ISSN: 2757-6817

Unika Sağlık Bilimleri Dergisi
Unika Journal of Health Sciences

Araştırma Makalesi/Research Article

Investigation of the Relationship Between Exercise Attitudes of Pregnant Women and Their Motherhood and Body Perceptions

Gebelerin Egzersiz Tutumu ile Annelik ve Beden Algısı Arasındaki İlişkinin İncelenmesi

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Abstract: Objective: This study aimed to investigate the relationship between pregnant women's exercise attitude and their perceptions of motherhood and body. Methods: This was a cross-sectional, comparative, and correlational study. Data were collected using a descriptive characteristics form, the Exercise Attitude Scale for Pregnant Women, and the Self-Perception of Pregnants Scale. The study sample consisted of 262 pregnant women who applied to a University Hospital, between July and October 2022. Data were assessed with t-test, Pearson correlation, and multiple linear regression analysis. Results: There was found no relationship between Exercise Attitude Scale scores and the mean scores motherhood and body perception. However, the relationship between Exercise Attitude Scale's knowledge level and maternal perception score was positive. The relationship between Exercise Attitude Scale's barrier sub-dimension score and maternal perception was negative, while the relationship between the Exercise Attitude Scale sub-dimension barrier and body perception was positive. Pregnant women who were informed about exercise and believed in the benefits of exercise had positive maternal and body perceptions. Conclusion: To increase the adaptation of pregnant women their pregnancy, their exercise knowledge should be increased and their barriers should be reduced.
Keywords: Body perception, Exercise, Motherhood perception, Pregnant women.

Öz: Amaç: Bu çalışma, gebe kadınların egzersiz tutumu ile annelik ve beden algıları arasındaki ilişkiyi araştırmayı amaçlamıştır. Gereç ve Yöntem: Bu kesitsel, karşılaştırmalı ve korelasyonel bir çalışmadır. Veriler, tanılama formu, Gebeler İçin Egzersiz Tutum Ölçeği ve Gebelerin Kendilerini Algılama Ölçeği kullanılarak toplandı. Araştırmanın örneklemini Temmuz-Ekim 2022 tarihleri arasında bir Üniversite Hastanesine başvuran 262 gebe oluşturmuştur. Veriler t testi, pearson korelasyonu ve çoklu doğrusal regresyon analizi ile değerlendirilmiştir. Bulgular: Egzersiz Tutum Ölçeği puanları ile annelik, beden algısı puan ortalamaları arasında ilişki bulunamadı. Ancak Egzersiz Tutum Ölçeği bilgi düzeyi ve annelik algısı puanı arasındaki ilişki pozitif yönde bulunmuştur. Egzersiz Tutum Ölçeği engel alt boyut puanı ile annelik algısı arasındaki ilişki negatif, Egzersiz Tutum Ölçeği alt boyut engeli ile beden algısı arasındaki ilişki ise pozitiftir. Egzersiz konusunda bilgi sahibi olan ve egzersizin faydalarına inanan gebelerin annelik ve beden algıları olumludur. Sonuç: Gebelerin kendi gebeliklerine uyumunu arttırmak için egzersiz bilgilerinin arttırılması ve engellerinin azaltılması gerekmektedir.
Anahtar Kelimeler: Annelik algısı, Beden algısı, Egzersiz, Gebe kadın.

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Makale Gönderim:16.02.2024 Makale Kabul:19.04.2024 Makale Yayın:27.08.2024

Introduction

Exercise during pregnancy is safe, provided there are no contraindications and high-risk activities are avoided (Mottola et al., 2018). The American Society of Gynecology and Obstetrics recommends that a daily program of at least 20-30 minutes of moderate-intensity aerobic exercise be developed and arranged with pregnant women without contraindications (ACOG, 2020). Research has shown that regular physical activity during pregnancy benefits pregnant women's physical and psychological health. For example, it prevents weight gain, reduces gestational diabetes risk, supports vaginal delivery, reduces labor induction risk, and accelerates postpartum recovery. It also reduces psychological problems, such as fatigue, stress, and depression, and positively affects breastfeeding outcomes (Davenport et al., 2018; Dipietro et al., 2019; Ferreira, Guerra, Silva, do Rosário and Pereira, 2019). While pregnant women are aware of the possible benefits of exercising, they perceive pregnancy as a barrier to it. The most frequently reported barriers include risk to the fetus, lack of time, bad weather, and inadequate knowledge or education (Vanstone, Kandasamy, Giacomini, DeJean and McDonald 2017; Janakiraman, Gebreyesus, Yihunie and Genet., 2021; Bayisa et al., 2022).

To develop a positive exercise attitude, it is important to identify women's current exercise knowledge, including their knowledge of its benefits during pregnancy and conditions it may prevent (Toprak Celenay, Calik Var and Ozer Kaya, 2021). Some published studies show that pregnant women have poor knowledge of exercise practice (Mbada et al., 2014; Janakiraman et al., 2021; Siyad et al., 2021), while others indicate that they have a good level of knowledge about physical activity (Asante, Osei, Abdul-Samed and Nanevie 2022; Gari, Aldharman, Alalawi, Alhashmi Alamer, Alnashri and Bomouzah, 2022). A South African study emphasized that women saw pregnancy as a period of relaxation and that there was a need for interventions to encourage exercise during pregnancy (Okafar and Goon, 2021).

Pregnant women's self-perception includes motherhood and body perceptions during pregnancy. While motherhood perception determines the pregnant woman's adjustment process to motherhood, body perception during pregnancy reflects the pregnant woman's perceptions about changes in her body (Kumcağiz, Ersanli, and Murat, 2017). For expectant mothers to adapt to their pregnancy, motherhood role, and body changes, it is essential to identify and prevent the risks they may face (Brown, Rance and Warren, 2015). An inadequate motherhood perception by the pregnant woman negatively affects her mental health and the mother-infant relationship. However, a positive body perception by the pregnant woman positively affects her mental health and self-esteem and her baby's health (Kumcağiz et al., 2017). The most common

physical change affecting body perception during pregnancy is weight gain. Küçükkaya et al. found a strong positive relationship between the weight gained during pregnancy and the acceptance of pregnancy and body image (Küçükkaya, Dindar, Erçel and Yılmaz, 2020). Güleroğlu and Uludağ reported that having a positive body image during pregnancy was important for healthy pregnancy progress and quality of life (Tosun Güleroğlu and Uludağ, 2022).

