

**Araştırma Makalesi/Research Article**

**Relationship Between Physical Activity And Self-Perception Levels of Pregnant Women in The COVID-19 Pandemic and Affecting Factors**

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*COVID-19 Pandemisinde Gebe Kadınların Fiziksel Aktivite ve Kendini Algılama Düzeyleri Arasındaki İlişki ve Etkileyen Faktörler*

**ABSTRACT**

**Objective:** The aim of this study was to investigate the relationship between the physical activity status and self-perception levels of pregnant women in COVID-19 pandemic and affecting factors.

**Methods:** This analytical and cross-sectional study was conducted between December 8, 2021 and June 27, 2022, with 382 pregnant women who presented to the obstetric outpatient clinic. Data were collected using the Pregnancy Description Form, International Physical Activity Questionnaire (IPAQ), and the Self-perception Scale for Pregnant Women (SPSP). Kruskal-Wallis test, Mann-Whitney-U test (with Bonferroni correction) and Spearman Correlation analysis were used in data analysis.

**Results:** It was concluded that there was no statistically significant difference between the SPSP mean scores of participants who were inactive and active according to IPAQ ( $p > .05$ ). Variables such as educational level, income and employment status, number of follow-up during pregnancy, and participation in childbirth preparation classes were found to influence the physical activity status of pregnant women ( $p < .05$ ). It was found that variables such as Body Mass Index (BMI), family type, number of pregnancies, number of follow-up during pregnancy, presence of planned pregnancy, attendance of childbirth preparation classes, the feeling when you first learned about pregnancy, feeling ready to become a mother influenced the self-perception of pregnant women ( $p < .05$ ).

**Conclusion:** Although no relationship was found between physical activity and self-perception levels of pregnant women in our study, it is important in terms of showing that many sociodemographic and obstetric factors are effective on physical activity and self-perception levels during the pandemic process.

**Keywords:** Mental health, pregnancy, physical activity, self-perception, reproductive health

**ÖZ**

**Amaç:** Bu çalışmanın amacı, COVID-19 pandemisinde gebelerin fiziksel aktivite durumları ile kendini algılama düzeyleri arasındaki ilişkiyi ve etkileyen faktörleri incelemektir.

**Yöntem:** Bu analitik ve kesitsel çalışma, 8 Aralık 2021 ile 27 Haziran 2022 tarihleri arasında kadın doğum polikliniğine başvuran 382 gebe ile gerçekleştirildi. Veriler, Gebe Tanıtıcı Formu, Uluslararası Fiziksel Aktivite Anketi (IPAQ) ve Gebeler İçin Kendini Algılama Ölçeği (SPSP) kullanılarak toplanmıştır. Verilerin analizinde Kruskal-Wallis testi, Mann-Whitney-U testi (Bonferroni düzeltilmeli) ve Spearman Korelasyon analizi kullanılmıştır.

**Bulgular:** IPAQ'ya göre hareketsiz ve aktif olan katılımcıların SPSP puan ortalamaları arasında istatistiksel olarak anlamlı bir fark olmadığı sonucuna varıldı ( $p > .05$ ). Eğitim düzeyi, gelir ve çalışma durumu, gebelikte izlem sayısı, doğuma hazırlık kurslarına katılım gibi değişkenlerin gebelerin fiziksel aktivite durumunu etkilediği bulundu ( $p < .05$ ). Vücut Kitle İndeksi (VKİ), aile tipi, gebelik sayısı, gebelikte takip sayısı, planlı gebelik varlığı, doğuma hazırlık kurslarına katılım, gebeliği ilk öğrendiğiniz andaki duygu, duygu durumu gibi değişkenlerin etkili olduğu saptanmıştır. Anne olmaya hazır olma gebe kadınların kendilik algısını etkiledi ( $p < .05$ ).

**Sonuç:** Çalışmamızda gebelerin fiziksel aktivite ve kendini algılama düzeyleri arasında ilişki saptanmamakla birlikte, birçok sosyodemografik ve obstetrik faktörün pandemi sürecinde fizik aktivite ve kendini algılama düzeyleri üzerinde etkili olduğunu göstermesi açısından önemlidir.

**Anahtar Kelimeler:** Gebelik, fiziksel aktivite, kendini algılama, üreme sağlığı, mental sağlık

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## GENİŞLETİLMİŞ ÖZET

**Amaç:** COVID-19 pandemisinde gebelerin fiziksel aktivite ve kendini algılama düzeylerini, arasındaki ilişkiyi ve etkileyen faktörleri incelemek amacıyla yapılmıştır.

**Gereç ve Yöntem:** Tanımlayıcı – Analitik tipteki araştırma 8 Aralık 2021 – 27 Haziran 2022 tarihleri arasında, Aydın Adnan Menderes Üniversitesi Hastanesi'nin Kadın Hastalıkları ve Doğum Anabilim Dalı'na bağlı Gebe Polikliniği'ne başvuran 382 gebe ile yürütülmüştür. Veriler Gebe Tanıtıcı Formu, Uluslararası Fiziksel Aktivite Anketi Kısa Formu (UFAA) ve Gebelerin Kendilerini Algılama Ölçeği (GKAÖ) ile toplanmıştır. Araştırma verilerinin analizinde tanımlayıcı istatistikler ile sayı, yüzde, ortalama ve ortanca (25-75 persentil) ile dört gözlü (veya fisher exact test) ya da çok gözlü ki-kare testi, Mann Whitney-U testi, Kruskal Wallis Testi ve Spearman Korelasyon analizi ile değerlendirilmiş olup, istatistiksel olarak anlamlı olanlarda post hoc iki grubun karşılaştırılması için Mann Whitney-U testi (Bonferoni düzeltilmesi ile) yapılmıştır.

**Bulgular:** Araştırmaya katılan gebelerin yaş ortanca değeri 27,0 (24,0 - 31,0) ve Beden Kitle İndeksi ortanca değeri 25,5 (22,9 – 28,0)'dir. Gebelerin; %42,9'unun lise mezunu olduğu,%69,4'ünün herhangi bir işte çalışmadığı, %67,5'inin gelirinin giderine denk olduğu, %45,3'ünün en uzun süre ilçede yaşadığı, %80,4'ünün çekirdek aile yapısına sahip olduğu bulunmuştur. Katılımcıların gebelik haftası ortanca değeri 26,0 (21,0 – 30,0), gebelik sayısı ortanca değeri 2,0 (1,0 – 2,0), yaşayan çocuk sayısı ortanca değeri 1,0 (0,0 – 1,0) ve son gebelikteki izlem sayısı ortanca değeri 1,0 (1,0 – 1,0) olarak tespit edilmiştir. Gebelerin %79,6'sının gebeliğinin planlı olduğu, gebelik izlemlerinin %63,4'ünün doktor tarafından yapıldığı, %81,2'sinin gebelik hakkında bilgilendirildiği, %68,6'sının doğum hakkında bilgilendirildiği, %67,5'inin bebek bakımı hakkında bilgilendirildiği, %92,9'unun gebe eğitim sınıfına katılmadığı, %89,8'inin gebeliği ilk öğrendiğinde mutluluk, olumlu duygular hissettiği, %97,9'unun anne olmaya hazır olduğu belirlenmiştir. Eşlerin %85,6'sının ev işlerine ve çocuk bakımına katıldığı belirlenmiştir. Gebelerin %97,1'inin Covid-19 geçirmediği, %94,5'inin hiç karantinaya alınmadığı, saptanmıştır. Gebelerin kendini algılama ölçek puanı ortancası 38,0 (35,0 – 40,0), annelik algısı

alt boyut ortancası 28,0 (27,0 – 28,0), beden algısı alt boyut ortancası 8,0 (10,0 – 13,0) olarak, UFAA'ya göre değerlendirildiklerinde, gebelerin 255'inin (%66,8) inaktif olduğu belirlenmiştir. Araştırmaya katılan gebelerin UFAA ve GKAÖ toplam puan karşılaştırılmasında UFAA'ya göre inaktif olanların ortanca değeri 38,0 (35,0 – 41,0) ve aktif olanların ortanca değeri 37,0 (34,0 – 39,0) olarak saptanmış olup, istatistiksel olarak anlamlı bir fark bulunmamıştır ( $p = 0,052$ ).

