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Factors affecting breastfeeding motivation in primiparious mothers: An application of breastfeeding motivation scale based on self-determination theory

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ABSTRACT

Researchers aim to adapt the breastfeeding motivation scale and to determine the effect of socio-demographic characteristics, obstetric properties and breastfeeding status on type of breastfeeding motivation. The study sample consisted of 250 mothers those who were primiparious. We recorded the telephone numbers of mothers staying in the Postpartum Services of the hospitals and applied data collection tools by home visits at eighth week postnatal. The autonomous motivations of the mothers who were exclusively breastfeeding their babies were higher than those partially breastfeeding. In addition, advanced age, high education level, nonsmoking status and breastfeeding support were factors that positively affected breastfeeding motivation.

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Due to the benefits of human milk, the World Health Organization (WHO, 2001) have recommended that mothers exclusively breastfeed their infants for the first 6 months of life, with the addition of complementary nutrition at 6 months to 2 years. According to the Turkey Demographic and Health Survey (TDHS) (2013), almost all children (97%) were breastfed for a certain period of time whereas the rate of exclusively breastfeeding for the first 6 months is 30.1% (TDHS, 2013).

Physiological, social, and psychological factors play a role in continuation of breastfeeding. Breastfeeding is typically stopped because of demographic, biological, social, and psychological reasons (Thulier & Mercer, 2009). Psychological factors, such as mother's perspective on breastfeeding, self-confidence, self-efficacy, and motivation, affect breastfeeding duration (Dennis, 2002; Thulier & Mercer, 2009). Recent research recommends screening women for motivation before health professionals offer

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breastfeeding counseling and support. Health professionals should understand the psychological theories that may help to explain the primary role of motivation in human and the reason why a few women have higher motivation in starting and continuing breastfeeding than others (Stockdale, Sinclair, Kernohan, & Keller, 2011b). The most important factor in perceiving human behavior is to understand motivating situations that affect behavior in a positive way. Theoreticians working on this issue indicate that behavior is linked to the value judgement of a person, that is, the thought of success in achieving that behavior motivates the individual in a positive way (Stockdale, Sinclair, Kernohan, McCrum-Gardner, & Keller, 2013). This hypothesis is supported by self-determination theory (SDT).

Self-determination theory

SDT is a motivation theory that focuses on processes behind human behavior and personality development. According to SDT; people who are *intrinsically motivated* exhibit activities or behavior as they bring interest, success, pleasure, happiness and excitement (Deci, Ryan, & Williams, 1996). An example of intrinsically motivated individuals is a woman who feels enjoyment, fun and happy while breastfeeding (Kestler-Peleg, Shamir-Dardikman, Hermoni, & Ginzburg, 2015; Lau et al., 2017; Sardo, 2016). In contrast to intrinsic motivation, individuals who are *extrinsically motivated* behave in order not to feel guilty, to obtain approval or to be appreciated. According to SDT, extrinsic motivation is categorized into four types, which have different contents and definitions according to their autonomous levels (Ryan & Deci, 2000). *Integrated regulation* occurs when individual definitions are aligned with the needs and objectives that are part of the self (Gagné & Deci, 2005). The woman's life has an aim, and a woman may breastfeed her baby because she likes to feel that her baby is exclusively dependent on her; this woman is motivated by integrated regulation (Kestler-Peleg et al., 2015; Lau et al., 2017). *Identified regulation* is the realization of an action due to its importance and benefits for an individual (Ryan & Deci, 2000). Breastfeeding is important and useful for woman, and a woman who feels better and important while breastfeeding is motivated by identified regulation (Kestler-Peleg et al., 2015; Lau et al., 2017). In *introjected regulation*, behavior arises from internal pressures, such as feeling of anxiety and guilt (Ryan & Deci, 2000). An example of this type of motivation is a woman who breastfeeds to prevent being an embarrassment to her husband or friends and to show that she is a good mother. To understand the impact of women's experiences and future commitment to breastfeeding, researchers regard that breastfeeding may not be a general