While no published studies have examined physical activity and motherhood perceptions in pregnant women, some studies have explored the relationship between exercise and body image. For example, one study indicated that eating disorders, a body mass index above the standards, and low physical activity increased dissatisfaction with body image (Linde, Lehnig, Nagl, Stepan, and Kersting, 2022). Another study found no significant relationship between participation in physical activity and body image (Kirkwood and Leicht, 2019).

Health professionals play an important role in determining maternal needs, supporting mothers' knowledge and skills, and facilitating the transition to motherhood (Korukcu, Bulut, and Kukulu, 2019). Investigating attitudes toward exercise during pregnancy, creating exercise programs for pregnant women, and maximizing exercise compliance are crucial for adapting to motherhood (Toprak Celenay et al., 2021). However, pregnant women's exercise attitudes can affect their motherhood and body image perceptions. Due to the lack of published knowledge on this topic, this study examined the effect of pregnant women's exercise attitudes on their motherhood and body perceptions. This study reveals variables related to pregnant women's exercise attitudes, motherhood, and body image.

This study aims to examine the relationship between exercise attitudes of pregnant women and motherhood and body perceptions.

Methods

This cross-sectional, comparative, and correlational study was conducted between July and October 2022. The study population comprised pregnant women who presented to the Obstetrics and Gynecology Polyclinic at the University Hospital in Denizli Province in Turkey's inner west between July and October 2022. The study's sample size was calculated as ≥195 pregnant women using the G Power 3.1.9.2 software, considering a power of 85%, a type I error margin of 5%, and an effect size of 0.20 (Faul et al., 2007). The sample comprised pregnant women aged ≥18 years who volunteered to participate in the study and had no communication problems (language, hearing, or mental). Women with high-risk pregnancies (threatened miscarriage, placenta previa, placental abruption, threatened preterm birth,

premature rupture of membranes, preeclampsia and eclampsia, preterm birth, intrauterine growth restriction, past term, etc.) constituted the exclusion criteria of the study. The analysis included 262 pregnant women since eight participants responded to the questionnaire inconsistently, and 10 pregnant women refused to participate.

The study data were collected using a descriptive characteristics form prepared by the researchers and comprising questions on participants' demographic and obstetric characteristics, the Exercise Attitude Scale for Pregnant Women (EAS), and the Self-Perception of Pregnants Scale (SPPS). A third researcher collected consent forms from pregnant women who presented to the polyclinic and asked them to complete the questionnaire. Data collection took approximately 15 minutes for each participant.

Descriptive Characteristics Form: This form, created by the researchers, had 13 questions on participants' age, gender, education level, employment status, perceived income level, marital status, family type, the status of having children, obstetric characteristics (conception method, risk status during pregnancy, and the status of having a desired pregnancy), and exercise status before and during pregnancy.

Exercise Attitude Scale for Pregnant Women (EAS): Toprak Celenay et al. developed this scale to measure pregnant women's attitudes toward exercise. It comprises two sub-dimensions: "knowledge and benefit" (24 items) and "barrier" (13 items). Each item is scored with the following options: strongly disagree (1), disagree (2), undecided (3), agree (4), and strongly agree (5). The barrier sub-dimension is used to measure the positive attitude of pregnant women toward exercising despite all barriers. In this context, items on the barrier sub-dimension are reverse-coded. This scale's scores range from 37 to 185, and high scores indicate a positive attitude toward exercise. Cronbach's alpha was 0.90 for the total scale, 0.91 for the knowledge and benefit sub-dimension, and 0.87 for the barrier sub-dimension (Toprak Celenay et al., 2021). In this study, Cronbach's alpha values were 0.75, 0.89, and 0.87, respectively.

Self-Perception of Pregnants Scale (SPPS): Kumcagiz et al. developed this scale to measure how pregnant women self-perception. It comprises two sub-dimensions: "pregnancy-related motherhood perception" (7 items) and "pregnancy-related body perception" (5 items). Each sub-dimension is evaluated separately and uses a four-point Likert-like scale: always (4), usually (3), sometimes (2), and never (1). This scale does not have a total score. In the pregnancy-related motherhood perception sub-dimension, which comprises positive questions, high scores indicate a high pregnancy-related motherhood perception and low scores indicate a low one. The pregnancy-related motherhood perception sub-dimension scores range from 7 to

28. In the pregnancy-related body perception sub-dimension, comprising negative questions, high scores indicate a negative pregnancy-related body perception and low scores indicate a positive one. This sub-dimension's scores range from 5 to 20. Cronbach's alpha values for the original scale's first and second sub-dimensions were 0.86 and 0.75, respectively. (Kumcagiz et al., 2017). In this study, they were 0.93 and 0.781, respectively.

The data were analyzed using SPSS software (version 23.0; IBM, Armonk, NY, USA). The data's normality was evaluated using the Skewness and Kurtosis tests. The distribution was considered normal since the Skewness-Kurtosis coefficients were between -1.96 and +1.96 when divided by standard errors (Can, 2018). The t-test was used to assess whether pregnant women's exercise attitude and motherhood and body image perceptions differed according to their demographic characteristics. Pearson's correlation coefficient (r) was used to assess the relationships between exercise attitude and motherhood and body image perceptions. Multiple linear regression analysis was used to explain the effect of the EAS sub-dimensions on motherhood and body image perceptions. The significance level was set at 0.05.