**Sonuç ve Öneriler:** Araştırmadan elde edilen bulgular doğrultusunda Covid-19 pandemisinde gebelerin fiziksel aktivite ve kendini algılama düzeyleri arasında ilişki olmadığı sonucuna ulaşılmıştır. Eğitim durumu, gelir durumu ve çalışma durumu, gebelikteki izlem sayısı, izlemi yapan kişi, bebek bakımı hakkında bilgilendirilme durumu gibi değişkenlerin fiziksel aktivite durumlarını etkilediği sonucuna ulaşılmıştır. BKİ, aile yapısı, gebelik sayısı, çocuk sayısı gebelikteki izlem sayısı planlı gebelik olma durumu, izlemi yapan kişi, doğum hakkında bilgi alma durumu, gebe eğitim sınıfına katılmış olma, anne olmaya hazır hissetme, gebeliği ilk öğrendiğinde hissedilen duygu, eşin ev işleri ve bebek bakımına katılma durumu gibi değişkenlerin gebelerin kendini algılama durumlarını etkilediği sonucuna ulaşılmıştır. Hemşirelerin ve ebelerin Covid-19 pandemisinde gebelerin kendini algılama düzeylerinin farkında olmaları, fiziksel aktivite durumlarını değerlendirerek uygun koşullarda arttırılmasını desteklemeleri önerilmektedir.

## INTRODUCTION

Pregnancy is a transitional phase in which both physical and emotional changes are observed (Bourgoin, Callahan, Séjourné and Denis, 2012). These changes affect women's standard of living and lead to changes in maternal and fetal health, even in healthy pregnancies without undesirable conditions (Ibanez, Blondel, Prunet, Kaminski and Saurel-Cubizolles, 2015). The American College of Obstetricians and Gynecologists (ACOG) recommends a minimum of half an hour of moderate exercise or (MET: metabolic equivalent task, hours/week) 8000 steps per day corresponding to roughly 7.5 metabolic equivalents. For mild exercise, a patient-tailored physical activity program tailored to the medical indication for a minimum of 20-30 minutes per day, several days a week or all week, is recommended (ACOG, 2015). Despite the reported benefits of regular physical activity, the

level of physical activity in women during pregnancy is much lower than before pregnancy (Tendais, Figueiredo, Mota and Conde, 2011). Studies on physical activity during pregnancy reveal that the prevalence of recommended activity levels is low and that leisure-time physical activity, exercise, sports and occupational activities are also decreasing (Borodulin, Evenson, Wen, Herring and Benson, 2008; Domingues and Barros, 2007; Özdemir et al., 2017). Regular physical activity by pregnant women maintains and improves physical fitness, controls weight, reduces the likelihood of gestational diabetes in women with obesity, and improves mental health (ACOG, 2015; Kostanoğlu, Maznak and Şahin, 2019).

While the perception of appearance has a great importance for most women, the way a pregnant woman perceives her body and the adaptation process to the changes that occur can positively or negatively affect her mood (Bacacı and Ejder, 2018). In the studies conducted, it is stated that there is a significant decrease in the satisfaction levels of pregnant women regarding their perception of appearance, especially due to weight gain (Boscaglia, Skouteris and Wertheim, 2003; Chang, Chao and Kenney, 2006). Negative body perception also leads pregnant women to eat unhealthy diets due to concerns that they will gain weight (Skouteris, Carr, Wertheim, Paxton and Duncombe, 2005). Especially between the third and sixth months of pregnancy, negative body perception may be associated with poor mother-baby relationship and a much longer and more difficult labor (Chang et al., 2006). If it is taken into consideration that negative body perception also lowers self-esteem, the deterioration in body perception may also negatively affect the perception of motherhood of pregnant women in the prenatal stage (Dikmen and Şanlı, 2019). In the literature on the subject, it is reported that the negative self-perception that occurs due to the weight gained during pregnancy, mental and physical problems related to pregnancy, and the feeling of dissatisfaction with their bodies negatively affects the psychological state of a pregnant woman and negatively affects her social relations with both her baby and her environment (Clark et al., 2009; Sweeney and Fingerhut, 2013).

The COVID-19 pandemic is adversely affecting people of all groups and ages worldwide, both health-wise and socially. Pregnant women are among these groups. Pregnancy itself is a period

of adaptation for women. In the COVID-19 pandemic, it is stated that being pregnant and meeting the needs of pregnancy will be more difficult within the scope of social isolation rules. Restrictions in access to health services, problems in receiving antenatal care, virus-induced disease states, concerns about the health of the fetus, and decreased family-friend support due to social isolation during the COVID-19 pandemic cause anxiety and anxiety symptoms in pregnant women (RCOG, 2020). Due to social isolation, pregnant women cannot do activities such as walking. Therefore, it is thought that this period may have an effect on both the physical activity status and self-perception of pregnant women. There are no studies in the literature investigating the physical activity and self-perception levels of pregnant women during the COVID-19 period. Therefore, our study is of great importance in terms of contributing to the literature and determining the physical activity and self-perception of pregnant women during the COVID-19 period and the factors affecting them.

### Research Questions

- Is there a relationship between physical activity and self-perception levels of pregnant women in the COVID-19 pandemic?
- What are the factors associated with physical activity and self-perception levels of pregnant women in the COVID-19 pandemic?

### METHODS

#### Study Design, Setting and Participants

This analytical and cross-sectional study was conducted in obstetric outpatient clinic of a university hospital in a city located in western Turkey. This hospital was chosen because pregnant women from different socio-economic backgrounds are admitted for health care services. According to the information obtained from the statistical unit of the hospital, it was determined that 12,894 pregnant women applied to the pregnancy outpatient clinic between January 01, 2020 and December 31, 2020 to have prenatal care follow-ups.

The sampling method of the study is random sampling method. The sample size of the study was calculated using the G\*Power 3.1.9.6 program. In the calculation, the Pearson correlation coefficient of the H1 hypothesis was 0.60 ( $r=0.60$ ), 5% margin of error ( $\alpha=0.05$ ), 80% power ( $1-\beta=0.80$ ) and the Pearson correlation

coefficient of the H0 hypothesis was 0.50 ( $r=0.50$ ) and the sample size for Pearson correlation analysis was calculated as 382 (Cohen, 1988; Faul, Erdfelder, Lang and Buchner, 2009). Inclusion criteria included being  $\geq 18$ -  $\leq 45$  years of age (being in the fertile period), being able to understand and speak Turkish, being at least primary school graduate, being in the 5th-38th gestational week, having a healthy fetus (no risk of anomaly, etc.), having no chronic disease, having a spontaneous pregnancy and agreeing to participate in the study. Pregnant women with risky pregnancies (multiple pregnancy, preeclampsia, gestational diabetes, etc.) and those diagnosed with psychological disorders (depressive personality disorders, depression, generalized anxiety disorder, etc.) were excluded from the study.

