significant at level 0.01 (2-tailed); IFI – Infant Feeding Intentions scale

Table 4 Preliminary multiregression analysis between attitude towards breastfeeding and IFI

Women's attitude towards breastfeeding	β	p
Husbands' attitudes	1.117	0.008
Breastfeeding and babies' health	-0.105	0.783
Breastfeeding and woman's health	0.435	0.029
Breastfeeding and physical burden on women	0.323	0.059
Breastfeeding and cost	0.330	0.282
Breastfeeding and convenience for women	0.120	0.633
Breastfeeding and time benefit	0.090	0.658
Adjusted R ²		0.149
p		0.000

B – Beta – coefficient; IFI – Infant Feeding Intentions scale; Significance level $p < 0.05$

the respondents' place of residence, and the education of husbands/partners to be significant. Incorporating the variables of fathers' attitudes towards breastfeeding, and breastfeeding and women's health (Model 3), we identified an increase in variation of almost 7% ($p = 0.000$). At this level of regression analysis, education of husbands/partners remains a significant independent factor, and the variables in the "attitudes towards breastfeeding" domain are also significant. However, the formerly non-significant variable of smoking during pregnancy (Model 2) became significant in Model 3 ($p = 0.041$). Consequently, we tested the inclusion of variables in the "attitudes towards breastfeeding" domain in isolation. If we include the variable breastfeeding and women's health, factors such as smoking during

pregnancy ($p = 0.088$) and fathers' education ($p = 0.062$) are not statistically significant. However, in the isolated inclusion of the variable fathers' attitudes, factors such as smoking ($p = 0.023$), and education of husbands/partners ($p = 0.015$) remain significant.

In the final model, we included body image, which shows an increase in variation to 30%. At this stage, the education of husbands/partners, and smoking during pregnancy are no longer statistically significant. In the final model, fathers' attitudes ($p = 0.001$), breastfeeding and women's health ($p = 0.036$), and body image ($p = 0.000$) are variables independently and significantly associated with intention to breastfeed (Table 5).

Table 5 Hierarchical model of factors associated with the IFI

	Model 1		Model 2		Model 3		Model 4	
	β	p	β	p	β	p	β	p
Socio-demographic factors								
residence	0.967	0.018	0.984	0.016	0.556	0.169	0.622	0.097
education of women	0.078	0.726	0.168	0.456	-0.060	0.793	0.047	0.822
education of husbands/partners	0.621	0.008	0.519	0.029	0.536	0.020	0.384	0.074
number of children	0.053	0.803	0.041	0.845	-0.030	0.882	0.102	0.596
Factors of pregnancy								
smoking during pregnancy			-1.634	0.052	-1.661	0.041	-0.611	0.432
Attitude towards breastfeeding								
husbands' attitudes					1.168	0.004	1.236	0.001
breastfeeding and women's health					0.374	0.039	0.354	0.035
BISS							0.497	0.000
Adjusted R ²	0.109		0.124		0.189		0.305	
p	0.000		0.000		0.000		0.000	

B – Beta – coefficient; IFI – Infant Feeding Intentions scale; Education (1–5, higher value = higher level of education); Significance level $p < 0.05$

Discussion

The results of the research show that the intention to breastfeed in pregnant women in the 5th to 9th month is very high. It is important to note that the study sample consisted of pregnant women whose intention to breastfeed ranged from medium to high (real IFI range: 7–16, possible IFI range: 0–16). The intention to breastfeed found in this study is perceived as

a positive phenomenon that can predict the actual percentage of breastfed babies.

Intention to breastfeed in other studies is similar, but may be higher or lower, depending on the methodology used, country of origin, and socio-economic parameters of the respondents. For example, an American study by May et al. (2017) found that 35% of women have a strong to very strong intention to breastfeed (IFI scale); 63.8% of

women with high intention to breastfeed were identified in Indonesia (IFI score ≥ 10) (Permatasari et al., 2016); and in China, the prevalence of the intention to breastfeed was 53.9% (Lau, 2010); however, in women from socio-economically disadvantaged areas of Glasgow, intention was only 20% (McInnes, Love, Stone, 2001).

Analysis of socio-demographic and pregnancy-related factors has shown that the place of residence, education of mothers and husbands/partners, smoking during pregnancy, and number of children significantly affect intention to breastfeed. For mothers living in the city, mothers with a higher education, mothers with one child, and non-smokers, the intention to breastfeed was higher.

