



Effects of the physical activity level on breastfeeding attitude in the postpartum period

Doğum sonu dönemde fiziksel aktivite düzeyinin emzirme tutumuna etkisi

Gamze Yıldız¹, Zeliha Burcu Yurtsal²

¹Sivas Cumhuriyet University, Institute of Health Sciences, Midwifery Department, Sivas, Türkiye

²Sivas Cumhuriyet University, Faculty of Health Sciences, Midwifery Department, Sivas, Türkiye

ABSTRACT

Aim: This study was conducted to investigate the effects of physical activity level on breastfeeding attitude in the postpartum period.

Method: The study is a cross-sectional descriptive type study. Of the breastfeeding mothers who presented to the pediatric outpatient clinic of Suşehri State Hospital between September 2019 and January 2020; 100 mothers who accepted to participate in the study were included in the study. The study data were collected by using the Personal Information Form, International Physical Activity Questionnaire, and Breastfeeding Attitude Assessment Scale. To analyze the study data, the Statistical Package for the Social Sciences (SPSS) 23.0 was used. P-values less than 0.05 were considered statistically significant.

Results: Of the mothers participating in the study, 57% did not do any physical activity before and during pregnancy, and 64% did not do any physical activity in the postpartum period. The mean score they obtained from the International Physical Activity Questionnaire was 470.09±316.64. Their activity levels were low in the postpartum period. The mean score they obtained from the Breastfeeding Attitude Assessment Scale was 108.91±13.58, which was above the medium level. There was a moderately significant positive correlation between the mean scores the mothers obtained from the International Physical Activity Questionnaire and Breastfeeding Attitude Assessment Scale ($t=4.155$; $p<0.001$).

Conclusion: The participating mothers' breastfeeding attitudes improved as their physical activity levels increased. Accordingly, it is recommended that trainings on the benefits of physical activity and breastfeeding should be planned for mothers.

Keywords: breastfeeding; physical activity; postpartum period

ÖZ

Amaç: Bu çalışma doğum sonu dönemde fiziksel aktivite düzeyinin emzirme tutumuna etkisini incelemek amacıyla yapılmıştır.

Yöntem: Kesitsel tanımlayıcı tipte olan araştırma Eylül 2019-Ocak 2020 tarihleri arasında Suşehri Devlet Hastanesi çocuk polikliniğine başvuran emziren anneler arasından araştırmaya katılmayı kabul eden 100 anne ile gerçekleştirilmiştir. Araştırma verileri Kişisel Bilgi Formu, Uluslararası Fiziksel Aktivite Anketi ve Emzirme Tutumunu Değerlendirme Ölçeği kullanılarak elde edilmiştir. Araştırma verilerinin değerlendirilmesinde SPSS 23.0 kullanılmıştır. Verilerin değerlendirilmesinde $p<0.05$ değeri anlamlı kabul edilmiştir.

Bulgular: Araştırmada annelerin %57'sinin gebelik öncesi ve gebelik döneminde, %64'ünün ise doğum sonu dönemde fiziksel aktivite yapmadığı belirlenmiştir. Araştırmada; annelerin Uluslararası Fiziksel Aktivite Anketi'nden 470.09±316.64 puan aldıkları, doğum sonrası dönemde aktivite düzeylerinin düşük seviyede olduğu ve Emzirme Tutumunu Değerlendirme Ölçeği'nden 108.91±13.58 puan aldıkları, doğum sonrası emzirme tutumlarının orta puanın üzerinde olduğu belirlenmiştir. Araştırmada annelerin Uluslararası Fiziksel Aktivite Anketi puanları ile Emzirme Tutumunu Değerlendirme Ölçeği puanları arasında pozitif yönde orta düzeyde anlamlı bir ilişkinin olduğu belirlenmiştir ($t=4.155$; $p<0.001$).

Sonuçlar: Annelerin fiziksel aktivite düzeylerinin artması ile emzirme tutumlarının da arttığı belirlenmiştir. Bu doğrultuda, annelere fiziksel aktivite ve emzirmenin yararları hakkında eğitimlerin planlanması önerilmektedir.