### Data Collection and Measurements

Data were collected with a data collection form by face-to-face interviews in a suitable environment with pregnant women who met the inclusion criteria and volunteered to participate in the study. In the data collection form are the Pregnancy Description Form prepared by the researchers according to the literature (Coşkun, Arslan and Okcu, 2020; Demir Alkin and Beydağ, 2020; Kostanoğlu et al. 2019; Tosun and Okyay, 2018; Özdemir et al. 2017), International Physical Activity Questionnaire (IPAQ) - Short Form (Craig, Marshall, Sjostrom, Bauman and Booth, 2003) and Self-perception Scale for Pregnant Women (SPSP) (Kumcağız, Ersanlı and Murat, 2017).

### Pregnancy Description Form

It consists of a total of 30 questions with two sections including socio-demographic (age, height, weight, educational status, income, family type, etc.) and obstetric characteristics (gestational week, total number of pregnancies, number of curettages, number of miscarriages, number of living children, feelings when first learning about pregnancy, feeling ready to be a mother, etc.).

### The International Physical Activity Questionnaire

The International Physical Activity Questionnaire (IPAQ) was developed to determine the physical activity levels of participants aged 15-65 years (Craig et al., 2003). The International Physical Activity Questionnaire was developed to obtain valid and comparable information about the level

of physical activity based on individual reports of daily physical activity in the international arena. The development of the IPAQ started in Geneva in 1998 and was followed by validity and reliability studies in 12 countries. In Turkey, the validity and reliability of the IPAQ was conducted by Sağlam et al. in 2010 (Sağlam et al., 2010). The International Physical Activity Questionnaire consists of 7 questions in total. Validity and reliability for determining physical activity levels posit the criterion that each activity is performed for at least 10 minutes at a time in the evaluation of activity. A score is obtained as "MET - min/week" by multiplying the duration in minutes, the number of days and the MET value corresponding to the basal metabolic rate (multiples of oxygen consumption at rest). Accordingly, physical activity levels are classified as physically inactive ( $< 600$  MET min/week), minimally active (600 - 3000 MET min / week) and very active ( $> 3000$  MET min/week) (beneficial for health) (Craig et al., 2003). The inter-class correlation coefficient of the IPAQ was reported between  $r = 0.60$  and  $r = 0.93$  (Sağlam et al., 2010).

### The Self-perception Scale for Pregnant Women

The Self-perception Scale for Pregnant Women (SPSP) was developed by Kumcağız et al. (2017) in Turkey. The scale has 12 items and 2 sub-dimensions. These sub-dimensions are perception of motherhood related to pregnancy with 7 questions and perception of body related to pregnancy with 5 questions. Each sub-dimension of this scale, which is structured on a four-point Likert scale (4 Always, 3 Most of the time, 2 Sometimes, 1 Never), is evaluated separately. It is evaluated that as the scores in the perception of motherhood related to pregnancy sub-dimension increase, the level of perception of motherhood related to pregnancy is higher, and as the scores decrease, the level of perception of motherhood related to pregnancy is lower. The highest score that can be obtained in the perception of motherhood related to pregnancy subscale is 28 and the lowest score is 7. When evaluating the scores from the perception of body related to pregnancy sub-dimension, high scores indicate that the perception of body related to pregnancy is negative and low scores indicate that the perception of body related to pregnancy is positive. The highest score that can be obtained in the perception of body related to pregnancy sub-

dimension is 20 and the lowest score is 5. The Cronbach's Alpha coefficient values for the sub-dimensions of the scale are 0.86 and 0.75, respectively, and there is no cut-off point (Kumcağız et al., 2017).

### Data Collection

Pregnant women who applied to the obstetric outpatient clinic of an university hospital and who met the research criteria were interviewed using face-to-face interview technique between the hours of outpatient clinic services on 3 weekdays. The data collection process was carried out before or after the examination in an empty or suitable room in the clinic to ensure that the interviews were conducted in a healthy manner and to ensure the privacy of the pregnant women. During face-to-face interviews, both the researchers and the pregnant women were required to wear masks to prevent the risk of COVID-19 transmission, and the interviews were conducted in accordance with social distancing rules. After verbal and written informed consent was obtained from the pregnant women who agreed to participate in the study, the questionnaires were completed in approximately 20 minutes. The pens to be used for signing the questionnaires and the Informed Consent Form were specially prepared for the pregnant women in terms of hygiene and were not taken back after use. While collecting the research data, care was taken not to affect the daily routines of the institution. Pregnant women included in the study were given the opportunity to ask questions about the purpose and subject of the study, the day, time, duration, place, and procedures to be performed, etc. after being explained about the applications.

### Statistical Analysis

Statistical analyses were performed using the SPSS 28.0 (Statistical Product and Service Solutions) package program. Descriptive statistics of the study were presented as median (25-75 percentiles) and mean, standard deviation for continuous variables and number (percentage) for categorical variables. Normal distribution status of continuous data was evaluated by Kolmogorov Smirnov test and histogram. In analytical statistics, the relationship between categorical variables was evaluated by chi-square test or Fisher exact test. The Mann Whitney-U test was used to assess the relationship between continuous variables of two groups. The relationship between continuous variables comparing more than two groups was evaluated by Kruskal-Wallis test, and Mann-Whitney-U test (with Bonferroni

correction) was performed for post hoc comparison of two groups in statistically significant cases. The relationship between the SPSP its subscales and continuous variables was analyzed by Spearman Correlation analysis. Type-1 error was accepted as 0.05.

### Ethical Statement

The research protocol was approved by Institute of Health Sciences Non-Interventional Clinical Research Ethics Committee of a University in Turkey (Approval number: 2021/057; Date: 01.12.2021). Permission was obtained from university hospital where the study was conducted. This study was conducted in accordance with the Declaration of Helsinki. Pregnant women included in the study were informed about the study and their written informed consent was obtained. Voluntary participation of the pregnant women was ensured without any pressure on them to participate in the study.

### RESULTS

The distribution of pregnant women included in the study according to their sociodemographic and obstetric characteristics is shown in Table 1. The mean age was 27.6 years and the median value was 27.0 (24.0 - 31.0), the mean BMI was 25.9 years and the median value was 25.5 (22.9 - 28.0), the mean gestational week was 25.6 years and the median value was 26.0 (21.0 - 30.0), the mean number of pregnancies was 1.9 years and the median value was 2.0 (1.0 - 2.0). It was found that 42.9% of the pregnant women were high school graduates, 69.4% were not employed, 67.5% had an income equivalent to their expenses, and 80.4% had a nuclear family structure. In addition, 79.6% of the pregnant women stated that their pregnancy was planned, 92.9% stated that they did not attend a pregnancy education class, 89.8% stated that they experienced positive emotions such as happiness, joy, etc. when they first learned about their pregnancy, and 97.9% stated that they were ready to become mothers.

### Physical Activity Status of Pregnant Women

The 382 pregnant women who participated in the study were evaluated according to the IPAQ, and it was determined that 255 (66.8%) of the pregnant women were inactive and 127 (33.2%) were active.