In the present study, we identified smoking in 5.7% of women, which is 2–3 times lower than that found in the studies by Pavúk (2001) and Bašková (2008). One of the possible reasons for the different incidence of smoking is the different educational distribution of the research sample. As Bašková (2008) states, smoking is significantly more common in women with lower education, while in the present study women with university education or who successfully completed secondary education (88.6%) predominate. Smoking represents a health risk to pregnant women and their children (Baška, 2008) and modifies pregnant women's behavior. Female smokers have lower intention to breastfeed (McInnes, Love, Stone, 2001; Lee et al., 2005; Insaf et al., 2011); however, in women who decided to stop smoking due to pregnancy, the intention to breastfeed was high (68%) (Joseph et al., 2017). If pregnancy and the possible impact of smoking on the health and development of children were not a sufficient motive for ending or discontinuing smoking, we can assume that women will continue with this habit even after childbirth. Women smokers – in an attempt to limit the negative impact of nicotine on the health of the child, at least after delivery, shorten the period of breastfeeding, or use milk formula (McInnes, Love, Stone, 2001). This suggests the need to implement support activities aimed at protecting the health of pregnant women and their children even during pregnancy.

Education is a significant factor determining the intention to breastfeed, and the association between higher levels of education in women and intention to breastfeed has been demonstrated by the authors Huang, Wang, Chen (2004), Lee et al. (2005), and Persad and Mensinger (2008). However, the results of this research show that the education of husbands/partners plays a more important role

compared to pregnant women's education (as analyzed in the discussion below).

Hierarchical regression analysis has shown that the factors examined explain 30% of variation in the intention to breastfeed. The most significant independent variables were breastfeeding and women's health, fathers' attitudes towards breastfeeding, and body-image.

We expected, based on other studies (Chen et al., 2013; Sipsma et al., 2013), that women's decision to breastfeed their children would be influenced predominantly by the importance of breast milk to children's health. However, analysis of research data has shown stronger associations between intention to breastfeed and variables that are more related to women themselves, mainly in connection with their health, but also with their convenience or physical burden. The status of women in society is gradually changing. Despite the fact that women are taking over some of the previously male-dominated activities in the family (Mendelová, 2014), women are still expected to perform typically female activities such as taking care of the family, or of their appearance (Bútorová, 2008). Wider pressures (the cult of being slim, the cult of female beauty), as well as the pressure of closer social groups (husbands/partners) on women, greater family instability, higher divorce rate, lack of guarantee of permanence in marriage, and women's greater investment in their education may all be behind women's changing reasons for breastfeeding.

Husbands/partners are a very important factor affecting pregnant women and their decision to breastfeed. The importance of social support from family, friends, and, in particular, from husbands/partners for intention to breastfeed or for the continuation of breastfeeding has been demonstrated in many studies (Persad, Mensinger, 2008; Lau, 2010; Sipsma et al., 2013). Partners can influence the decisions of pregnant women, their behavior in relation to their health and the health of their babies both positively and negatively. Women experiencing violence committed by their partners had lower intention to breastfeed (Sipsma et al., 2013), while absence of conflicts with partners positively determined the intention to breastfeed (Lau, 2010). Correlations in the present research indicate that the attitudes of partners towards breastfeeding are closely related to the health of the children, the health of women, the convenience of women during breastfeeding, and, to a lesser extent, with the price benefits of breast milk and the physical burden on breastfeeding women.

An interesting finding in this research (regression analysis, Model 3) is that integration of husbands'/partners' attitudes towards breastfeeding leads to the identification of three independent significant factors affecting intention to breastfeed. These are: the education of fathers, women's smoking during pregnancy (in Model 2 it is a non-significant factor) and fathers' attitudes towards breastfeeding. It is possible to assume that the education of partners primarily interferes with their own attitudes towards breastfeeding; secondly, their attitudes are transferred to pregnant women and their behavior (e.g., partners can abet a pregnant woman to quit smoking and to breastfeed in the future). This is confirmed also by the fact that we found a positive correlation between fathers' education and their attitudes towards breastfeeding ($r = 0.156$; $p = 0.041$) (unpublished data). Pregnant women's husbands or partners are therefore able to determine not only mothers' health but, in particular, that of their babies.

Changes in shape, body size, and weight gain are phenomena that are a natural part of pregnancy (Galdunová, 2016) and may affect the satisfaction of pregnant women with their body image (Zaltzman, Falcon, Harrison, 2015). Some studies have shown an increase in women's dissatisfaction with their pregnant bodies, while others have found more positive attitudes (Hodgkinson, Smith, Wittkowski, 2014; Meireles et al., 2015; Zaltzman, Falcon, Harrison, 2015). Dissatisfaction with one's own body in pregnancy is associated with changing diet (Zaltzman, Falcon, Harrison, 2015), depression (Silveira et al., 2015), or shorter period of breastfeeding. Brown, Rance, Warren (2015) found that women who worry about their body changes are less likely to breastfeed. Body image may be a mediator leading to a shorter period of breastfeeding in women with a higher BMI (Hauff, Demerath, 2012). Decisions regarding children's diet (artificial nutrition versus breastfeeding) are determined by body perceptions before pregnancy (Huang, Wang, Chen, 2004). Presented research identified body image as the most important factor determining the intention to breastfeed. The perception of pregnant women of their bodies explains 11% of variation. In pregnant women, we found body image to be average, i.e., body image was neither significantly negative nor very positive. If women's dissatisfaction with their bodies modifies the behavior of women, changing their attitudes towards breastfeeding, then such behavior not only affects the health of women but also the health of their children; therefore it is necessary for healthcare professionals to pay adequate attention to this phenomenon.