Anahtar kelimeler: doğum sonu dönem; emzirme; fiziksel aktivite

Introduction

A woman goes through many physiological stages throughout her life. Postpartum period and lactation are two of these physiological stages. The postpartum period covers a six-week period during which all the system organs, including the reproductive organs, return to their pre-pregnant state (Bilgin & Potur, 2010; Karacam & Eryılmaz, 2008; Ozturk, 2014). Lactation is the stage during which breast milk is produced (Golbası & Egri, 2010; Ince et al., 2010). Breastfeeding is the healthiest method of delivering breast milk to babies (Bilgin & Potur, 2010). It is assumed that breastfeeding provides significant health benefits to mothers and their babies, and therefore, mothers' physical health should be better supported while they breastfeed (Schwarz & Nothnagle, 2015). The World Health Organization (WHO) defines physical activity as bodily movements (mopping floors,

ironing, working at work, etc.) that require energy produced by skeletal muscles (WHO, 2011). In the physical activity guidelines published by the United States Department of Health and Human Services for healthy pregnant and postpartum women, they are recommended to do moderate-intensity aerobic activity (equivalent to brisk walking) for 30 minutes during the day and at least 150 minutes in seven days (ACOG, 2015). Physical activity in the postpartum period is known to improve the mood, stress and energy level of the mother. Despite all the known benefits of physical activity, breastfeeding women avoid exercising, because they think that physical activity is no affect to the production or composition of breast milk. In several studies, whether an acute or regular participation in exercise affects the volume or composition of breast milk has been investigated, and exercise has been determined not to have a negative effect on milk volume or its



macronutrient content when it is performed alone or along with calorie restriction (Dewey et al., 1994; Lovelady et al., 2000; McCrory et al., 1999). It is also known that exercise done during breastfeeding does not have a harmful effect on the amount and structure of breast milk, infant development and maternal health (Carey & Quinn, 2001; Wright et al., 2002). It is thought that possible health risks will be reduced by providing training on postpartum physical activity to mothers, breastfeeding attitudes will improve with physical activity, and healthier individuals will be raised with learned behavior changes. Our literature review revealed a gap in the literature related to studies in which the effects of mothers' physical activity levels on their breastfeeding attitudes in the postpartum period were investigated. Therefore, our study was aimed at investigating the effects of physical activity level on postpartum women's breastfeeding attitudes.

Methods

The study was designed as a descriptive and cross-sectional study in order to investigate the relationship between the physical activity level and breastfeeding attitude in postpartum women.

Population of the study

The population of the study included 350 healthy breastfeeding mothers with healthy babies in the postpartum period (6 weeks-6 months) who presented to the Sivas Susehri State Hospital pediatric outpatient clinic between September 2019 and January 2020. According to the power analysis performed, the minimum number of individuals to be included in the study was calculated as 74 people. Considering the possibility of losses during the study, we decided to include more people in the sample. Thus, the study was completed with 100 healthy postpartum mothers. To calculate the sample size, the MedCalc (v20.023 Trial version) program was used. Of the mothers, those who agreed to participate in the study were informed about the study, and their written consent was obtained.

Data collection

Personal information form

The form consists of 21 items questioning the participating mothers' socio-demographic characteristics, and birth-, motherhood and breastfeeding-related characteristics. Whether they do physical activities in the postpartum period was also questioned.

International Physical Activity Questionnaire (IPAQ)

The short form of the IPAQ was developed by Craig et al. (2003) to determine the physical activity levels of individuals aged 15-65 years. The validity and reliability study of the Turkish version of the IPAQ was conducted by Ozturk (2005). The IPAQ consists of seven questions about the amount of time the person spent for walking, doing moderate-vigorous activities, and sitting in the past week. The amount of energy spent for activities is calculated with the Metabolic Equivalent of Task (MET)-minutes per week score. The activity level is determined by the MET values obtained. MET values are classified as follows: low level: < 600 points, medium level: between 600 and 3000 points, and high level >3000 points (Genc et al., 2011; Vatansever et al., 2015).

Breastfeeding Attitude Assessment Scale (BAAS)

The BAAS developed by Arslan (1999) consists of 46 items whose responses are rated on a 5-point Likert type scale. As the score increases, it is evaluated that the breastfeeding

attitude is positive. The Cronbach's alpha value of the BAAS was 0.63 in its validity/reliability study (Arslan, 1999) and 0.64 in the present study.