purpose of a woman; she is likely to achieve another goal and may prefer to breastfeed as a tool. Mother uses breastfeeding as a tool in *external regulation*. For example, a woman might breastfeed her baby to save formula costs and lose weight quickly (Kestler-Peleg et al., 2015; Lau et al., 2017). One of the underlying issues of SDT is the difference between autonomous and controlled motivation (Ryan & Deci, 2000). Autonomous behavior is voluntary and based on the interest of an individual and personal importance. Controlled behavior contains causality and is based on pressure from oneself or other people (Ryan, 1982). According to SDT, mothers with autonomous motivation (intrinsic motivation, integrated regulation and identified regulation) breastfeed their babies for a long duration, whereas mothers with controlled motivation (introjected regulation and external regulation) breastfeed their babies for a short duration (Kadzikowska-Wrzosek, 2016; Kestler-Peleg et al., 2015; Racine et al., 2009; Stockdale, Sinclair, Kernohan, & Keller, 2011a; Stockdale et al., 2013). Few studies in the literature have investigated the motivation of breastfeeding and its influencing factors (Chentanez, Barto, & Singh, 2004; Kadzikowska-Wrzosek, 2016; Kestler-Peleg et al., 2015; Lau et al., 2017; Pinto, Chaves, Duarte, Nelas, & Coutinho, 2016; Racine et al., 2009; Sardo, 2016; Stockdale et al., 2013). Thus far, no study has evaluated breastfeeding motivation by using a measurement tool to determine factors affecting it. The aims of the researchers were to adapt the breastfeeding motivation scale (BMS) developed based on SDT by Kestler–Peleg (2015) and translate it into Turkish for evaluation of primiparous mothers. We also used the scale to determine the effect of sociodemographic characteristics, obstetric properties, and breastfeeding status on type of breastfeeding motivation.

Methods

Design and sample

We conducted the study in Postpartum Services in the university and state hospitals of Eskisehir through home visits. We recorded the telephone numbers of mothers staying in the Postpartum Services of the hospitals. Data collection tools were applied by home visits at eighth week postnatal upon the recommendation of the researchers who developed the scale. Data were collected from 10 May 2016 to 24 March 2017. The study sample consists of primiparous mothers who are (1) literate, (2) able to stay in the same room with the baby after birth, (3) have no disabilities on herself/baby for breastfeeding, (4) are breastfeeding continuously up to the 8th week, (5) delivered single born baby, with birth weight of more than 2500 g, and (6) reside in the city center of Eskisehir.

In scale adaptation and development, the sample size should be at least twice or preferably 10 times the number of items (Büyüköztürk, 2002). The present study aimed to obtain samples up to 10 times the number of items to be evaluated. About 250 mothers were recruited for the study considering the data loss for the scale consisting of 24 items. Respondents were selected from the hospitals where the study was continued by using a stratified technique, proportional to size sampling method.

Data collection tools

Postnatal Questionnaire

The Postnatal Questionnaire form was developed by the researcher to determine the socio-demographic characteristics, obstetric properties, labor process, and initial and post-discharge breastfeeding status of women.

BMS

BMS was developed by Kestler–Peleg et al. in 2015. The scale consists of 24 items and was applied to the sample group. The scale covers five factors: (1) intrinsic motivation and integrated regulation, (2) identified regulation, (3) introjected regulation, (4) external regulation (instrumental needs) and (5) external regulation (baby's health). The Cronbach alpha of the scale ranges from 0.62 to 0.93. BMS is a four-point Likert scale, and each item is scored from 1 (Strongly Disagree) to 4 (Strongly agree). The scale has no total score. As the score from the subscale of the scale increases, the motivation that represents that subscale also increases (Kestler-Peleg et al., 2015).