Ethics Committee Approval: This study was conducted according to the principles of the Declaration of Helsinki. Ethics Committee approval (No: 10.186.1.96 111-20/06/2022) and official permissions were obtained for this study. Informed written consent was obtained from participants, and permission was obtained from the relevant authors to use the scales.

Results

In our study sample, 67.6% of participants were aged ≤30, 68.3% had a high school or higher education, 26.7% were employed, 33.6% had one child, 21.4% had a risky pregnancy, 81.3% had conceived willingly, and 18.3% exercised during pregnancy.

Their mean scores for the entire EAS (135.39±10.91) and its knowledge and benefit sub-dimension (93.63±9.77) were below average (i.e., negative). Their mean score for the EAS barrier sub-dimension (44.32±9.80) was above average, indicating low awareness of barriers.

Their mean score for the pregnancy-related motherhood perception sub-dimension (33.36±4.21) was above average (i.e., positive). Their mean score for the pregnancy-related body perception sub-dimension (7.97±2.43), comprising negative questions, was below average (Low score, positive perception).

When the participants' descriptive characteristics were compared with their mean scores for the EAS and the pregnancy-related motherhood and pregnancy-related body perception sub-

dimensions, their scale scores differed significantly according to the values of some variables ($p<0.05$). Scores for the entire EAS and its knowledge and benefit sub-dimensions were significantly higher in participants who had an undergraduate or higher education, were employed, and had equal income and expenses or more income than expenses ($p<0.05$). In addition, the EAS knowledge and benefit sub-dimension scores were significantly lower for participants with two or more children ($p<0.05$). The mean total EAS score was higher in older patients ($p<0.05$). The EAS barrier sub-dimension scores were significantly higher in participants who were aged >30 years, had secondary or below education, had two or more children, did not want pregnancy, and did not exercise before and during pregnancy ($p<0.05$). The mean score for the pregnancy-related motherhood perception sub-dimension was higher in participants who were aged ≤30 years, had undergraduate or higher education, had one child, conceived willingly, had no pregnancy-related risks, and exercised before and during pregnancy ($p<0.05$). The mean score for the pregnancy-related body perception sub-dimension was higher in participants who had a risky pregnancy or did not exercise during pregnancy ($p<0.05$) (Table 1).

A weak-to-moderate positive correlation was found between EAS knowledge and benefit sub-dimension scores and pregnancy-related motherhood perception sub-dimension scores ($r=0.342$, $p<0.05$). However, EAS knowledge and benefit sub-dimension scores were not correlated with pregnancy-related body perception sub-dimension scores ($p>0.05$). EAS barrier sub-dimension scores had a weak negative correlation with pregnancy-related motherhood perception sub-dimension scores ($r=-0.269$, $p<0.05$) and a weak positive correlation with pregnancy-related body perception sub-dimension scores ($r=0.199$, $p<0.05$) (Table 2) (figure 1).

Table 1: Comparison of Women's Demographic Characteristics and Obstetric History With Motherhood and Body Perception Characteristics (n=262)

Vari Charateristic	N (%)	EAS Mean (SD)	EAS Knowledge and benefit Mean (SD)	EAS Barrier Mean (SD)	Motherhood Mean (SD)	Body perception Mean (SD)
Age ≤30	177 (67,6)	134.27 (10.26)	94.07 (9.57)	42.66 (9.87)	26.11 (3.16)	7.88 (2.30)
>30	85 (32,4)	137.71 (11.89)	92.73 (10.18)	47.77 (9.01)	23.87 (3.90)	8.17 (2.69)
t/p		-2.407/0.017*	1.034/0.302	4.029/0.000***	4.980/0.000***	-0.900/0.369
Education level ≤Secondary school	83 (31,7)	133.05 (10.391)	88.783 (7.016)	46.940 (9.864)	24.193 (3.980)	8.217 (2.253)
≥High school	179 (68,3)	136.47 (11.01)	95.877 (10.07)	43.101 (9.67)	25.939 (3.22)	7.855 (2.51)
t/p		-2.381/0.018*	-5.797/0.000***	2.971/0.003**	3.780/0.000***	1.122/0.263
Employment status Yes	70 (26,7)	137.87 (9.53)	95.77 (11.15)	44.73 (10.63)	25.80 (3.47)	7.86 (2.84)
No	192 (73,3)	134.87 (10.32)	92.85 (9.13)	44.17 (9.61)	25.23 (3.59)	8.01 (2.27)
t/p		2.244/0.026*	2.157/0.052	0.407/0.684	1.137/0.257	-0.451/0.653
Economic status Income less than expenditures	58 (26,7)	131.33 (9.53)	90.62 (8.60)	43.66 (8.22)	24.95 (3.78)	8.22 (3.03)
Income equal to or more than expenditures	204 (73,3)	136.54 (11.03)	94.49 (9.94)	44.51 (10.31)	25.51 (3.50)	7.90 (2.24)
t/p		-3.268/0.001**	-2.689/0.008**	-0.577/0.514	-1.059/0.291	0.903/0.446
Number of children 0-1	174 (66,4)	135.26 (10.90)	95.06 (10.13)	42.72 (9.70)	26.72 (2.35)	7.94 (2.544)
≥2	88 (33,6)	135.63 (11.00)	90.81 (8.38)	47.48 (9.50)	22.75 (4.069)	8.30 (2.20)
t/p		-0.252/0.801	3.391/0.001**	3.776/0.000***	9.994/0.000***	-0.789/0.431
Risky state during pregnancy Yes	56 (21,4)	134.64 (11.16)	91.64 (10.53)	45.71 (8.87)	23.70 (4.00)	8.63 (2.53)
No	206 (78,6)	135.59 (10.86)	94.17 (9.51)	43.94 (10.12)	25.85 (3.30)	7.79 (2.38)
t/p		-0.565/0.570	-1.722/0.086	1.195/0.233	4.120/0.000***	2.293/0.023*
Intented Preganncy Yes	213 (81,3)	135.40 (11.02)	94.37 (9.82)	43.58 (10.02)	26.18 (3.01)	7.90 (2.48)
No	49 (18,7)	135.31 (10.55)	90.41 (8.99)	47.53 (8.61)	21.939 (3.77)	8.29 (2.19)
t/p		0.056/0.954	2.587/0.010**	-2.553/0.011*	8.462/0.000***	-1.010/0.314
Pre-pregnancy exercise habit Yes	85 (32,4)	136.18 (10.29)	98.24 (9.53)	40.17 (9.36)	26.51 (2.73)	7.60 (2.28)
No	177 (67,6)	135.01 (11.21)	91.42 (9.12)	46.31 (9.51)	24.85 (3.80)	8.15 (2.49)
t/p		0.813/0.403	5.583/0.000***	-.921/0.000***	3.606/0.000***	-1.710/0.088
Doing exercise during pregnancy Yes	48 (18,3)	135.58 (12.32)	102.06 (10.49)	35.98 (10.28)	26.63 (2.70)	7.31 (2.00)
No	214 (81,7)	135.34 (10.60)	91.74 (8.55)	46.19 (8.78)	25.11 (3.68)	8.12 (2.50)
t/p		0.139/0.900	7.236/0.000***	-.050/0.000***	2.698/0.001**	-2.084/0.038*