**Table 1.** The Sociodemographic and obstetrics characteristics of the participants

Variables	Mean±SD	Median	25 p – 75 p
Age (Year)	27.6±5.5	27.0	24.0 – 31.0
BMI	25.9±4.4	25.5	22.9 – 28.0
Pregnancy week	25,6±6,4	26.0	21.0 – 30.0
Number of pregnancies	1.9±0.9	2.0	1.0 – 2.0
Number of follow-ups during pregnancy	1.4±1.3	1.0	1.0 – 1.0
		n	%
Education level			
Primary school graduate		55	14.4
Secondary school graduate		81	21.2
High school graduate		164	42.9
University graduate		77	20.2
Master's/PhD graduate		5	1.3
Employment status			
Not working		265	69.4
Working		117	30.6
Income status			
Income less than expenses		75	19.6
Income equivalent to expenses		257	67.5
Income exceeds expenses		50	13.1
Family type			
Extended family		75	19.6
Nuclear family		307	80.4
Presence of planned pregnancy			
No		78	20.4
Yes		304	79.6
Participation in a pregnancy education class			
Did not participate		355	92.9
I participated		27	7.1
The feeling when you first learned about pregnancy			
Sadness and negative emotions		13	3.4
Positive emotions such as happiness, joy, etc.		343	89.8
Nothing		4	1.0
Other*		22	5.8
Feeling ready to be a mother			
I am not ready		8	2.1
I am ready		374	97.9

\* Emotions not included in the options

**Table 2.** Comparison of SPSP total scores and subdimensions scores according to pregnant women's physical activity status

IPAQ	SPSP -Total			p	SPSP -Perception of Maternity			p	SPSP - Perception of Body			p
	Mean±SD	Median	25p - 75p		Mean±SD	Median	25p - 75p		Mean±SD	Median	25p - 75p	
Inactive	38.1±4.1	38.0	35.0 – 41.0	0.052	27.3±1,4	28.0	27.0 – 28.0	0.124	10.8±3.9	10.0	8.0 – 13.0	0.174
Active	37.1±4.2	37.0	34.0 – 39.0		26.9±2.3	28.0	27.0 – 28.0		10.2±3.7	10.0	7.0 – 12.0	

### Self-Perception Level of Pregnant Women

Participants' the total mean score of SPSP was 37.7, with a median of 38.0 (35.0 - 40.0), the mean score of perception of motherhood sub-dimension was 27.1, with a median of 28.0 (27.0 - 28.0), and the mean score of perception of body sub-dimension was 10.6, with a median of 8.0 (10.0 - 13.0).

### The Between Physical Activity Status and Self-Perception Levels of Pregnant Women

It was found that there was no statistically significant difference between the IPAQ mean scores and SPSP - total scores of the pregnant women who participated in the study ( $p = 0.052$ ), SPSP - perception of motherhood sub-dimension scores ( $p = 0.124$ ) and SPSP - perception of body sub-dimension scores ( $p =$

0.174) (Table 2).

### Sociodemographic and Obstetric Factors Affecting Physical Activity Status of Pregnant Women

A statistically significant difference was found between the physical activity status of the pregnant women in the study and educational level ( $p = 0.006$ ), employment status ( $p < 0.001$ ), income status ( $p = 0.049$ ), number of follow-up during pregnancy ( $p = 0.008$ ) and participation in childbirth preparation classes ( $p = 0.033$ ). The difference between age, BMI, month of gestation, number of pregnancies, presence of planned pregnancy, feeling when first learning about pregnancy and feeling ready to become a mother and physical activity status was not significant ( $p > 0.05$ ) (Table 3).

### Affecting Self-Perception Levels of Pregnant Women

pregnancy, family type, presence of planned pregnancy, feeling when first learning about pregnancy and feeling ready to become a mother. In addition, it was revealed that the difference between the scores of SPSP - body perception sub-dimension scores in terms of the emotion felt when first learning about pregnancy and feeling ready to become a mother was statistically significant.

### Sociodemographic and Obstetric Factors

As shown in Table-4, it was found that there was a statistically significant difference between the total scores of pregnant women from SPSP in terms of family type and participation in childbirth preparation classes. It was determined that there was a statistically significant difference between the SPSP - perception of motherhood sub-dimension scores in terms of BMI, number of pregnancies, number of follow-up during

**Table 3.** Comparison of physical activity status of pregnant women according to sociodemographic and obstetric characteristics

Variables	IPAQ				p
	Inactive		Active		
	n	%	n	%	
<b>Age</b>					
24 years and younger	92	71.9	36	28.1	0.263
25-34 years	131	63.3	76	36.7	
35 years and older	32	68.1	15	31.9	
<b>BMI</b>					
Weak/Normal	104	63.0	61	37.0	0.403
Overweight	115	69.7	50	30.3	
Obese	36	69.2	16	30.8	
<b>Education level</b>					
Primary school graduate	45	81.8	10	18.2	0.006*
Secondary school graduate	48	59.3	33	40.7	
High school graduate	121	73.8	43	26.2	
University and higher education	41	50.0	41	50.0	
<b>Employment status</b>					
Not working	191	72.1	74	27.9	< 0.001
Working	64	54.7	53	45.3	
<b>Income status</b>					
Income less than expenses	50	66.7	25	33.3	0.049*
Income equivalent to expenses	182	70.8	75	29.2	
Income exceeds expenses	23	46.0	27	54.0	
<b>Family type</b>					
Extended family	51	68.0	24	32.0	0.798
Nuclear family	204	66.4	103	33.6	
<b>Month of pregnancy</b>					
First two trimesters	145	69.0	65	31.0	0.326
Last trimester	110	64.0	62	36.0	
<b>Number of pregnancies</b>					
First pregnancy	98	62.8	58	37.2	0.107
Two or more pregnancies	157	69.5	69	30.5	
<b>Number of follow-up during pregnancy</b>					
One and six follow-ups	228	69.3	101	30.7	0.008
Multiple monitoring	27	50.9	26	49.1	
<b>Presence of planned pregnancy</b>					
No	51	65.4	27	34.6	0.774
Yes	204	67.1	100	32.9	
<b>Participation in childbirth preparation classes</b>					
Did not participate	242	68.2	113	31.8	0.033
I participated	13	48.1	14	51.9	
<b>The feeling when you first learned about pregnancy</b>					
Happiness, joy and positive emotions	234	68.2	109	31.8	0.071
Other emotions	21	53.8	18	46.2	
<b>Feeling ready to be a mother</b>					
I am not ready	4	50.0	4	50.0	0.449*
I am ready	251	67.1	123	32.9	

\*Fisher exact test

**Table 4.** Comparison of pregnant women's of SPSP total and subscale scores according to sociodemographic and obstetric characteristics