Translation of BMS and pilot application

In the first stage of the study, BMS was adapted into Turkish by translation–retranslation studies. The scale consisting of 24 items was translated into Turkish by the researchers. Three linguists having knowledge of both language and culture translated the scale into Turkish. A field expert with a good command of English translated the scale proposal into Turkish and then into English again. The retranslated scale was found to be similar to the original scale. After the linguistic validity of the scale, the opinions of eight experts were taken for content validity. The experts were asked to assess the items as follows: 'item is appropriate', 'item is appropriate but needs to be corrected' and 'item is unnecessary'. The Lawshe's Content Validity Ratio (CVR) formula was used to validate the content of the scale. The ratio of each item should not be less than 0.78 for eight experts. All items in the study were found to be in accordance with Lawshe content validity ratios. After obtaining the expert opinion, researchers conducted

the pilot application of the scale on 30 mothers staying at the hospital in their postpartum period. Initially, the researcher read the scale, and marked the answers of the respondent. However, some items answered as 'Absolutely Agree' to open to be directed. For this reason, the scale form should be given to the mothers and they should fill it up during the data collection phase of the study.

Data collection

Mothers who stay in the State Hospital and satisfied the sampling criteria were included in the study through random sampling on Monday, Wednesday, Friday and Sunday. Mothers who stay in the postnatal clinics of Medical Faculty Training and Research Hospital and satisfied the sampling criteria were selected through random sampling on Tuesday, Thursday and Saturday.

We informed mothers who agreed to participate about the study protocols. The mothers would be visited at home, and data collection forms would be given during the visit at 8th week postnatal. Telephone numbers and the date of birth of mothers who participated in the study were recorded. According to their date of birth, the mothers were called at the 8th week and visited in the home addresses they provided. Firstly, mothers completed the BMS and filled up the Postnatal Questionnaire. During home visits, the telephone numbers of mothers who satisfied the sampling criteria and agreed to participate in the study were continuously collected on specified days. Recording of the telephone number of the respondents was completed in about 5 months. Mothers excluded from the study include those who were reached by telephone number but their husbands did not allow them to participate, stopped breastfeeding and could not be reached because they gave wrong or unused phone numbers. These mothers were regarded as data loss. Five mothers were excluded from the study because they stopped breastfeeding, one mother was excluded because her baby died and 31 mothers were excluded because their husbands did not allow them to participate and they gave wrong phone numbers. The mothers wanted their husbands to be at home during the home visits and thus made an appointment after 17.00 on weekdays and on weekends. Data were collected for an average of 15 to 20 minutes. An average of 15 mothers were visited per week. When the researcher had convenient schedule (summer vacation, holidays), 20–25 mothers were reached per week.

Data analysis

An exploratory and confirmatory factor analysis was conducted for the validity of the BMS Cronbach's alpha was created to measure the internal

consistency of the BMS. After the analysis of the validity and reliability of the BMS, analyzes were conducted on the factors affecting breastfeeding motivation. Non-normally distributed data were compared using the Mann–Whitney U test (two groups) or the Kruskal–Wallis. A multiple-comparisons procedure was performed with Tukey's test. A p value of less than 0.05 was accepted as statistically significant.

Limitations of the study

Breastfeeding motivation should be assessed periodically during the first 6 postnatal months (Kestler-Peleg et al., 2015; Lau et al., 2017). In this study, we assessed breastfeeding motivation only once at 8th week. The results are valid only for mothers at their 8th week postnatal period. Upon reaching mothers who cannot be contacted through the telephone numbers they provided, the researcher found that they gave the wrong or unused number and they could not participate in the study because their husbands did not give them permission.

Ethical approval

Written permission was obtained via e-mail from Ariel University (Israel) Lecturer Miri Kestler–Peleg, who is one of the researchers who developed the scale. The approval number was 80558721/G-139, and institutional permissions were obtained from the Non-Interventional Clinical Research Ethics Committee of Eskisehir Osmangazi University. Informed written consent was obtained from mothers who agreed to participate in the study.

Results

Sample characteristics

The mean age of primiparous mothers was 24.89 ± 4.17 years. About 43.6% of the mothers graduated from high school, and the majority (43.2%) were not employed. About 67.2% of the mothers delivered vaginally, and 9.6% of them smoked during pregnancy. In terms of breastfeeding status, 74.8% of the mothers breastfed their infants within the first hour after birth, 88.4% of them are supported by family while breastfeeding and 43.2% were trained in breastfeeding.