Table 2: The Correlation Between The Pregnant Women's Attitudes Toward Exercise and Self-Perception of Pregnant Women

	EAS	**EAS Knowledge and benefit**	**EAS Barrier**	**SPPS Motherhood**	**SPPS Body perception**
EAS	1				
EAS Knowledge and benefit	r=0.582 p=0.000***	1			
EAS Barrier	r=0.542 p=0.000***	r=-0.362 p=0.000***	1		
SPPS Motherhood	r=0.072 p=0.245	r=0.342 p=0.000***	r=-0.269 p=0.000***	1	
SPPS Body perception	r=0.057 p=0.360	r=-0.117 p=0.059	r=0.199 p=0.001**	r=-0.053 p=0.393	1

** p<0.05; ** p<0.01; *** p<0.001; test: pearson correlation coefficient.*

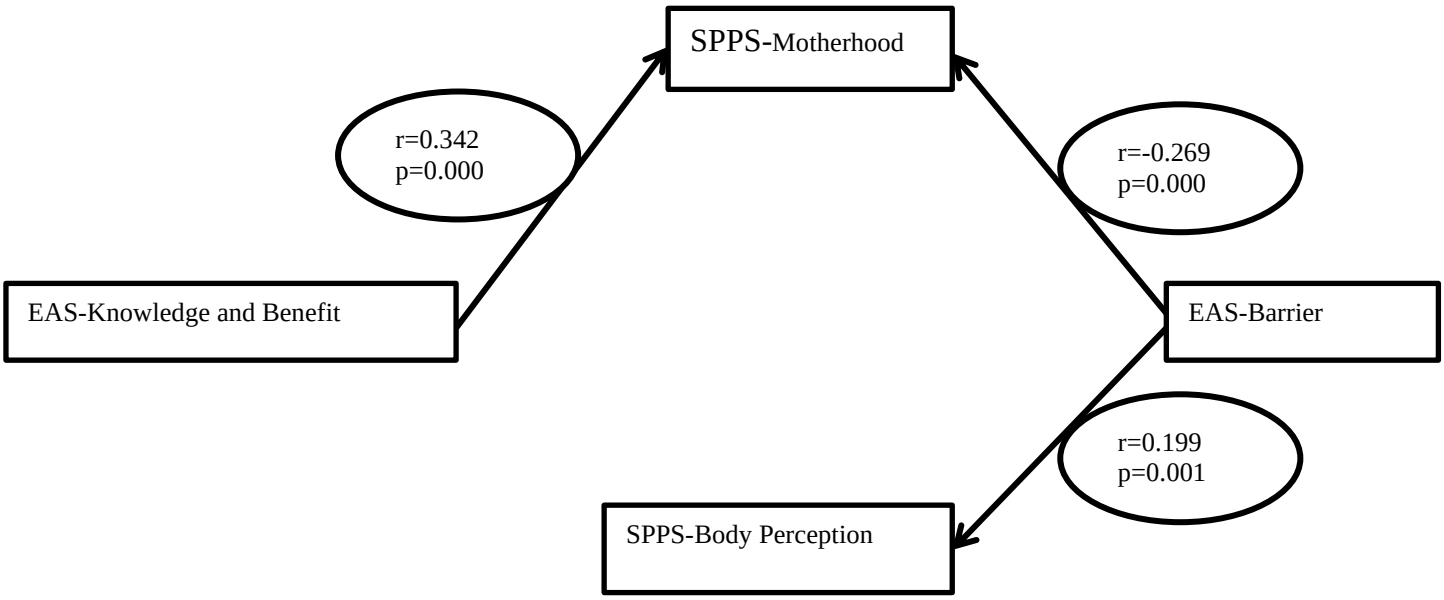

Figure 1. The Relationship Between Exercise Attitude Scale and Maternity Perception and Body Perception

With a low-to-moderate explanatory power, the participants' EAS knowledge and benefit sub-dimension scores significantly positively affected their pregnancy-related motherhood perception scores (R^2=0.117, p<0.05; Table 3).

With low explanatory power, the EAS barrier sub-dimension decreased the pregnancy-related motherhood perception score by 0.073 times (R^2=0.073, p<0.05) (Table 3).

With low explanatory power, the EAS barrier sub-dimension also increased the pregnancy-related body perception score by 0.040 times (R^2=0.040, p<0.05) (Table 3).