Statistical analysis

Statistical analysis of the data was performed on the computer using the Statistical Package for the Social Sciences 23.0. Whether the data were normally distributed or not was determined by using the Kolmogorov-Smirnov (K-S) test. The mean score, standard deviation, maximum and minimum values of the International Physical Activity Questionnaire and Breastfeeding Attitude Assessment Scale and their sub-dimensions were calculated based on the data obtained. To find out whether there was a difference between the mean values in independent groups, the t-test was used for two groups, ANOVA was used for more than two groups, if the data were not normally distributed, Mann Whitney U test was used and the Kruskal Wallis-H one-way analysis of variance test was used for more than two independent groups. In the analysis of variance, the difference between the groups was examined with the Tukey Post Hoc test and Tamhane's T2 test. In order to reveal the relationship between the variables, Pearson Correlation Coefficient analysis was used for the variables conforming to the normal distribution. Linear Regression analysis was used to determine the effect of the mothers' physical activity level on their breastfeeding attitude in the postpartum period. In the analysis of the data, p-values less than 0.05 were considered statistically significant.

Ethical issues

Before the study was conducted, ethical approval was obtained from Sivas Cumhuriyet University Non-Interventional Clinical Research Ethics Committee (2019-08/14) and permission was obtained from the Chief Physician of Susehri State Hospital where the study was to be conducted. To administer the IPAQ and BAAS to obtain the study data, permissions were obtained from the authors of the scales via e-mail. During the data collection phase, the mothers who agreed to participate in the study and were included in the sample were informed about the study and their written consent was obtained.

Results

Table 1. Relationship between the means scores between the IPAQ and BAAS

IPAQ	BAAS	
	r ^a	0.387
	p	0.000*

IPAQ: International Physical Activity Questionnaire; BAAS: Breastfeeding Attitude Assessment Scale

The analysis of the descriptive characteristics of the mothers demonstrated that their mean age was 26.83±4.15 (20-36) years. Of them, 46% were in the age group of 25-29 years, 41% were high school graduates, 88% were unemployed, 51% had income equal to their expenses, 84% had nuclear families, 1% was smokers and 51% had a child.

Table 2. Distribution of the means scores of IPAQ and BAAS

	Number of the Items	Mean ±SD	Median	Min-Max	Range
IPAQ	7	470.09±316.64	459	0-1128	1128
BAAS	46	108.91±13.58	109	79-134	55

IPAQ: International Physical Activity Questionnaire; BAAS: Breastfeeding Attitude Assessment Scale

Table 3. Comparison of the mothers' physical activity status, and the mean scores they obtained from the IPAQ and BAAS

Characteristics	n	IPAQ	Test value	P value	BAAS	Test value	P value
		Mean±SD			Mean±SD		
Doing physical activity before and during pregnancy							
Yes	43	661.53±297.39	t=6.152	0.000	114.02±14.00	t=5.997	0.000
No	57	325.65±248.06			105.05±11.9		
Doing physical activity during the postpartum period							
Yes	36	706.25±300.61	t=6.730	0.000	115.83±14.26	t=4.120	0.000
No	64	337.24±239.88			105.01±11.57		
Reason for not doing physical activity* (n= 64)							
Not having enough time	53	330.49±248.53	F=0.074	0.929	104.21±11.16	F=0.101	0.904
Thinking that postpartum exercise is inconvenient	9	345.00±207.88			103.50±3.53		
Thinking that it will adversely affect breast milk	2	364.00±215.14			106.11±17.25		
Level pf of postpartum physical activity							
Low	69	301.17±199.55	t=-13.194	0.000	104.43±12.92	t=-5.626	0.000
Moderate	31	846.04±170.04			118.89±9.021		
IPAQ: International Physical Activity Questionnaire; BAAS: Breastfeeding Attitude Assessment Scale							

IPAQ: International Physical Activity Questionnaire; BAAS: Breastfeeding Attitude Assessment Scale