Validity and reliability of BMS

Confirmatory Factor Analysis (CFA) was performed with the first subscales determined in the original scale and the model consisting of items under subscales to determine the construct validity of the primiparous mothers.

The RMSEA (Root Mean Square Error Of Approximation) provides information about 'badness of fit', with lower RMSEA values indicating good model fit. According to the results of CFA, the acceptable adaptive value of RMSEA should be $0.05 < \text{RMSEA} < 0.10$. The RMSEA value for the mothers was 0.120. Based on this result, the five-factor model developed by Kestler-Peleg et al. (2015) did not show acceptable adaptation in the primiparous sample group. In this regard, Exploratory Factor Analysis (EFA) was performed. The conformity of the BMS to descriptive factor analysis was assessed by Barlett and KMO (Kaiser–Meyer–Olkin) tests. KMO and Bartlett's sphericity tests were performed to examine the suitability of the data for factor analysis. The KMO index ranges from 0 to 1 and the Bartlett's test should be significant ($p < 0.05$) for factor analysis to be suitable. The KMO value was 0.87, and the Barrett test p value was < 0.001. Hence, BMS was considered suitable for factor analysis in primiparous mothers. The analysis was started with 24 items, and those with a factor load of 0.30 or higher were included in the scale. When the results of the first analysis were examined, the factor load of the second item in the scale *(It's been said that breastfeeding is good for the baby's immune system)* was 0.204; as such, the item was removed from the scale, and factor analysis was performed again. The eigenvalues of the items tested were determined in five subscales higher than 1. Eigenvalues the total variance explained by a factor. Only factors with eigenvalues higher than 1 were presented, because factors with an eigenvalue less than 1 explain no more variance than a single variable (Terwee, Gerding, Dekker, Prummel, & Wiersinga, 1998) . Subscale headings were renamed according to the relation of the items they contain to the SDT (Table 1). CFA was performed for model adaptation after the EFA of BMS. A number of fit indices were used to assess the suitability of the scale model construct in the CFA. The values of RMSEA and adaptive chi-square tests were regarded as the basis for model compatibility. The acceptable chi-square adaptive value ($\chi 2/df$) was 5 and below 5, and the RMSEA was < 0.010. The $\chi 2/df$ (675.96/220) value was 3.07, and the RMSEA value was 0.088. The Cronbach alpha of the assessed scale was 0.887. According to the calculated Cronbach alpha value, BMS was very reliable for assessment of primiparous mothers. The Cronbach alpha of the sub-factors of the scale ranged from 0.658 to 0.879.

Distribution of BMS subscale average score according to mothers who were exclusively and partially breastfeeding at 8th week

The autonomous motivation levels of primiparious mothers who were exclusively breastfeeding were higher than those of mothers who were partially breastfeeding at the 8th week. Primiparous mothers feeding their

Table 1. Factor loadings of exploratory factor analysis for primiparous mothers.

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
	Integrative regulation	Intrinsic motivation and identified regulation	Introjected regulation – social approval	Introjected regulation – social pressure	External regulation – instrumental needs
Item	Bonding	Enjoyment and maternal self-perception	Social approval	Social pressure	Instrumental needs
14. Gives my life a purpose	0.768				
19. Seems natural	0.761				
22. Giving a part of myself	0.744				
21. Close to my baby	0.707				
15. Strengthen my attachment	0.681				
17. Good for my health	0.633				
24. Makes me happy	0.565				
13. Makes me feel good	0.518				
3. My baby depends on me	0.466				
1. Convenient	0.419				
12. Healthy for baby	0.330				
11. Makes me feel special		0.778			
8. Makes me proud and important		0.760			
6. Breastfeeding is fun		0.666			
23. Excites me		0.626			
18. Sublime sensation		0.548			
16. Makes me like myself better		0.516			
4. Doing what's acceptable			0.861		
5. Makes me appreciated			0.806		
7. Ashamed not to				0.865	
9. People won't criticize				0.855	
10. Saves money					0.822
20. Helps lose weight faster					0.793
Cronbach's alpha	0.879	0.837	0.734	0.824	0.658

Factor loadings $\geq$0.30 were shown in the table.

babies with only breast milk had higher scores on integrated regulation ($Z = 6.832$, $p < 0.001$), intrinsic motivation and identified regulation ($Z = 5.873$, $p < 0.001$) subscales.