Table 3: Motherhood Level and Body Perceptin Level Based on EAS-Knowledge-Benefit and EAS-Barrier

						Motherhood Level	
	B	**SD**	**Beta**	**t**	**p value**	**95.0% CI for *B***	
						Lower Bound	**Upper Bound**
Constant	69.803	4.095		17.044	0.000***	61.739	77.868
EAS-Knowledge - benefit R = 0.342 R^2 = 0.117 adjusted R^2=0.114 F=34.511 p=0.000***	0.939	0.160	0.342	5.875	0.000***	0.624	1.253

						Motherhood Level	
	B	SD	Beta	t	p value	95.0% CI for *B*	
						Lower Bound	Upper Bound
Constant	63.256	4.242		14.913	0.000***	54.903	71.609
EAS-Barrier R = 0.269 R^2 = 0.073 adjusted R^2=0.069 F=20.327 p=0.000***	-0.746	0.165	-0.269	-4.509	0.000***	-1.072	-0.420

						Body Perception Level	
	B	SD	Beta	t	p value	95.0% CI for *B*	
						Lower Bound	Upper Bound
Constant	37.877	2.056		18.422	0.000***	33.828	41.925
EAS-Barrier R = 0.199 R^2 = 0.040 adjusted R^2=0.036 F=10.722 p=0.000***	0.808	0.247	0.199	3.274	0.001**	0.322	1.294

Discussion

Conscious and controlled exercise during pregnancy positively affects pregnant women's physical, mental, and psychosocial health (Gustafsson, Stafne, Romundstad, Mørkved, Salvesen, and Helvik, 2016). In our study, which evaluated the relationship between exercise attitude and motherhood and body self-perceptions of pregnant women, there was no relationship between exercise attitude total score and motherhood and body perception. But, there was a positive relationship between the EAS knowledge and benefit sub-dimension and

the pregnancy-related motherhood perception sub-dimension. There was also a negative relationship between the EAS barrier sub-dimension and the pregnancy-related motherhood perception sub-dimension and a positive correlation between the EAS barrier sub-dimension and the pregnancy-related body image perception sub-dimension. Discussing our study results in the context of published studies may be useful in supporting pregnant women's physical and psychosocial health.

In our study, the attitudes of pregnant women toward exercise were low. The rate of physical activity and exercise among women in Turkey is quite low, and one out of every two women does not comply with the physical activity recommendations of the World Health Organization (WHO, 2018). The weak attitude of pregnant women toward exercise in our study is expected. Some studies have shown that pregnant women do not exercise due to the belief that exercise is unsafe for the mother and baby and a lack of knowledge (Nascimento, Surita, Godoy, Kasawaraand ve Morais, 2015; Evenson et al., 2014). Tan et al. found that most pregnant women in their study perceived exercise as beneficial but that most did not participate in physical activity (Tan, Tan, Dai, Tan, and Tan, 2023). Hasan et al. determined that pregnant women had inadequate knowledge about prenatal exercise and had a negative attitude toward it (Hasan, Zahid, Hafeez, Hashmi, Mannan and Hassan., 2019). A different study showed that while pregnant women's knowledge about antenatal exercise was low, their attitude toward exercise was quite positive (Janakiraman et al., 2021). Another study emphasized increasing exercise knowledge to improve pregnant women's attitudes toward exercise (Petrov Fieril, Fagevik OlsénGlantz, and Larsson, 2014). Studies have shown different results between exercise knowledge and exercise attitudes of pregnant women. This shows that there are different variables such as perception, belief, risky situations in pregnancy, cultural factors as well as knowledge in the exercise attitude of pregnant women.

In our study, the mean score on the pregnancy-related motherhood perception sub-dimension was high and positive, and the mean score on the pregnancy-related body image perception sub-dimension was low but positive. Our findings are consistent with those of other studies (Kaya and Atasever, 2022; Coşkun, Arslan, and Okcu, 2020). Unlike this study, two studies indicated that motherhood perception was moderate and body perception was high and negative (Alkin and Beydağ, 2020; Tosun Güleroğlu and Uludağ, 2022). The positive result of our study on the perception of motherhood and body image can be explained by its participants' higher education level, low number of children, and their higher ratio of voluntary conception.

In our study, exercise attitude was positive and higher in older women, who had higher education and income, and were employed, which was expected. It is thought that this result is related to the fact that pregnancy reaches advanced ages during the higher education process and the working status of educated pregnant women is high. Similarly, another study showed that pregnant women with higher education levels had more positive attitudes toward and knowledge of exercise (Negash, Yusuf, and Gebru, 2022). In addition, two studies indicated that higher education level correlated significantly with having good exercise knowledge (Ribeiro and Milanez, 2011; Negash et al., 2022). Mbada et al. found that pregnant women less than 30 years aged with a good income level had better attitudes and knowledge (the majority of women in the study were young) (Mbada et al., 2014). Yaseen found a positive correlation between pregnant women's age and exercise attitudes (Yaseen, 2022). Studies emphasize that especially the educational level of pregnant women is effective in exercise knowledge and attitude. In this study, the good exercise attitudes of older pregnant women may be because they know the problems caused by a sedentary life.

In our study, motherhood perception was higher in younger pregnant women, had a higher education level, had one or no children, had conceived with treatment, had a risk-free pregnancy, and exercised before pregnancy. The body perception of pregnant women who had a risk-free pregnancy and exercised during pregnancy was positive. These results were expected. Similarly, Kaya and Atasever found that motherhood perception was higher in younger pregnant women, had a higher education level, had a low number of pregnancies, and had conceived willingly (Kaya and Atasever, 2022). Kumcagiz et al. determined that pregnant women who conceived young and had a high school education had better body perception (Kumcagiz et al, 2017). Contrary to these findings, another study reported no relationship between pregnant women's self-perception (motherhood and body perception) status and their sociodemographic characteristics (Coşkun et al., 2020). However, the same study found that conceiving willingly positively affected motherhood and body perception. Another study found that the body perception of pregnant women with a low-income level was significantly negative and unaffected by age, health insurance status, and education level (Babacan Gümüş, Çevik, Hataf HyusniBiçen, Keskin and Tuna Malak, 2011). One study showed that mothers who were older and had fewer pregnancies had higher mean motherhood perception scores and that body perception scores were more positive in those who conceived willingly (Alkin and Beydağ, 2020).