As for their birth, pregnancy and breastfeeding-related characteristics, of the mothers, 50% gave birth by cesarean section, 50% gave birth vaginally, 63% had babies aged 2-4 months and 55% stated that their babies were followed by a pediatrician. Of the mothers, 86% gave breast milk to their babies as the first food, and 81% exclusively breastfed their babies for the first six months. Of the mothers who received information about breast milk and breastfeeding, 75% received the information from healthcare professionals, 46% from family members, and 5% from prenatal education classes/courses. As for doing physical activity, 57% did not do any physical activity before and during pregnancy, 43% did physical activity, 64% did not do any physical activity in the postpartum period, and 36% did physical activity. Of those who did physical activity in the postpartum period, 69% did it at a low level. As is seen in Table 1, there was a positive moderate correlation between the mean scores the mothers obtained from the IPAQ and BAAS ($r=0.387$; $p<0.01$) ($p<0.05$). This result suggests that a mother's breastfeeding attitudes improve as her postpartum physical activity level increases. A one-unit increase in their postpartum physical activity level improved their breastfeeding attitude by 0.017 units. As is seen in Table 2, an average of 470.09 ± 316.64 (median 459; min.-max.: 0-1128) points obtained from the International Physical Activity Questionnaire indicates that the mothers' activity levels were low in the postpartum period, and the average score of 108.91 ± 13.58 (median 109; min.-max.: 79-134) obtained from the Breastfeeding Attitude Assessment Scale indicates that the mothers' postpartum breastfeeding attitudes were above the middle score.

As is seen in Table 3, the comparison of physical activity status of the mothers and their mean score for the BAAS demonstrated that there was statistically significant relationship between their BAAS score, and their physical activity status before, during and after pregnancy, and postpartum physical activity level ($p<0.05$).

As is seen in Table 4, the difference between the mean scores the mothers obtained from the IPAQ and Breastfeeding Attitude Assessment Scale (BAAS) in terms of the variables such as education level and age was statistically significant ($p<0.05$). The difference between the mean scores the mothers obtained from the IPAQ in terms of the variables such as the income status, and the number of children was statistically significant ($p<0.05$).

Table 4. Comparison of the mothers' descriptive characteristics and the mean scores of IPAQ and BAAS

Characteristics	n	IPAQ Mean±SD	BAAS Mean±SD
Age (years)			
20-24 ¹	31	420.29±252.44	103.03±11.83
25-29 ²	46	546.35±359.31	111.54±15.17
≥30 ³	23	384.62±277.30	111.56±9.86
Test value		F=2.640	F=4.506
Significance level		p=0.077	p=0.013
Difference		-	2-3>1
Education status			
Only literate ¹	2	333.00±190.91	98.50±3.53
Primary school ²	11	335.04±279.84	109.00±15.10
High school ³	41	345.98±266.11	102.04±11.43
University ⁴	46	618.94±312.14	115.45±12.12
Test value		F=7.521	F=9.319
Significance level		p=0.000	p=0.000
Difference		4>2-3	4>3
Employment status			
Employed	12	580.25±327.91	113.33±13.46
Unemployed	88	455.06±313.99	108.30±13.56
Test value		Z=-1.099	Z=-1.205
Significance level		p=0.272	p=0.228
Income status			
Income less than expenses ¹	25	367.26±248.74	105.72±12.00
Income equal to expenses ²	51	452.18±326.63	108.21±13.76
Income more than expenses ³	24	615.22±317.58	113.70±13.97
Test value		F=4.172	F=2.314
Significance level		p=0.018	p=0.104
Difference		3>1	-
Family type			
Nuclear family	84	463.00±312.19	109.23±13.78
Extended family	16	507.28±347.32	107.18±12.76
Test value		t=-0.511	t=0.552
Significance level		p=0.611	p=0.582
Smoking status			
Smoker	1	132.00±0.00	107.00±0.00
Non-smoker	99	473.50±316.39	108.92±13.648
Test value		Z=-1.179	Z=-0.208
Significance level		p=0.238	p=0.835
Number of children			
1	59	547.46±325.99	110.54±13.91
≥2	41	358.73±269.26	106.56±12.88
Test value		t=3.052	t=1.450
Significance level		p=0.003	p=0.150

IPAQ: International Physical Activity Questionnaire; BAAS: Breastfeeding Attitude Assessment Scale

As is seen in Table 5, the difference between the mean scores the mothers obtained from the IPAQ and BAAS in terms of the variables such as birth type, age of the baby, health personnel who routinely follows the baby, first food given to the baby, time when breast milk is first given to the baby after birth, the food given to the baby for the first 6 months, the duration of breastfeeding, the frequency of breastfeeding, the status of receiving information about breast milk and breastfeeding was not statistically significant ($p>0.05$). However, of the mothers, those who gave birth vaginally, whose babies were ≥ 5 months old, who first exclusively breastfed the baby, who breastfed the baby within the first half hour after birth, who exclusively breastfed the baby within the first 6 months, who breastfed the baby for 15 -20 minutes each time, and who breastfed the baby every two hours, obtained higher scores from the BAAS ($p<0.05$).