Factors affecting breastfeeding motivation of mothers

After determining the validity and reliability of the scale, the sub-dimension scores were calculated. The effects of socio-demographic, obstetric and breastfeeding characteristics on the mean score of the sub-dimensions of BMS were also investigated. We found a positive correlation between the ages of the mothers and the scores for integrated regulation ($r = 0.140$, $p = 0.027$), intrinsic motivation and identified regulation ($r = 0.160$, $p = 0.011$). No relationship was found between age and other sub-dimensions. As the age of the primiparous mothers increased, their level of autonomous motivation also increased. A significant positive difference was found between the educational background of the mothers and the scores for the sub-dimensions intrinsic motivation–identified regulation ($X^2 = 12.588$, $p = 0.006$) introjected regulation–social approval ($X^2 = 9.810$, $p = 0.020$) and introjected regulation–social pressure ($X^2 = 18.042$, $p < 0.001$). The scores of mothers who graduated from primary school were lower than those of mothers who had an undergraduate degree in the internal motivation and identified regulation sub-dimensions. In introjected regulation–-social approval and introjected regulation–social pressure sub-dimensions, the scores decreased with increasing education level. No statistically significant difference was found between the mothers' employment status and the scores of the BMS sub-dimensions (Table 2).

The score distribution of the BMS sub-dimensions among the mothers was investigated according to their certain obstetric characteristics (Table 3). A statistically significant difference was found between smoking during pregnancy and the mean scores for integrated regulation, intrinsic motivation and identified regulation sub-dimensions ($p < 0.001$). Mothers who did not smoke during pregnancy had higher scores in these sub-dimensions. The distribution of BMS sub-dimension mean scores according to certain breastfeeding characteristics of the mothers is shown in Table 4. A statistically significant difference was found between breastfeeding support and the score for the introjected regulation–social approval sub-scale ($p = 0.037$). Mothers who did not receive any support in breastfeeding had high scores in this sub-dimension.

Discussion

Breastfeeding motivation is positively affected by sociodemographic factors such as old age (mothers elder than 25 years), high education level, good

Table 2. The distribution of BMS sub-dimension mean scores according to sociodemographic characteristics of the mothers.

Sociodemographic characteristics	Integrative regulation Mean ± *SD*	Intrinsic motivation and identified regulation Mean ± *SD*	Introjected regulation – social approval Mean ± *SD*	Introjected regulation – social pressure Mean ± *SD*	External regulation – instrumental needs Mean ± *SD*
Educational status					
Primary school[a]	38.38 ± 5.46	18.44 ± 4.25	6.04 ± 2.24	4.08 ± 2.22	4.88 ± 2.31
Secondary school[b]	37.98 ± 6.19	20.11 ± 3.96	5.98 ± 1.83	3.36 ± 1.95	4.83 ± 1.98
High school[c]	39.28 ± 4.92	20.56 ± 3.04	5.31 ± 2.15	2.91 ± 1.51	4.91 ± 2.05
University[d]	40.08 ± 5.49	20.14 ± 4.35	4.75 ± 2.43	2.88 ± 1.67	4.96 ± 2.06
Statistical analysis	$X^2 = 5.262$ $p = 0.154$	$X^2 = 12.588$ $p = 0.006$	$X^2 = 9.810$ $p = 0.020$	$X^2 = 18.042$ $p < 0.001$	$X^2 = 0.124$ $p = 0.989$
Occupational status					
Working	38.73 ± 5.58	19.44 ± 4.23	5.55 ± 2.13	3.20 ± 1.87	4.85 ± 2.04
Not working	37.42 ± 6.09	18.60 ± 4.72	4.90 ± 2.44	3.27 ± 1.84	5.06 ± 2.23
Statistical analysis	$Z = 5.413$ $p = 0.144$	$Z = 1.911$ $p = 0.591$	$Z = 2.391$ $p = 0.495$	$Z = 6.023$ $p = 0.110$	$Z = 1.091$ $p = 0.779$

X^2 = Kruskal–Wallis test.
[a–d]($p = 0.023$) (intrinsic motivation and identified regulation).
[b–d]($p = 0.043$) (introjected regulation – social approval).
[a–d]($p < 0.001$) and b–d ($p < 0.001$) (introjected regulation – social pressure).