Our study identified a positive and moderate relationship between EAS knowledge and benefit scores and pregnancy-related motherhood perception scores in pregnant women. According to the results of the regression analysis, EAS knowledge and benefit level had a positive effect on the SPPS motherhood perception. The EAS knowledge and benefit sub-dimension assesses pregnant women's current knowledge of exercise, including their knowledge of the benefits of exercising during pregnancy (Toprak Celenay et al., 2021). The pregnancy-related motherhood perception is essential in determining the status of pregnant women as they adapt to motherhood (Kumcagiz et al., 2017). Inadequate exercise knowledge is a barrier to pregnant women exercising (Petrov Fieril et al., 2014). Some studies indicated that pregnant women had insufficient exercise knowledge and behavior (Mbada et al., 2014; Janakiraman et al., 2021; Siyad et al., 2021). Siyad et al. found that women who were aged 25–35, had a higher education level, had a low number of pregnancies, and knew the benefits of physical activity had a better exercise profile (Siyad et al., 2021). Mbada et al. emphasized that knowledge about the benefits and contraindications of exercise during the antenatal period significantly affected attitudes toward exercise during pregnancy (Mbada et al., 2014). Our results indicate that increasing the exercise knowledge and behaviors of pregnant women with negative attitudes toward exercise is necessary. This approach may facilitate the adaptation process of pregnant women to motherhood and reduce the problems they may encounter during or after pregnancy.

There was a weak negative relationship between the EAS barrier and pregnancy-related motherhood perception scores and a weak positive relationship between the EAS barrier and pregnancy-related body perception scores. According to the results of the regression analysis, the EAS barrier level had a negative effect on the SPPS motherhood perception and a positive effect on the SPPS body perception. The EAS barrier sub-dimension evaluates factors that prevent women from exercising during pregnancy. While the benefits of exercise during pregnancy are known, many women remain sedentary or significantly reduce their exercise during pregnancy (Gaston and Vamos, 2013; Silva-Jose, Sánchez-Polán, Barakat, Gil-Ares and Refoyo, 2022). A systematic review by Harrison et al. stated that personal, social, and environmental factors negatively affected pregnant women's exercise attitude and behavior (Harrison, Taylor, Shields, and Frawley., 2018). A study on pregnant women in rural areas found that lack of time, physical changes such as nausea and fatigue, and difficulty accessing resources were barriers to physical activity (Tinius, Nagpal, Edens, Duchette, and Blankenship, 2020)

The pregnancy-related motherhood perception sub-dimension is essential in determining the status of pregnant women as they adapt to motherhood (Kumcagiz et al., 2017). Many factors affect both the adjustment of women to pregnancy and their perception of pregnancy. These factors are their age and weight, socioeconomic status, body perception view, health problems experienced during pregnancy, family and culture approaches, and social support systems (Kaya and Atasever, 2022). As expected, our study found that pregnant women's EAS barrier scores negatively affected their pregnancy-related motherhood perception scores. Increasing the knowledge and awareness of mothers about exercise during pregnancy and reducing exercise barriers can be effective in facilitating the expectant mother's adaptation to the pregnancy process.

Our study revealed a weak positive relationship and low effect between exercise and maternal body perceptions. Pregnancy-related body perception is pregnant women's perceptions of changes in their bodies. Women's experiences of body image during pregnancy are contradictory and body functionality is more important than aesthetics in pregnancy (Watson et al, 2016). In one study, a positive interaction was found between body perception of pregnancy and acceptance of pregnancy (Küçükkaya et al. 2020). In this study, the low level of body perception in the exercise behavior of pregnant women may be related to the exercise barriers, training, and knowledge of pregnant women. Increasing the exercise behavior of the expectant mother during pregnancy and reaching the desired level of weight gain may increase her adaptation to body changes and facilitate her adaptation to motherhood.

Limitations of the Study

This study had two limitations. First, its sample represented women from a community in the inner west of Turkey. Therefore, its results cannot be generalized to other populations in this region or elsewhere in Turkey. Second, because the SPPS did not have a total score, it could not be compared to the EAS score.

Conclusion

In this study, the EAS scores indicated that pregnant women's knowledge and benefit levels were low, and their perceptions of barriers were high. Their pregnancy-related motherhood and body perceptions were good level. In addition, pregnant women who had knowledge about exercise during pregnancy and believed in its benefits perceived motherhood and their bodies positively. To ensure pregnant women have healthier physical, mental, and psychosocial statuses and to increase their adaptation to pregnancy, it is necessary to increase their exercise knowledge, reduce their barriers, and ensure they exercise. Consequently, the

number of healthier mothers and babies in society can increase, contributing to the development of healthy societies.

Funding: This work was not supported by any foundation or institute.

Conflict of interest: No conflict of interest was declared by the authors.

Author Contributions: Idea: ATİ, İOÇ.; Dizayn: ATİ, NTA.; Check: ATİ.; Sources: ATİ, NTA, İOÇ., Ingredients: ATİ, NTA, İOÇ.; Data collecting**:** İOÇ**.;** Analysis: ATİ, NTA.; Literature Review: AT, NTA, İOÇ., Posted by: AT.; Critical Review: ATİ.

Peer Review: Internal/External independent.

References

Alkin, D.E., Beydağ, K.D. (2020). Relationship between perceived stress level and self-perception level of women who had three or more pregnancies. J Psychiatr Nurs, 11(3), 228-238. https://doi.org/10.14744/phd.2020.72621.

Asante, D.O., Osei, F., Abdul-Samed, F., Nanevie, V.D. (2022). Knowledge and participation in exercise and physical activity among pregnant women in Ho, Ghana. Front Public Health, 10, 927191. https://doi.org/10.3389/fpubh.2022.927191.