Discussion

In our study, the comparison of the physical activity status of the mothers and the mean scores they obtained from the overall BAAS demonstrated that of the mothers, those who did physical activity before, during and after pregnancy and who performed moderate physical activity obtained higher mean scores ($p<0.05$). Although considerable research has been devoted to the benefits of physical activity and breastfeeding for both mothers and infants, the relationship between these important issues has seldom been studied. In their study, Wallace et al. (1992) investigated whether there was lactic acid accumulation in breast milk after exercise and reported that only 4 out of 58 women surveyed often had difficulty in breastfeeding their babies after they exercised. Similarly, in a case report published by Duffy (1997), it was reported that the exclusively breastfed baby cried inconsolably shortly after being breastfed after the mother ran 5 miles. However, it was proven that the concentration of lactic acid in breast milk was not affected by the 5-mile run; thus, it was thought that there might be other reasons for the baby's crying (Duffy, 1997). However, in several studies, it was determined that the amount and quality of milk, and infant growth were not adversely affected by moderate physical activity when exercise was done alone or with calorie restriction (Carey & Quinn, 2001; Clap, 1998; Dewey & McCrory 1994; Lovelady et al., 2000; Sampsel et al., 1999; Schwarz & Nothnagle, 2015; Wright et al., 2002). In a prospective cohort study conducted with Vietnamese women, it was reported that breastfeeding outcomes were better in women who were physically active during breastfeeding (Nguyen et al., 2017). In our study; the comparison of the mean score for the overall IPAQ and the mothers' birth-, pregnancy- and breastfeeding-related characteristics and their physical activity levels demonstrated that there was no statistically significant difference between them ($p>0.05$). Consistent with our study, in a cohort study conducted in Australia, the intensity levels of postpartum exercise were not associated with duration of any breastfeeding up to twelve months postpartum and of exclusive breastfeeding up to six months postpartum (Su et al., 2007). In our study, of the mothers who did not do any physical activity, 82% stated that they did not have enough time to exercise 14% thought that postpartum exercise was inconvenient, and 3% thought that physical activity in the postpartum period would

Table 5. Comparison of the mothers' birth, pregnancy and breastfeeding-related characteristics and the mean scores they obtained from the IPAQ and BAAS