Variables	SPSP - Total			p	SPSP - Perception of Maternity			p	SPSP - Perception of Body			p
	r				r				r			
Age (Year)	0.016			0.761	-0.043			0.40	0.032			0.539
BMI	0.026			0.607	-0.105			0.041	0.066			0.196
Pregnancy week	-0.029			0.574	0.050			0.331	-0.072			0.158
Number of pregnancies	0.008			0.878	-0.143			0.005	0.071			0.165
Number of follow-ups during pregnancy	-0.039			0.450	-0.112			0.028	0.075			0.142
	Mean±SD	Median	25p - 75p		Mean±SD	Median	25p - 75p		Mean±SD	Median	25p - 75p	
Education level												
Primary School	38.2±4.7	38.0	35.0 – 42.0	0.078	27.1±1.8	28.0	27.0 – 28.0	0.717	11.1±4.2	10.0	8.0 – 14.0	0.060
Secondary School	37.4±3.9	38.0	34.0 – 40.0		26.8±2.4	28.0	26.0 – 28.0		10.7±3.2	10.0	9.0 – 13.0	
High School	38.2±4.4	38.0	34.0 – 41.0		27.3±1.2	28.0	27.0 – 28.0		10.9±4.1	8.0	10.0 – 13.0	
University	36.7±3.5	36.0	35.0 – 38.0		27.1±2.1	28.0	27.0 – 28.0		9.6±3.3	9.0	7.0 – 11.0	
Postgraduate	37.2±1.3	38.0	36.0 – 38.0		27.8±0.4	28.0	27.5 – 28.0		9.4±0.9	10.0	8.5 – 10.0	
Employer												
Unemployed	37.8±4.3	38.0	35.0 – 40.0	0.760	27.1±1.7	28.0	27.0 – 28.0	0.772	10.7±3.9	10.0	8.0 – 13.0	0.724
Employed	37.6±4.1	37.0	35.0 – 39.5		27.1±2.0	28.0	27.0 – 28.0		10.5±3.6	10.0	8.0 – 12.0	
Income												
Income Less than Expenses	37.0±4.2	37.0	34.0 – 39.0	0.235	26.9±1.9	28.0	26.0 – 28.0	0.219	10.1±3.8	10.0	7.0 – 13.0	0.408
Income Equivalent to Expenses	37.9±4.2	38.0	35.0 – 41.0		27.2±1.6	28.0	27.0 – 28.0		10.7±3.9	10.0	8.0 – 13.0	
Income Exceeds Expenses	37.6±4.3	38.0	35.0 – 40.0		26.9±2.3	28.0	27.0 – 28.0		10.8±3.6	10.0	8.0 – 13.0	

Family Type												
Extended family	36.8±4.1	36.0	34.0 – 39.0	0.029	26.6±1.9	27.0	26.0 – 28.0	<0.001	10.2±3.7	10.0	7.0 – 13.0	0.333
Nuclear family	37.9±4.1	38.0	35.0 – 41.0		27.2±1.7	28.0	27.0 – 28.0		10.7±3.8	10.0	8.0 – 13.0	
Planned Pregnancy												
No	37.2±4.8	37.0	34.0 – 40.3	0.308	26.1±2.9	27.0	25.0 – 28.0	<0.001	11.2±3.9	11.0	8.0 – 14.0	0.136
Yes	37.9±4.0	38.0	35.0 – 40.0		27.4±1.2	28.0	27.0 – 28.0		10.5±3.8	10.0	8.0 – 12.0	
Participation in childbirth preparation classes												
No	37.6±4.2	37.0	35.0 – 40.0	0.027	27.1±1.8	28.0	27.0 – 28.0	0.428	10.5±3.8	10.0	8.0 – 13.0	0.108
Yes	39.3±3.7	38.0	37.0 – 42.0		27.5±0.9	28.0	27.0 – 28.0		11.8±3.7	10.0	10.0 – 14.0	
The feeling when you first learned about pregnancy												
Sadness and negative emotions	37.2±6.6	35.0	33.0 – 42.0	0.440	24.1±5.0	27.0	20.5 – 28.0	<0.001*	13.2±4.3	14.0	11.0 – 15.0	0.011
Happiness, joy and positive emotions	37.8±4.0	38.0	35.0 – 40.0		27.0±1.3	28.0	27.0 – 28.0		10.4±3.7	10.0	8.0 – 12.0	
Nothing	38.0±4.2	38.5	33.8 – 41.8		23.8±2.1	23.5	22.0 – 25.8		14.3±2.5	14.5	11.8 – 16.5	
Other emotions	36.9±5.6	35.0	33.8 – 39.0		25.8±2.3	27.0	23.8 – 28.0		11.1±4.5	10.0	8.0 – 14.0	
Feeling ready to be a mother												
I am not ready	35.5±6.8	35.0	31.5 – 39.8	0.145	22.5±5.4	22.0	17.5 – 28.0	0.004	13.0±3.7	13.0	11.0 – 14.8	0.048
I am ready	37.8±4.1	38.0	35.0 – 40.0		27.2±1.5	28.0	27.0 – 28.0		10.6±3.8	10.0	8.0 – 13.0	

\*Perception of maternity (Mann Whitney U):Nothing-happiness p=0.001,z=3.685,Other-happiness p<0.001,z=4.121,Sadness-happiness p=0.042, z= -2.697

## DISCUSSION

### **The Relationship Between Physical Activity Status and Self-Perception Levels of Pregnant Women In The COVID-19 Pandemic**

In this study, which was conducted to determine the relationship between the physical activity and self-perception levels of pregnant women in the COVID-19 pandemic and the factors affecting this relationship, it was concluded that there was no statistically significant difference between the SPSP total scores and sub-dimensions of pregnant women who participated in the study and who were inactive and active according to the IPAQ. In the literature review, no studies examining the relationship between physical activity and self-perception levels of pregnant women during the COVID-19 period were found. Therefore, we tried to discuss the findings of the research on physical activity and psychological well-being before the pandemic. In the literature review, studies contrary to our research findings were found. In the study conducted by Goodwin et al. (2000), it was reported that there was a significant difference between the groups who exercised and did not exercise in late pregnancy, and psychological well-being was higher in the exercise group (Goodwin, Astbury and McMeeken, 2000). In a prospective cohort study conducted by Thorell et al. (2010) with 1383 pregnant women, it was reported that the mean mental health score of pregnant women who exercised regularly was higher than those who exercised infrequently (Thorell, Svärdsudd, Andersson and Kristiansson, 2010). Tendais et al., (2011) showed that pregnant women with low levels of physical activity in the first trimester had low levels of mental health in the second trimester (Tendais, Figueiredo, Mota and Conde, 2011). Mourady et al. (2017) reported that light physical activity was positively associated with psychological health (Mourady et al., 2017). The finding obtained from the study is important in terms of providing data on the self-perception of pregnant women whose physical activity was affected due to restrictions during the pandemic process. Despite significant efforts in recent years, a significant decline in physical activity levels during pregnancy and postpartum period is reported to continue. It is stated that the rates of physical activity in pregnancy decrease, especially with the addition of social isolation to barriers such as lack of time, motivation, lack of information and support, burnout, safety concerns, pregnancy disorders, lack of energy

(Harrison, Taylor, Shields and Frawley, 2018). Factors affecting the perception of pregnancy, which differs for each woman and her family, include personal experiences, readiness for motherhood, expectations from pregnancy, socioeconomic structure of the family, pre-existing diseases in women, risky situations experienced in previous and current pregnancies, willingness to become pregnant, social support systems and physical activity level (Kumcağız et al, 2017; Özkan and Arslan, 2007). The quarantine measures taken during the COVID-19 pandemic may have created the idea that both their own and the fetus' health is under guarantee. This situation suggested that although there was a decrease in the physical activity levels of pregnant women, it may not have affected their self-perception levels.