Bayisa, D., Waltengus, F., Lake, S., Wakuma, B., Bayisa, L., Chala, M., ……., Mosisa, G. (2022). Pregnant women's knowledge, attitudes, and associated factors toward physical exercise during pregnancy among those attending antenatal care at Bahir Dar city, Northwest Ethiopia, SAGE Open Med, 10, 20503121221115252. https://doi.org/10.1177/20503121221115252

Brown, A., Rance, J., Warren, L. (2015). Body image concerns during pregnancy are associated with a shorter breastfeeding duration. Midwifery, 31(1), 80-89. https://doi.org/10.1016/j.midw.2014.06.003

Can, A. (2018). SPSS ile Bilimsel Araştırma Sürecinde Nicel Veri Analizi, Bir Ölçme Aracı ile Yapılan Ölçümün Güvenirliliğini Belirleme (p. 385-394). Ankara: Pegem Yayıncılık.

Celenay, ST., Calik Var, E., Ozer Kaya, D. (2021). Development of an exercise attitude scale in Turkish for pregnant women: validity and reliability. Women Health 61(9), 854-866. https://doi.org/10.1080/03630242.2021.1979166

Coşkun, A.M., Arslan, S., Okcu, G. (2020). An analysis of pregnancy perception of pregnant women in terms of stress, demographic and obstetric characteristics. JERN, 17(1), 1-8. https://doi.org/10.5222/HEAD.2020.001

Davenport, M.H., Ruchat, S.M., Poitras, V.J., Jaramillo Garcia, A., Gray, C.E., Barrowman, N., ……., Mottola, M.F. (2018). Prenatal exercise for the prevention of gestational diabetes mellitus and hypertensive disorders of pregnancy: a systematic review and meta-analysis. Br J Sports Med, 52(21), 1367-1375. https://doi.org/10.1136/bjsports-2018-099355

Dipietro, L., Evenson, K.R., Bloodgood, B., Sprow, K., Troiano, R.P., Piercy, K.L., ……., 2018 Physical Activity Guidelines Advisory Committee. (2019). Benefits of physical activity during pregnancy and postpartum: an umbrella review. Med Sci Sports Exerc, 51(6), 1292-1302. https://doi.org/10.1249/MSS.0000000000001941

Evenson, K.R., Barakat, R., Brown, W.J., Dargent-Molina, P., Haruna, M., Mikkelsen, E.M., ……., Yeo, S. (2014). Guidelines for physical activity during pregnancy: comparisons from around the World. Am J Lifestyle Med, 8(2), 102-121. https://doi.org/10.1177/1559827613498204

Ferreira, C.L.M., Guerra, C.M.L, Silva A.I.T.J., do Rosário, H.R.V., Pereira, M.B.F.L.O. (2019). Exercise in pregnancy: the ımpact of an ıntervention program in the duration of labor and mode of delivery. Rev Bras Ginecol Obstet. 41(2), 68-75. https://doi.org/10.1055/s-0038-1675613

Faul, F., Erdfelder, E., Lang, A.-G., Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behavior research methods, 39(2), 175-191.

Gari, A.M., Aldharman, S.S., Alalawi, W.O., Alhashmi Alamer, E.H., Alnashri, A.A., Bomouzah, F.A. (2022). Exercise during pregnancy: knowledge and beliefs among females in Saudi Arabia. Cureus, 14(10), e30672. https://doi.org/10.7759/cureus.30672

Gaston, A., Vamos, C.A. (2013). Leisure-time physical activity patterns and correlates among pregnant women in Ontario, Canada. Matern Child Health J, 17(3), 477-484. https://doi.org/10.1007/s10995-012-1021-z

Gustafsson, M.K., Stafne, S.N., Romundstad, P.R., Mørkved, S., Salvesen, K., Helvik, A.S. (2016). The effects of an exercise programme during pregnancy on health-related quality of life in pregnant women: a Norwegian randomised controlled trial. BJOG: Int J Obstet, 123(7), 1152-1160. https://doi.org/10.1111/1471-0528.13570

Güleroğlu, F.T., Uludağ, E. (2022). The effects of motherhood and body perception on sexual dysfunctions among pregnant women. Perspect Psychiatr Care, 58(4), 2072-2078. https://doi.org/10.1111/ppc.13033

Gümüş, A.B., Çevik, N., Hataf, S.H., Biçen, Ş., Keskin, G., Tuna Malak, A. (2011). Characteristics associated with self-esteem and body image in pregnancy. Anatol J Clin Investig, 5, 7-14.

Harrison, A.L., Taylor, N.F., Shields, N., Frawley, H.C. (2018). Attitudes, barriers and enablers to physical activity in pregnant women: a systematic review. J Physiother, 64(1), 24-32. https://doi.org/10.1016/j.jphys.2017.11.012

Hasan, M., Zahid, S., Hafeez, S., Hashmi, Z., Mannan, H., Hassan, D. (2019). Knowledge and attitude of Pakistani women towards antenatal exercise: a cross-sectional survey across Lahore. Pak J Med Res, 69(12), 1900-1902. https://doi.org/10.5455/JPMA.294813

Janakiraman, B., Gebreyesus, T., Yihunie, M., Genet, M.G. (2021). Knowledge, attitude, and practice of antenatal exercises among pregnant women in Ethiopia: A cross-sectional study. PloS one, 16(2), e0247533. https://doi.org/10.1371/journal.pone.0247533

Kaya, C.E., Atasever, Z. (2022). Self perception status of pregnant women and ınfluencing factors. Gumushane Univ J Health Sc, 11(3), 956-968. https://doi.org/10.37989/gumussagbil.908030

Kirkwood, L., Leicht, A. (2019). Relationship between physical activity participation and body image in pregnant and post-natal women. JSAMS, 22. https://doi.org/10.1016/j.jsams.2019.08.247

Korukcu, O., Bulut, O., Kukulu, K. (2019). From experiences to expectations: A quantitative study on the fear of childbirth among multigravida women. Arch Psychiatr Nurs, 33(3), 248-253. https://doi.org/10.1016/j.apnu.2018.11.002

Kumcagız, H. (2012). Pregnant women, body image and self-esteem according to the examination of some of the variables. J Hum Sci, 9(2), 691-703.