Table 3. The distribution of BMS sub-dimension mean scores according to obstetric properties of the mothers.

Obstetric properties	Integrative regulation Mean ± *SD*	Intrinsic motivation and identified regulation Mean ± *SD*	Introjected regulation – social approval Mean ± *SD*	Introjected regulation – social pressure Mean ± *SD*	External regulation – instrumental needs Mean ± *SD*
Type of birth					
Vaginal birth ($n = 168$)	38.40 ± 5.85	18.97 ± 4.33	5.09 ± 2.27	3.09 ± 1.94	4.70 ± 2.00
Caesarean birth ($n = 82$)	38.93 ± 5.52	19.66 ± 4.08	5.57 ± 2.14	3.29 ± 1.84	5.00 ± 2.09
Statistical analysis	$Z = 0.683$ $p = 0.495$	$Z = 1.300$ $p = 0.194$	$Z = 1.488$ $p = 0.137$	$Z = 1.664$ $p = 0.096$	$Z = 1.037$ $p = 0.300$
Smoke during pregnancy					
Yes ($n = 24$)	34.12 ± 4.47	15.41 ± 4.42	4.75 ± 1.67	3.20 ± 1.69	4.66 ± 1.63
No ($n = 226$)	39.25 ± 5.52	19.86 ± 3.92	5.49 ± 2.23	3.23 ± 1.89	4.92 ± 2.10
Statistical analysis	$Z = 4.537$ $p < 0.001$	$Z = 4.597$ $p < 0.001$	$Z = 1.800$ $p = 0.072$	$Z = 0.401$ $p = 0.689$	$Z = 0.661$ $p = 0.509$
Gender of the baby					
Female ($n = 113$)	38.45 ± 5.65	19.71 ± 4.04	5.69 ± 2.14	3.20 ± 1.82	4.74 ± 2.07
Male ($n = 117$)	39.01 ± 5.61	19.21 ± 4.27	5.18 ± 2.22	3.24 ± 1.92	5.03 ± 2.05
Statistical analysis	$Z = 0.933$ $p = 0.351$	$Z = 0.901$ $p = 0.368$	$Z = 1.859$ $p = 0.063$	$Z = 0.006$ $p = 0.995$	$Z = 1.182$ $p = 0.237$

Z = Mann–Whitney U test.

socio-economic level, nonsmoking practice, breastfeeding training, and housewife status (Dennis, 2002; Mizrak, Ozerdogan, & Çolak, 2017). Few studies have investigated the relationship of breastfeeding motivation and socio-demographic factors (Barbosa, Santos, Moraes, Rizzardi, & Corrêa, 2015; Kestler-Peleg et al., 2015; Lange, Nautsch, Weitmann, Ittermann, & Heckmann, 2017; Pinto et al., 2016). In the present study, the effect of

Table 4. The distribution of BMS sub-dimension mean scores according to breastfeeding characteristics of the mothers.