Limitation of study

With regard to the type of study (cross-sectional), we cannot generalize from the results. Despite the high value of Cronbach alpha for the body image state scale, the authors of this research are aware that the scale is not specifically designed for pregnant women, and does not specifically reflect the aspects of change in body appearance in pregnant women (e.g., abdominal size, breast enlargement, skin changes).

Conclusion

Parents are responsible for the health of their children. Although decisions about how to feed a child are made by the parents, healthcare professionals can play an important role in encouraging breastfeeding. The results of the study indicate that the most significant factors influencing intention to breastfeed include partners' attitudes and pregnant women's perceptions of their own bodies. This means that in order to increase the intention to breastfeed, it is necessary to pay attention to this issue during pregnancy, to implement a dyadic approach – i.e., to include husbands/partners in education, and, finally, to analyze women's attitudes towards body perception and, where appropriate, to provide support for women in addressing issues related to body image dissatisfaction.

Ethical aspects and conflict of interest

The research was carried out with the consent of the Ethics committee of the University Hospital, Prešov. The authors declare that they are not aware of any conflicts of interest.

Authors' contribution

Concept and design (SM, AS), data collection (AS), analysis and interpretation of data (SM), manuscript draft (SM), critical revision of the manuscript (SM, AS, MR), final approval of the manuscript (SM).

References

- Baška T. *Prevencia užívania tabaku u školskej mládeže*. Martin: Národná koalícia pre kontrolu tabaku v SR; 2008. (in Slovak)
- Bašková M. Výskyt fajčenia žien počas tehotenstva – kultúrne a regionálne rozdiely na Slovensku. *Kontakt*. 2008;2:360–367. (in Slovak)
- Brown A, Rance J, Warren L. Body image concerns during pregnancy are associated with a shorter breast feeding duration. *Midwifery*. 2015;31(1):80–89.
- Bútorová Z. *Ona a on na Slovensku. Zaoštroené na rod a vek*. Bratislava: Inštitút pre verejné otázky; 2008. (in Slovak)