### **Factors Affecting The Physical Activity Status of Pregnant Women In The COVID-19 Pandemic**

According to other findings obtained from the study, there was a significant difference between the sociodemographic characteristics (education level, income status and employment status) and physical activity status of pregnant women, while no significant difference was found between other sociodemographic characteristics (age, BMI and family type) and physical activity status. In the study of Daşikan et al. (2019), it was reported that income status and family structure were among the factors affecting the level of physical activity during pregnancy (Daşikan, Güner and Bozkurt, 2012). Other studies in the literature also show that education and income status are determinant on the physical activity status of pregnant women (Gaston and Cramp, 2011; Nascimento, Surita, Godoy, Kasawara and Morais, 2015). It is an expected result that these factors, which are stated to affect physical activity the most in studies and determine the socioeconomic status of women, were also found to be effective in our study. It has been reported that the economic effects of the pandemic affect parameters such as activity that affect the physical health of pregnant women (Nascimento et al., 2015). However, although all pregnant women were exposed to social isolation during full and partial lockdown processes during the pandemic, women with high socioeconomic status continued their physical activities at home by using some technological facilities or digital platforms (tele-health, blogs, instagram, youtube, etc.).

Another finding of the study was that a significant difference was found between some obstetric characteristics of pregnant women (number of check-up visits during pregnancy, participation in a pregnancy education course) and their physical activity status, but no significant difference was found between other obstetric characteristics (month of pregnancy, number of pregnancies, presence of a planned pregnancy, feeling when they first learned about the pregnancy and feeling ready for motherhood) and the physical activity status of pregnant women. In contrast to our research findings, Nascimento et al. (2015) conducted a study with 1279 women and showed that increasing numbers of children were associated with physical activity (Nascimento et al., 2015). A systematic review by Gaston and Cramp (2011) found that factors associated with greater participation in physical activity during pregnancy included having no other children at home and being active before pregnancy (Gaston and Cramp, 2011). In the study conducted by Daşikan et al. (2019), multiple pregnancy, unplanned pregnancy and pre-pregnancy perceived sedentary behavior were reported to be associated with physical activity (Daşikan et al., 2019). The use of different scales to assess physical activity during pregnancy, obstetric characteristics of the women in the sample group and the discomfort they encountered during pregnancy, as well as seasonal and cultural differences may have been effective in obtaining the research results.

### **Factors Influencing Self-Perception Levels of Pregnant Women During The COVID-19 Pandemic**

This study showed that there was no statistically significant association between some of the variables that indicated the socio-demographic characteristics of pregnant women, such as age, educational status, employment status, income status, and the total scores of SPSP, the mean score of SPSP- perception of motherhood sub-dimension and the mean score of SPSP - perception of body sub-dimension. In studies supporting our research findings, there was no statistically significant difference between socio-demographic characteristics and scores on SPSP - perception of motherhood sub-dimension and SPSP - perception of body sub-dimension (Öztürk-Altınayak, Özkan and Hür, 2021; Coşkun et al., 2020). In a study whose results are not consistent with our research findings, it was

reported that the body perception of pregnant women with low socioeconomic status was lower (Kumcağız 2012). The results of the study suggest that psychological effects are more pronounced in pregnant women due to the pandemic, as in all age groups, and therefore psychosocial factors may have a greater effect on self-perception than socio-demographic factors.

On the other hand, it was found that there was a significant difference between BMI and mean score of SPSP - perception of motherhood sub-dimension, while there was no significant difference between BMI and total scores of SPSP and the mean score of SPSP - perception of body sub-dimension. In support of our study, Rauff and Downs (2011) reported that there was no association between body perception and weight gain during pregnancy (Rauff and Downs, 2011). In contrast to the results of our study, Nash (2012) reported that body image decreased with weight gain as pregnancy progressed (Nash, 2012). In a study by Mehta et al. (2011), body image was reported to be associated with weight gain in pregnancy (Mehta, Siega-Riz and Herring, 2011). In a study conducted by Gümüşay and Erbil (2016), it was found that the body perception of pregnant women with a low body mass index was higher (Gümüşay and Erbil, 2016). In a study by Inanır et al. (2015), it was found that the body perception of pregnant women with high BMI was low (Inanır, Cakmak, Nacar, Guler and Inanır, 2015). Küçükkaya et al. (2020) qualitatively examined women's body image experiences during pregnancy and found that women's body image experiences during pregnancy and their self-perceptions during pregnancy were different (Küçükkaya, Altan-Sarıkaya, Kahyaoğlu-Süt and Öz, 2020). Pregnant women's focus on fetal health and healthy abortion may have been critical to the research outcome.

It was found that the difference between family type, another socio-demographic variable, and the total scores of SPSP and the scores of SPSP - perception of motherhood sub-dimension was significant. Uçar (2014) reported that there was no significant relationship between family structure and self-perception during pregnancy (Uçar, 2014). It is reported that the socio-economic, demographic and intellectual transformation process that has taken place in Turkey in the last quarter century has affected individuals' perceptions of childbearing and the shift towards the nuclear family has taken place

(Değirmenci, 2006; Kumcağız et al., 2017). A woman's perception of pregnancy is influenced by the society and culture in which she lives, as well as the attitudes and reactions of people around her to her pregnancy. Therefore, this result is an expected outcome for pregnant women, most of whom live in nuclear families.

A significant difference was found between the obstetric characteristics of the pregnant women who participated in the study (number of pregnancies, number of children, number of check-ups during pregnancy, planned pregnancy, the person who performed the pregnancy check-up, the status of information about childbirth, the emotions they felt when they learned about the pregnancy, and the status of feeling ready to become a mother) and the scores of SPSP - perception of motherhood sub-dimension. In a study conducted by Öztürk-Altınayak et al. (2021), it was reported that there was no statistically significant difference between the number of pregnancies and scores of SPSP - perception of motherhood sub-dimension, while there was a statistically significant difference between the planned pregnancy and scores of the perception of motherhood sub-dimension of the scale (Öztürk-Altınayak et al., 2021). In a study by Demir-Alkin and Beydağ (2020), a significant difference was found between the number of pregnancies and planned pregnancy and the perception of motherhood (Demir-Alkin and Beydağ, 2020). In a study conducted by Yıldırım (2015), it was found that the acceptance of motherhood was significantly higher among women whose pregnancies were planned and who had at most one child (Yıldırım, 2015). Many studies have reported that women with planned and voluntary pregnancies who experience a low number of pregnancies (2 at most) report less physical and emotional discomfort during pregnancy, perceive the discomfort that should occur during this period as more normal, and have a more positive perception of motherhood (Uçar, 2014; Demiray, 2006)). Factors such as the number of pregnancies, planned pregnancy and readiness for motherhood influence pregnant women's self-perceptions (Özçalkap, 2018). In the study conducted by Demir Alkin and Beydağ (2020), 57.4% of pregnant women reported that they felt ready for motherhood (Demir-Alkin and Beydağ, 2020). Therefore, this result obtained during the pandemic process is an expected result.

A significant difference was found between the

obstetric characteristics of the pregnant women in the study (the feeling they experienced when they first learned about pregnancy and the feeling of being ready to become a mother) and mean scores of SPSP - perception of body sub-dimension. Examining the studies in the literature, there are no studies that examine the relationship between the emotions felt when first learning of pregnancy and feeling ready to become a mother and pregnant women's body perceptions, but there are studies that examine perceptions of pregnancy in general. It has been reported that 78% of pregnant women in Babadağlı's (2008) study, 9.5% of pregnant women in Özçalkap's (2018) study and 91.3% of pregnant women in Evrenol-Öçal's (2011) study felt ready for pregnancy (Özçalkap, 2018; Evrenol Öçal, 2011; Babadağlı, 2008). It is believed that the woman's feeling ready for motherhood contributes to the formation of a positive body image by perceiving pregnancy positively.