Breastfeeding characteristics	Integrative regulation Mean ± *SD*	Intrinsic motivation and identified regulation Mean ± *SD*	Introjected regulation – social approval Mean ± *SD*	Introjected regulation – social pressure Mean ± *SD*	External regulation – instrumental needs Mean ± *SD*
Breastfeeding status					
Exclusively breast feeding ($n = 176$)	40.48 ± 4.31	20.42 ± 3.72	5.12 ± 2.08	3.08 ± 1.79	5.06 ± 2.07
Partially breast-feeding ($n = 74$)	34.64 ± 6.25	17.10 ± 4.27	5.54 ± 2.23	3.56 ± 2.03	4.52 ± 2.01
Statistical analysis	$Z = 6.832$ $p < 0.001$	$Z = 5.873$ $p < 0.001$	$Z = 1.538$ $p = 0.124$	$Z = 1.546$ $p = 0.122$	$Z = 1.819$ $p = 0.069$
Supporting systems					
Exist ($n = 108$)	38.58 ± 5.75	19.42 ± 4.05	5.31 ± 2.20	3.19 ± 1.87	4.86 ± 2.05
Not exist ($n = 142$)	40.10 ± 4.41	19.51 ± 5.06	6.20 ± 2.02	3.44 ± 2.09	5.17 ± 2.20
Statistical analysis	$Z = 1.188$ $p = 0.235$	$Z = 0.758$ $p = 0.448$	$Z = 2.083$ $p = 0.037$	$Z = 0.907$ $p = 0.364$	$Z = 0.831$ $p = 0.406$
Breastfeeding training					
Yes ($n = 221$)	39.26 ± 5.62	19.89 ± 3.84	5.41 ± 2.29	3.25 ± 1.90	4.87 ± 2.16
No ($n = 29$)	38.37 ± 5.62	19.09 ± 4.38	5.42 ± 2.13	3.21 ± 1.90	4.92 ± 1.99
Statistical analysis	$Z = 1.829$ $p = 0.067$	$Z = 1.332$ $p = 0.183$	$Z = 0.134$ $p = 0.893$	$Z = 0.197$ $p = 0.844$	$Z = 0.299$ $p = 0.765$

Z = Mann–Whitney U test.

certain characteristics of primiparious mothers on breastfeeding motivation was investigated. As the ages of the mothers increased, their level of autonomous motivation increased. In the study of Barbosa et al. (2015) on 306 multiparious and primiparious mothers, those who were at an early age had a short breastfeeding span; this finding was explained by the low education level of these mothers and their limited experience considering that it was their first pregnancy (Barbosa et al., 2015). The increase in the autonomous control level can be related to the increased clarity of people's expectations, self-confidence and capacity to deal with problems. The high breastfeeding motivation of mothers with a high education level could be due to their easier access to information regarding breastfeeding, being a mother in their later ages and the positive effects of these factors on their breastfeeding motivation (Barbosa et al., 2015; Pinto et al., 2016). In the present study, the autonomous motivation level of mothers who graduated from primary school was lower than those of mothers with an undergraduate degree. The controlled motivation levels decreased as the level of education increased, except for external-additional benefits. Hence, the motivations of mothers with a low education level and those without breastfeeding experience were shaped according to external factors. Lange et al. (2017) revealed that mothers with a high education level had high breastfeeding motivation scores (Lange et al., 2017). Dunn, Davies, McCleary, Edwards, and Gaboury (2006) reported that the self-confidence

of mothers was affected by their age and education level; a positive significant relationship was found between mothers' self-confidence regarding breastfeeding and their education level. Mothers with high education level had high self-confidence, which positively affected their breastfeeding motivation. The employment status of mothers may pose a problem regarding the start and continuation of breastfeeding. Working women had a negative approach to breastfeeding and considered themselves as inadequate primarily because of their working conditions (Attanasio, Kozhimannil, McGovern, Gjerdingen, & Johnson, 2013; Kaneko et al., 2006; Kehler, Chaput, & Tough, 2009). In the present study, the breastfeeding motivations of the mothers were not significantly affected by their employment status. Wilhelm, Flanders Stepans, Hertzog, Callahan Rodehorst, and Gardner (2006) conducted interviews among mothers during their second and fourth postnatal days to determine their belief that they can achieve breastfeeding and their breastfeeding self-efficacy. The results revealed that mothers who work and return to work soon after giving birth had lower breastfeeding self-efficacy and shorter breastfeeding duration than those who do not work (Wilhelm et al., 2006).