Characteristics	n	IPAQ Mean \pm SD	BAAS Mean \pm SD
Type of birth			
Cesarean section	50	475.24 \pm 287.17	107.96 \pm 15.09
Vaginal	50	464.93 \pm 346.47	109.86 \pm 11.95
Test value		t=0.153	t=-0.698
Significance level		p=0.872	p=0.487
Baby's age (months)			
2-4	63	489.38 \pm 290.98	108.33 \pm 13.23
≥ 5	37	437.22 \pm 357.94	109.89 \pm 14.28
Test value		t=0.752	t=-0.552
Significance level		p=0.429	p=0.582
Health personnel routinely follows the baby			
Family physician	10	508.95 \pm 311.66	109.00 \pm 10.47
Pediatrician	55	475.55 \pm 336.51	108.07 \pm 15.62
Midwife/ Nurse	35	450.38 \pm 292.35	110.20 \pm 10.83
Test value		F=0.149	F=0.259
Significance level		p=0.862	p=0.773
Food given to the baby first			
Breast milk	86	493.74 \pm 325.27	111.63 \pm 12.006
Formula	14	324.75 \pm 212.781	92.14 \pm 10.48
Test value		t=1.875	t=5.725
Significance level		p=0.064	p=0.000
Time when the baby was breastfed first after birth			
First Half Hour ¹	51	518.76 \pm 353.27	112.17 \pm 12.07
First Hour ²	18	467.91 \pm 267.29	110.83 \pm 10.71
First Two Hours ³	19	422.52 \pm 270.29	99.10 \pm 16.60
First Day ⁴	12	341.75 \pm 268.72	107.66 \pm 12.03
Test value		F=1.210	F=4.972
Significance level		p=0.310	p=0.003
Difference		-	1>3
Food given to the baby in the first 6 months			
Only breast milk	81	497.48 \pm 327.47	112.61 \pm 11.38
Breast milk and formula	19	353.28 \pm 238.80	93.10 \pm 10.62
Test value		t=1.807	t=6.805
Significance level		p=0.074	p=0.000*
Duration of breastfeeding (minutes)			
5-10	11	506.45 \pm 259.67	107.72 \pm 12.08
10-15	46	432.03 \pm 341.81	108.32 \pm 14.13
15-20	36	533.25 \pm 313.17	110.08 \pm 13.95
≥ 20	7	338.14 \pm 189.03	108.57 \pm 12.25
Test value		F=1.158	F=0.143
Significance level		p=0.330	p=0.934
Breastfeeding frequency			
Every hour	16	409.50 \pm 241.81	107.56 \pm 13.84
Every two hours	30	531.31 \pm 317.34	112.66 \pm 12.48
Whenever the cries	54	454.01 \pm 334.85	107.22 \pm 13.91
Test value		F=0.922	F=1.666
Significance level		p=0.401	p=0.194
Obtaining information on breast milk and breastfeeding			
Yes	99	463.74 \pm 311.79	108.78 \pm 13.59
No	1	198.0 \pm 0.00	121.00 \pm 0.00
Test value		Z=-1.892	Z=-0.884
Significance level		p=0.093	p=0.377
Duration of exclusive breastfeeding (months)			
0-2 ¹	24	360.75 \pm 214.73	98.45 \pm 12.89
2-4 ²	13	536.19 \pm 310.19	108.30 \pm 16.06
4-6 ³	54	499.33 \pm 355.04	114.40 \pm 10.77
6-9 ⁴	9	490.66 \pm 281.88	104.66 \pm 9.75
Test value		KW=3.676	KW=21.426
Significance level		p=0.299	p=0.000
Difference		-	3>1, 3>4

IPAQ: International Physical Activity Questionnaire; BAAS: Breastfeeding Attitude Assessment Scale

adversely affect breast milk. In the literature, consistent with our study results, among the most common barriers to being physically active were lack of energy, fatigue or lethargy, unsuitable weather conditions (Marwa et al., 2021), lack of time, lack of motivation (Doran & Davis, 2011), and lack of an appropriate exercise program (Evenson et al., 2009), increase in lactic acid in breast milk after exercise and concerns that increased lactic acid would cause taste changes in infants (Wright et al., 2002). In another study, ongoing pain and fatigue were stated as the factors affecting women's participation in physical activities in the postpartum period (Liva et al., 2021).

Limitations of the study

The fact that the pediatric outpatient clinic did not provide services for some weeks actively while the study was conducted, that the outpatient clinic services did not work except for emergencies as of March 2020 within the scope of COVID-19 measures, and the lack of sufficient studies on the subject caused limitations in the discussion of the findings.

Conclusion

The participating mothers' breastfeeding attitudes improved as their physical activity levels increased. The results of the present study suggest that identifying the causes of physical inactivity in women and encouraging them to do physical activities will enable them to maintain their current health status in all periods of life (pre-pregnancy, pregnancy, postpartum and advanced age). It is thought that physically active mothers will have a high level of self-perception, will be motivated to breastfeed their babies, and will raise healthier generations thanks to learned behavior changes. While they give trainings to mothers, midwives should enlighten mothers that they and their babies can benefit from both exercising and breastfeeding.

Ethics Committee Approval

Ethics committee approval was obtained from Sivas Cumhuriyet University Non-Interventional Clinical Research Ethics Committee (Board Decision No: 2019-08/14) on August 7, 2019.

Informed Consent

Written consent was obtained from the women participants.

Peer-Review

Externally peer-reviewed.

Author Contributions

G.Y.: Concept, Design, Literature Review, Data Collection and/or Processing, Article Writing.

Z.B.Y.: Concept, Design, Literature Review, Article Writing, Critical Review/Critical Reading.

Conflict of Interest

There is no conflict of interest.

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