### **Limitations and Difficulties of The Study**

The study has some limitations. Since the pregnant women participating in the study were determined by random sampling method, the results of the study cover only the sampled women. Since the study was conducted cross-sectionally, the data obtained may change over time. Since the questionnaire used in data collection was applied with face-to-face interview technique, the reliability of the data is limited to the accuracy of the information given by the pregnant women and cannot be generalized to all pregnant women. There were some problems such as communication breakdowns, inability to understand the questions, and reluctance towards the survey due to the fear of being caught by COVID-19 and the obligation to comply with social distancing rules to protect against COVID-19. In addition, the data collection period was prolonged due to the difficulty in reaching the sample number due to flexible working hours.

### **CONCLUSION AND RECOMMENDATIONS**

In line with the research findings, it was concluded that there was no relationship between physical activity status and self-perception levels of pregnant women in the COVID-19 pandemic. However, it was revealed that some sociodemographic (education level, income status, employment status) and obstetric characteristics (number of follow-ups during

pregnancy, participation in childbirth preparation courses) of pregnant women had an effect on their physical activity status. It was also concluded that variables such as Body Mass Index, family type, number of pregnancies, number of follow-ups during pregnancy, presence of planned pregnancy, participation in childbirth preparation classes, feeling ready to be a mother affect the self-perceptions of pregnant women. Therefore, it is recommended that health personnel take a systematic approach by considering socio-demographic and obstetric factors in the organization and delivery of health services during pandemic periods such as COVID-19.

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**Ethics Committee Approval:** The research protocol was approved by Institute of Health Sciences Non-Interventional Clinical Research Ethics Committee of a Aydın Adnan Menderes University in Turkey (Approval number: 2021/057; Date: 01.12.2021). Permission was obtained from university hospital where the study was conducted.

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## REFERENCES

- Babadađlı, B. (2008). Gebelik yařının gebelikte yařanan fizyolojik ve psikolojik deđiřikliklere etkisi. *Atatürk Üniversitesi Hemřirelik Yüksekokulu Dergisi*. 11, 96-105.
- Bacacı, H., Ejder, A.S. (2018). Gebelerde beden imajı algısı ve distres arasındaki iliřki, *Düzce Üniversitesi Sađlık Bilimleri Enstitüsü Dergisi*. 8,76-82.
- Boscaglia, N., Skouteris, H., Wertheim, E.H. (2003). Changes in body image satisfaction during pregnancy: A comparison of high exercising and low exercising women, *The Australian and New Zealand Journal of Obstetrics and Gynaecology*. 43(1), 41-45. <https://doi.org/10.1046/j.0004-8666.2003.00016.x>.
- Borodulin, K.M., Evenson, K.R., Wen, F., Herring, A.H., Benson, A.M (2008). Physical activity patterns during pregnancy, *Medicine & Science in Sports & Exercise*. 40(11), 1901-8. <https://doi.org/10.1249/MSS.0b013e31817f1957>.
- Bourgoin, E., Callahan, S., Séjourné, N., Denis, A. (2012). Image du corps et grossesse: vécu subjectif de 12 femmes selon une approche mixte et exploratoire, *Psychologie Française*. 57(3),205-13. <https://doi.org/10.1016/j.psfr.2012.04.001>
- Chang, S.R., Chao, Y.M., Kenney, N.J. (2006). I am a woman and I'm pregnant: body image of women in Taiwan during the third trimester of pregnancy, *Birth*. 33(2),147-153. <https://doi.org/10.1111/j.0730-7659.2006.00087.x>.
- Clark, A., Skouteris, H., Wertheim, E.H., Eleanor, H., Paxton, S.J., Milgrom, J. (2009). The relationship between depression and body dissatisfaction across pregnancy and the postpartum: A prospective study, *Journal of Health Psychology*. 14(1),27-35. <https://doi.org/10.1177/1359105308097940>.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. 2nd ed. Hillsdale, NJ, Erlbaum.
- Cořkun, A.M., Arslan, S., Okcu, G. (2020). Gebe kadınlarda gebelik algisinin stres, demografik ve obstetrik özellikler ađısından incelenmesi, *Koç Üniversitesi Hemřirelikte Eđitim ve Arařtırma Dergisi*.17(1),1-8.
- Craig, C.L., Marshall, A.L., Sjostrom, M., Bauman, A.E., Booth, M.L. (2003). International physical activity questionnaire: 12-country reliability and validity, *Medicine and Science in Sports and Exercise*.35(8),1381-95. <https://doi.org/10.1249/01.MSS.0000078924.61453.FB>.
- Dařıkan, Z., Güner, Ö., Bozkurt, T. (2019). İkinci ve üçüncü trimester gebelerin fiziksel aktivite düzeyi ve fiziksel aktivite engelleri, *Adıyaman Üniversitesi Sađlık Bilimleri Dergisi*. 5(3):1731-1745.
- Deđirmenci, F. (2016). Gebelerin psikososyal sađlık durumları ile sosyal destekleri arasındaki iliřki (yükseklisans tezi), *Mersin Üniversitesi Sađlık Bilimleri Enstitüsü Hemřirelik Anabilim Dalı, Mersin*.
- Demir-Alkin, E., Beydađ, K.D. (2020). Üç ve üzeri gebeliđi olan kadınların algıladıkları stres düzeyi ve kendilerini algılama düzeyi iliřkisi, *Journal of Psychiatric Nursing*. 11(3),228-238.
- Demiryay, A. (2006). Gebe kadınların algıladıkları fiziksel ve emosyonel yakınmalar (yükseklisans tezi). *Afyon Kocatepe Üniversitesi, Sađlık Bilimleri Enstitüsü, Afyon*.
- Dikmen, A.H., řanlı, Y. (2019). Progresif kas gevřeme egzersizlerinin gebelerin distres düzeyi ve gebelik algısına etkisi, *Dokuz Eylül Üniversitesi Hemřirelik Fakültesi Elektronik Dergisi*. 12 (3), 186-198.
- Domingues, M.R., Barros, A.J. (2007). Leisure-time physical activity during pregnancy in the 2004 Pelotas Birth Cohort Study, *Revista de Saúde Pública*. 41(2), 173-80. <https://doi.org/10.1590/S0034-89102007000200002>.
- Evrenol-Öçal, S. (2011). Adölesan gebelerin gebelik, dođum ve anneliđe uyumları ve etki eden faktörler (yükseklisans tezi), *Ege Üniversitesi, Sađlık Bilimleri Enstitüsü, Hemřirelik Anabilim Dalı, İzmir*.
- 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*. 39,175-191. <https://doi.org/10.3758/bf03193146>.
- Gaston, A., Cramp, A. (2011). Exercise during pregnancy: A review of patterns and determinants, *The Journal of Science and Medicine in Sport*. 14(4),299-305. <https://doi.org/10.1016/j.jsams.2011.02.006>.
- Goodwin, A., Astbury, J., McMeeken, J. (2000). Body image and psychological well-being in pregnancy. A comparison of exercisers and non-exercisers, *The Australian and New Zealand Journal of Obstetrics and*