Factors positively affecting breastfeeding motivation include vaginal birth, planned pregnancy, not encountering a problem during birth, a problem-free birth, satisfaction with birth and postnatal services, coping with pain during the birth and nonsmoking status (Dennis, 2006). In the present study, the breastfeeding motivation of the mothers did not significantly differ according to their birth type. By contrast, Lange et al. (2017) found that mothers who had cesarean birth had lower breastfeeding motivation than those who had vaginal birth. One of the indications of cesarean birth is preterm births. In contrast to the present study, the study of Lange et al. (2017) included mothers who had preterm birth. In the study of Lange et al., mothers who had cesarean birth had low breastfeeding motivation because preterm infants might have several breastfeeding problems. In the present study, the gender of infants did not affect the breastfeeding motivation of their mothers. The prolonged breastfeeding duration for male infants could be due to the fact that boys are seen as a guarantee for family based on the influence of the regional and cultural structure in Turkey and the thought that boys provide continuance of the family. In the present study, mothers who smoked during their pregnancy had low autonomous motivation. Lange et al. (2017) reported the low breastfeeding motivation scores of mothers who smoked during their pregnancy. The low breastfeeding motivation could be due to the fact that women who smoked during their pregnancy had a high level of somatostatin, which causes sleeping tendency, emotional disorder and motivation and energy loss (Amir, 2001). In other studies, the effect of smoking on breastfeeding was explained with

psychological and social factors rather than physiological ones. Smokers generally consist of young women who have a low education level, an unplanned pregnancy, an insufficient social support and a high depression level. These factors affect breastfeeding motivation and thus breastfeeding (Henderson, Evans, Straton, Priest, & Hagan, 2003; Kronborg & Vaeth, 2004).

Providing breastfeeding training for pregnant/mothers is important to prevent them from stopping breastfeeding and increase the breastfeeding rate to the desired level (Dennis, 2006). Thus far, no study has investigated the effect of breastfeeding training on breastfeeding motivation. Nevertheless, many studies highlighted the positive effect of breastfeeding training on breastfeeding self-efficacy, duration and intention (Hatamleh, 2012; Mizrak et al., 2017; Noel-Weiss, Rupp, Cragg, Bassett, & Woodend, 2006). The present study investigated the effect of having breastfeeding training on breastfeeding motivation, but the results did not show a significant difference. The quality of the training that the mothers had was not examined because it is outside the scope of the study. Motivation evaluation after providing structured breastfeeding training will yield objective results. In the present study, mothers who cannot receive help from their environment while breastfeeding had high scores on the sub-scale of the introjected regulation–social approval, which is one of the controlled motivation types. Hence, mothers are more influenced by social direction and pressure in the absence of social support and when they cannot use their autonomous motivation. The social support provided by the close environment and health professionals is an essential element to improve the confidence of mothers in breastfeeding (Blyth et al., 2002). The confidence of mothers in breastfeeding positively affects their motivation because it also increases their self-efficacy. Kools Thijs, Kester, and de Vries (2006) pointed out that mothers who cannot receive social support while breastfeeding had low breastfeeding motivation and short breastfeeding duration (Kools et al., 2006). Dennis investigated the effect of breastfeeding-related variables on the breastfeeding self-efficacy perceptions of 522 mothers in the first week after birth; the results showed that mothers who receive help from partner, family, health personnel, or friends while breastfeeding had a high level of breastfeeding self-efficacy perception (Dennis, 2006).

Conclusion

Breastfeeding continuation is considerably affected by different motivation types, which constitute the breastfeeding motivation scale based on SDT. According to SDT, mothers with autonomous motivation breastfeed their

babies for a long duration, whereas mothers with controlled motivation breastfeed their babies for a short duration. In our study, mothers with autonomous motivation breastfeed their babies for a long duration, In addition, advanced age, high level of education, nonsmoking status and support for breastfeeding were factors that positively affected breastfeeding motivation. Therefore, prior to providing any breastfeeding support, health professionals/nurses must evaluate mothers' motivation level and determine key factors (social support, being knowledgeable about breastfeeding, self-efficacy) positively affecting their autonomous motivation.

Disclosure statement

No potential conflict of interest was reported by the authors.

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