- Cash TF, Fleming EC, Alindogan J, Steadman L, Whitehead A. Beyond body image as a trait: the development and validation of the Body Image States Scale. *Eating Disorders: The Journal of Treatment & Prevention*. 2002;10(2):103–113.
- Chen S, Binns CW, Liu Y, Maycock B, Zhao Y, Tang L. Attitudes towards breastfeeding - the Iowa Infant Feeding Attitude Scale in Chinese mothers living in China and Australia. *Asia Pacific Journal of Clinical Nutrition*. 2013;22(2):266–269.
- de Jager E, Skouteris H, Broadbent J, Amir L, Mellor K. Psychosocial correlates of exclusive breastfeeding: a systematic review. *Midwifery*. 2013;29(5):506–518.
- De la Mora A, Russell DW, Dungy CI, Losch M, Dusdieker L. The Iowa Infant Feeding Attitude Scale: analysis of reliability and validity. *Journal of Applied Social Psychology*. 1999;29(11):2362–2380.
- Erick M. Breast milk is conditionally perfect. *Medical Hypotheses*. 2018;111:82–89.
- ESPGHAN Committee on Nutrition, Agostoni C, Braegger C, Decsi T, Kolacek S, Koletzko B, Michaelsen KF, Mihatsch W, Moreno LA, Puntis J, Shamir R, Szajewska H, Turck D, van Goudoever J. Breast-feeding: A commentary by the ESPGHAN Committee on Nutrition. *Journal of Pediatric Gastroenterology and Nutrition*. 2009;49(1):112–125.
- Fewtrell M, Bronsky J, Campoy C, Domellöf M, Embleton N, Fidler Mis N, Hojsak I, Hulst JM, Indrio F, Lapillonne A, Molgaard C. Complementary feeding: a position paper by the European Society for Paediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN) Committee on Nutrition. *Journal of Pediatric Gastroenterology and Nutrition*. 2017;64(1):119–132.
- Galdunová H. *Farmakologické a nefarmakologické tmenie pôrodných bolestí*. Prešov: Prešovská univerzita; 2016. (in Slovak)
- Hauff LE, Demerath EW. Body image concerns and reduced breastfeeding duration in primiparous overweight and obese women. *American Journal of Human Biology*. 2012;24(3):339–349.
- Hodgkinson EL, Smith DM, Wittkowski A. Women's experiences of their pregnancy and postpartum body image: a systematic review and meta-synthesis. *BMC Pregnancy and Childbirth*. 2014;14:330.
- Huang HC, Wang SY, Chen CH. Body image, maternal-fetal attachment, and choice of infant feeding method: a study in Taiwan. *Birth*. 2004;31(3):183–188.
- Insaf TZ, Fortner RT, Pekow P, Dole N, Markenson G, Chasan-Taber L. Prenatal stress, anxiety, and depressive symptoms as predictors of intention to breastfeed among Hispanic women. *Journal of Women's Health*. 2011;20(8):1183–1192.
- Joseph HM, Emery RL, Bogen DL, Levine MD. The influence of smoking on breast feeding among women who quit smoking during pregnancy. *Nicotine & Tobacco Research*. 2017;19(5):652–655.
- Lau Y. Breastfeeding intention among pregnant Hong Kong Chinese women. *Maternal and Child Health Journal*. 2010;14(5):790–798.
- Lee HJ, Rubio MR, Elo IT, McCollum KF, Chung EK, Culhane JF. Factors associated with intention to breastfeed among low-income, inner-city pregnant women. *Maternal and Child Health Journal*. 2005;9(3):253–261.
- May L, Borger Ch, Weinfield N, MacAllum C, DeMatteis J, McNutt S, Whaley S, Ritchie L, Sallack L. *WIC infant and toddler feeding practices study – 2: Infant year report*. USDA: Food and Nutrition Service; 2017.
- McInnes RJ, Love JG, Stone DH. Independent predictors of breastfeeding intention in a disadvantaged population of pregnant women. *BMC Public Health*. 2001;1:10.
- Meedya S, Fahy K, Kable A. Factors that positively influence breastfeeding duration to 6 months: a literature review. *Women and Birth*. 2010;23(4):135–145.
- Meireles JF, Neves CM, de Carvalho PH, Ferreira ME. Body dissatisfaction among pregnant women: an integrative review of the literature. *Ciencia & Saude Coletiva*. 2015;20(7):2091–2103.
- Mendelová E. Súčasná postmoderná rodina a vnútorodinná deľba práce. *Sociální pedagogika*. 2014;2(1):11–21. (in Slovak)
- Národné centrum zdravotníckych informácií. *Činnosť všeobecných ambulancií pre deti a dorast v SR 2016*. Bratislava; 2017 [cited 2018 Feb 12]. Available from: <http://www.nczisk.sk/Aktuality/Pages/Cinnost-vseobecnych-ambulanci-pre-deti-a-dorast-v-SR-2016.aspx> (in Slovak)
- Nommsen-Rivers LA, Dewey KG. Development and validation of the infant feeding intentions scale. *Maternal and Child Health Journal*. 2009;13(3):334–342.
- Pavúk A. Rozdielne následky fajčenia u tehotných rómskych a nerómskych žien v regióne východného Slovenska. In: 8. demografická konferencia: Súčasný populačný vývoj na Slovensku v európskom kontexte. Rajecké Teplice, 2001; s. 156–159. (in Slovak)
- Permatasari TAE, Sartika RAD, Achadi EL, Puwono U, Irawati A, Ocviyanti D, Martha E. Does breastfeeding intention among pregnant mothers associated with early initiation of breastfeeding? *Jurnal Kesehatan Reproduksi*. 2016;7(3):169–184.
- Persad MD, Mensinger JL. Maternal breastfeeding attitudes: association with breastfeeding intent and socio-demographics among urban primiparas. *Journal of Community Health*. 2008;33(2):53–60.
- Silveira ML, Ertel KA, Dole N, Chasan-Taber L. The role of body image in prenatal and postpartum depression: a critical review of the literature. *Archives of Womens Mental Health*. 2015;18(3):409–421.
- Sipsma HL, Divney AA, Magriples U, Hansen N, Gordon D, Kershaw T. Breastfeeding intention among pregnant adolescents and young adults and their partners. *Breastfeeding Medicine*. 2013;8(4):374–380.
- Schwarz EB, Nothnagle M. The maternal health benefits of breastfeeding. *American Family Physician*. 2015;91(9):603–604.
- Vieira TO, Martins CD, Santana GS, Vieira GO, Silva LR. Maternal intention to breastfeed: a systematic review. *Ciencia & Saude Coletiva*. 2016;21(12):3845–3858.
- Waits A, Guo CY, Chien LY. Evaluation of factors contributing to the decline in exclusive breastfeeding at 6 months postpartum: The 2011–2016 National Surveys in Taiwan. *Birth*. 2018;45(2):184–192.
- Zaltzman A, Falcon B, Harrison ME. Body image in adolescent pregnancy. *Journal of Pediatric and Adolescent Gynecology*. 2015;28(2):102–108.