- Gynaecology. 40(4),442-47.  
<https://doi.org/10.1111/j.1479-828x.2000.tb01178.x>.
- Gümüřay, M., Erbil, N. (2016). Gebelikte kadının beden algısının ve eşlerinin cinsel fonksiyonunun incelenmesi (yükseklisans tezi), Ordu Üniversitesi Sağlık Bilimleri Enstitüsü Hemşirelik Anabilim Dalı, Ordu.
- 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, *Journal of Physiotherapy*. 64(1),24-32.  
<https://doi.org/10.1016/j.jphys.2017.11.012>.
- Ibanez, G., Blondel, B., Prunet, C., Kaminski, M., Saurel-Cubizolles, M.J. (2015). Prevalence and characteristics of women reporting poor mental health during pregnancy: findings from the 2010 French National Perinatal Survey, *Revue d'Épidémiologie et de Santé Publique*. 63(2),85-95. <https://doi.org/10.1016/j.respe.2015.02.023>.
- Inanir, S., Cakmak, B., Nacar, M.C., Guler, A.E., Inanir, A. (2015). Body image perception and self-esteem during pregnancy, *International Journal of Women's Health and Reproduction Sciences*. 3(4),196-200.  
<https://doi.org/10.15296/ijwhr.2015.41>.
- Kostanođlu, A., Maznak, A.S., řahin, A. (2019). Gebelerde fiziksel aktivite, uyku kalitesi ve yaşam kalitesi, *Journal of Turkish Sleep Medicine*. 3,80-87.
- Kumcađız, H., Ersanlı, E., Murat, N. (2017). Gebelerin kendilerini algılama ölçeđi geliştirme çalışması, *Journal of Psychiatric Nursing*. 8(1),23-31.
- Kumcađız, H. (2012). Gebe kadınlarda beden algısı ve benlik saygısının bazı deđişkenlere göre incelenmesi, *International Journal of Human Sciences*. 9(2),691-703.
- Küçükkaya, B., Altan-Sarıkaya, N., Kahyaglu-Süt, H., Öz, S. (2020). Gebelikte alınan kiloya bađlı beden algısı ile gebeliđin kabulü arasındaki iliřki, *JAREN*. 6(3),426-432.
- Mehta, U.J., Siega-Riz, A.M., Herring, A.H. (2011). Effect of Body Image on Pregnancy Weight Gain, *Maternal and Child Health Journal*.15(3):324-332.  
<https://doi.org/10.1007/s10995-010-0578-7>.
- Mourady, D., Richa, S., Karam, R., Papazian, T., Hajj- Moussa, F., El Osta, N. ... Rabbaa-Khabbaz, L. (2017). Associations between quality of life, physical activity, worry, depression and insomnia: A cross-sectional designed study in healthy pregnant women, *PLoS One*. 12(5),1-15.  
<https://doi.org/10.1371/journal.pone.0178181>.
- Nascimento, S.L., Surita, F.G., Godoy, A.C., Kasawara, K.T., Morais, S.S. (2015). Correction: Physical Activity Patterns and Factors Related to Exercise during Pregnancy: A Cross Sectional Study, *PLoS One*.10(7),e0133564.  
<https://doi.org/10.1371/journal.pone.0128953>.
- Nash, M. (2012). Weighty matters: Negotiating 'fatness' and 'in-betweenness' in early pregnancy, *Feminism & Psychology*. 22(3),307-323.  
<https://doi.org/10.1177/0959353512445361>
- Özçalkap, N. (2018). Adıyaman il merkezindeki gebelerin gebelik ve anneliđe uyumlarının karřılařtırılması (yükseklisans tezi), Hasan Kalyoncu Üniversitesi, Sağlık Bilimleri Enstitüsü, Hemşirelik Anabilim Dalı, Gaziantep.
- Özdemir, Ö.Ç., Sürmeli, M., Özel, A., Yavuz, E.İ., Topçuođlu, A., Ankaralı, H. (2017). Gebelerde fiziksel aktivite ve yaşam kalitesi arasındaki iliřki, *Anatolian Clinic Journal of Medical Sciences*. 22(2), 95-102.
- Özkan, A., Arslan, H. (2007). Gebeliđe karar verme, fizyolojik yakınmaları algılama ve eđitim gereksinimleri, *Zeynep Kamil Tıp Bülteni*.38(4),155-161.
- Öztürk-Altınayak, S., Özkan, H., Hür, S. (2021). Anne adaylarının kendilerini algılama durumlarının deđerlendirilmesi, *Göbeklitepe International Journal of Health Sciences*. 4(5),129-137.
- Rauff, E.L., Downs, D.S. (2011). Mediating effects of body image satisfaction on exercise behavior, depressive symptoms, and gestational weight gain in pregnancy, *Annals of Behavioral Medicine*. 42(3),381-390.  
<https://doi.org/10.1007/s12160-011-9300-2>.
- Royal College of Obstetricians and Gynaecologists [RCOG]. (2020). Coronavirus (COVID-19) infection in pregnancy. Available from: URL:  
<https://www.rcog.org.uk/guidance/coronavirus-covid-19-pregnancy-and-women-s-health/coronavirus-covid-19-infection-in-pregnancy/>. Access in: December 22, 2022.
- Saglam, M., Arikan, H., Savci, S., Inal-Ince, D., Bosnak-Guclu, M., Karabulut, E., Tokgozoglul, L. (2010). International physical activity questionnaire: reliability and validity of the Turkish version, *Comparative Study Percept Mot Skills*.

111(1),278-84.

doi:10.2466/06.08.PMS.111.4.278-284.

Skouteris, H., Carr, R., Wertheim, E.H., Paxton, S.J., Duncombe, D. (2005). A prospective study of factors that lead to body dissatisfaction during pregnancy, *Body Image*. 2(4),347-361.

<https://doi.org/10.1016/j.bodyim.2005.09.002>

Sweeney, A.C., Fingerhut, R. (2013). Examining relationships between body dissatisfaction, maladaptive perfectionism, and postpartum depression symptoms, *Journal of Obstetric, Gynecologic & Neonatal Nursing*. 42(5):551-61. <https://doi.org/10.1111/1552-6909.12236>.

Tendais, I., Figueiredo, B., Mota, J., Conde, A. (2011). Physical activity, health-related quality of life and depression during pregnancy, *Cad Saude Publica*. 27(2),219-28. <https://doi.org/10.1590/s0102-311x2011000200003>.

The American College of Obstetricians and Gynecologists [ACOG]. (2015). Committee Opinion No.650: Physical activity and exercise during pregnancy and the postpartum period, *Obstet Gynecol*. 126(6),e135-42. <https://doi.org/10.1097/AOG.0000000000001214>.

Thorell, E., Svärdsudd, K., Andersson, K., Kristiansson, P. (2010). Moderate impact of full-term pregnancy on estimated peak-oxygen uptake, physical activity and perceived health, *Acta Obstetrica et Gynecologica Scandinavica*. 89(9), 1140-48. <https://doi.org/10.3109/00016349.2010.487894>.

Tosun, Ö.Ç., Okyay, R.E. (2018). Gebelik sürecinde fiziksel aktivite değişimlerinin incelenmesi, *Journal of Health Sciences of Professions*.5(3),333-341.

Uçar, H. (2014). Gebelerin psikososyal sağlık durumları ile annelik rolü arasındaki ilişki (yükseklisans tezi). Atatürk Üniversitesi Sağlık Bilimleri Enstitüsü. Erzurum.

Yıldırım H. (2015). Gebe kadınların ebeveynlik öz-yeterliliklerinin prenatal uyumlarına etkisi (yükseklisans tezi), Yüksek Lisans Tezi, İnönü Üniversitesi Sağlık Bilimleri Enstitüsü, Malatya.