Kumcağiz, H., Ersanli, E., Murat, N. (2017). The development of a self-perception of pregnants scale and its psychometric features. Psychiatr Nurs, 8, 23-31. https://doi.org/10.14744/phd.2017.12599

Küçükkaya, B., Dindar, İ., Erçel, Ö., Yılmaz, E. (2020). The relation between body perception related to the weight gain during pregnancy and acceptance of pregnancy. JAREN, 6(3), 426-432. https://doi.org/10.5222/jaren.2020.15010

Linde, K., Lehnig, F., Nagl, M., Stepan, H., Kersting, A. (2022). Course and prediction of body image dissatisfaction during pregnancy: a prospective study. BMC Pregnancy Childbirth, 22(1), 719. https://doi.org/10.1186/s12884-022-05050-x

Mbada, C.E., Adebayo, O.E., Adeyemi, A.B., Arije, O.O., Dada, O.O., Akinwande, O.A. ……., Alonge, I.A. (2014). Knowledge and attitude of nigerian pregnant women towards antenatal exercise: a cross-sectional survey. ISRN Obstet Gynecol, 2014, 260539. https://doi.org/10.1155/2014/260539

Mottola, M.F., Davenport, M.H., Ruchat, S.M., Davies, G.A., Poitras, V.J., Gray, C.E., ……., Zehr, L. (2018). 2019 Canadian guideline for physical activity throughout pregnancy. Br J Sports Med, 52(21), 1339-1346. https://doi.org/10.1136/bjsports-2018-100056

Nascimento, S.L., Surita, F.G., Godoy, A.C., Kasawara, K.T., Morais, S.S. (2015). Physical activity patterns and factors related to exercise during pregnancy: a cross sectional study. PloS One, 10(6), e0128953. https://doi.org/10.1371/journal.pone.0128953

Negash, S., Yusuf, L., Gebru, D.B. (2022). Knowledge, attitude, and practice of pregnant mothers regarding exercise during pregnancy in mothers attending ANC at selected health facilities Addis Ababa, Ethiopia, 2021. J Gynecol Obstet Hum Reprod, 6(1), 22-35. https://doi.org/10.33140/jgrm.06.01.05

Okafor, U.B., Goon, D.T. (2021). Providing physical activity education and counseling during pregnancy: a qualitative study of midwives' perspectives. Niger J Clin Pract, 24(5), 718-728. https://doi.org/10.4103/njcp.njcp_486_20

Petrov Fieril, K., Fagevik Olsén, M., Glantz, A., Larsson, M. (2014). Experiences of exercise during pregnancy among women who perform regular resistance training: a qualitative study. Phys Ther, 94(8), 1135-1143. https://doi.org/10.2522/ptj.20120432

Physical Activity and Exercise During Pregnancy and the Postpartum Period: ACOG Committee Opinion, Number 804. (2020). Obstet Gynecol, 135(4), e178–e188.

Ribeiro, C.P., Milanez, H. (2011). Knowledge, attitude and practice of women in Campinas, São Paulo, Brazil with respect to physical exercise in pregnancy: a descriptive study. Reprod Health, 8(1), 1-7. https://doi.org/10.1186/1742-4755-8-31

Silva-Jose, C., Sánchez-Polán, M., Barakat, R., Gil-Ares, J., Refoyo, I. (2022). Level of physical activity in pregnant populations from different geographic regions: a systematic review. J Clin Med, 11(15), 4638. https://doi.org/10.3390/jcm11154638

Siyad, S., Mustafa, N., Banu, S.S., Buharoon, M.A., Al Mulla, M.A., Ankarali, H., ……., Abdulrahman, M. (2021). Pregnant women's perceptions of physical activity: Adaptation of the pregnancy physical activity questionnaire in Dubai, a multicultural society. J Public Health Res, 11(1), 2261. https://doi.org/10.4081/jphr.2021.2261

Tan, Y.R., Tan, K.H., Dai, F., Tan, H.K., Tan, L.K. (2023). Attitudes and practices of exercise among pregnant mothers in Singapore. Singapore Med J, 1-6. https://doi.org/10.4103/singaporemedj.SMJ-2021-247

Tinius, R., Nagpal, T.S., Edens, K., Duchette, C., Blankenship, M. (2020). Exploring beliefs about exercise among pregnant women in rural communities. J Midwifery Womens Health, 65(4), 538-545. https://doi.org/10.1111/jmwh.13080

Vanstone, M., Kandasamy, S., Giacomini, M., DeJean, D., McDonald, S.D. (2017). Pregnant women's perceptions of gestational weight gain: a systematic review and meta-synthesis of qualitative research. Matern Child Nutr, 13(4), e12374. https://doi.org/10.1111/mcn.12374

Watson, B., Broadbent, B., Skouteris, H., Fuller-Tyszkiewicz, M. A qualitative exploration of body image experiences of women progressing through pregnancy. Women and Birth 2016; 29(1); 72-79 https://doi.org/10.1016/j.wombi.2015.08.007

World Health Organization, Global Action Plan on Physical Activity 2018-2030: More Active People for a Healthier World; World Health Organization: Geneva, Switzerland. (2018). https://apps.who.int/iris/bitstream/handle/10665/272722/9789241514187-eng.pdf.

Yaseen, M. (2022). The knowledge, attitude and practices of pregnant women regarding physical activity in Turbat, Kech. ASSAP, 3, 2. https://doi.org/10.52700/assap.v3i2.176