Cukurova Medical Journal
ÇUKUROVA ÜNİVERSİTESİ TIP FAKÜLTESİ

Cukurova Med J 2020;45(2):547-555
DOI: 10.17826/cumj.683215

ARAŞTIRMA / RESEARCH

Effect of physical activity on health-related quality of life and depression anxiety in pregnancy

Gebelikte yapılan fiziksel aktivitenin sağlıkla ilgili yaşam kalitesi ve depresyon-anksiyete üzerine etkisi

Duygu İlke Yıldırım[1], Şule Balcı[2], Oğuzhan Günenç[3], Mehmet Ali Eryılmaz[4]

[1,2]Department of Family Medicine, Konya Training and Research Hospital, University of Health Sciences, Konya, Turkey.
[3]Departmant of Obstetrics and Gynecology, Konya Training and Research Hospital, University of Health Sciences, Konya, Turkey.
[4]Department of General Surgery, Konya Training and Research Hospital, University of Health Sciences, Konya, Turkey.

Cukurova Medical Journal 2020;45(2):547-555

Abstract

Purpose: The study aimed to investigate the effect of physical activity on health-related quality of life and depression-anxiety in pregnancy.
Materials and Methods: This is a descriptive and cross-sectional study. The study included 347 pregnant women who were admitted to the gynecology and obstetrics outpatient polyclinic. The quality of life of the pregnant women was collected using the Nottingham Health Profile scale, physical activity levels were collected by using the short form of the International Physical Activity Questionnaire and data on depression and anxiety levels of the participants were collected using the Beck Depression Inventory and the Beck Anxiety Inventory.
Results: When physical activity levels of pregnant women were compared according to Nottingham Health Profile scale and quality of life subscales; there were statistically significant differences between physical activity levels and energy level, social isolation, emotional status, sleep and total Nottingham Health Profile score. There was a significant relationship between low (a) - high (c) and middle (b) - high (c) groups when anxiety levels were compared with physical activity levels.
Conclusion: The results of our study are considered to act as a guideline for the regulation and necessity of physical activity in pregnant women.
Keywords: Pregnancy, physical activity, quality of life, depression, anxiety

Öz

Amaç: Bu çalışmanın amacı; gebelikte yapılan fiziksel aktivitenin sağlıkla ilgili yaşam kalitesi ve depresyon-anksiyete üzerine olan etkilerinin değerlendirilmesidir.
Gereç ve Yöntem: Bu tanımlayıcı ve kesitsel bir çalışmadır. Çalışmaya kadın hastalıkları ve doğum polikliniğine başvuran sağlıklı ve çalışmaya katılmaya gönüllü 347 gebe kadın dahil edilmiştir. Gebelerin yaşam kaliteleri; Nottingham Sağlık Profili (NSP), fiziksel aktivite düzeyleri; Uluslararası Fiziksel Aktivite Anketi'nin kısa formu, katılımcıların depresyon ve anksiyete düzeyleri ile ilgili veriler ise; Beck Depresyon Ölçeği ve Beck Anksiyete Ölçeği kullanılarak toplanmıştır.
Bulgular: Gebelerin yaptıkları fiziksel aktivite düzeyleri NSP ölçeği ile yaşam kalitesi alt ölçeklerine göre karşılaştırıldığında; fiziksel aktivite düzeyleri ile enerji seviyesi, sosyal izolasyon, duygusal durum, uyku ve toplam NSP puanı arasında istatistiksel olarak anlamlı farklılık saptanmıştır. Anksiyete durumu fiziksel aktivite düzeylerine göre karşılaştırıldığında düşük(a)-yüksek(c) ve orta(b)-yüksek(c) olan gruplar arasında anlamlı ilişki saptanmıştır
Sonuç: Çalışmamızın sonuçları, gebe kadınlarda fiziksel aktivitenin düzenlenmesi ve gerekliliği için bir rehber olarak kabul edilebilir.

Anahtar kelimeler: Gebelik, fiziksel aktivite, yaşam kalitesi, depresyon, anksiyete

Yazışma Adresi/Address for Correspondence: Dr. Duygu İlke Yıldırım, Konya Training and Research Hospital, University of Health Sciences, Department of Family Medicine, Konya, Turkey E-mail: azrailla@hotmail.com
Geliş tarihi/Received: 01.02.2020 Kabul tarihi/Accepted: 25.03.2020 Çevrimiçi yayın/Published online: 18.05.2020

INTRODUCTION

It is known that regular physical activity contributes positively to the mental and physical health of people, protects them from many diseases, and also improves the quality of life[1,2]. Physical activity during pregnancy is thought to be beneficial to health. Adequate physical activity improves pregnancy outcomes by preventing excessive weight gain during pregnancy, reducing the risk of gestational diabetes, preeclampsia, and premature birth, and preventing the development of varicose veins[3-5]. Physically inactive life reduces quality of life and constitutes a risk factor for noncommunicable diseases such as hyperlipidemia, cardiovascular diseases, cancer, and type 2 diabetes mellitus[6]. The World Health Organization recommends aerobic physical activity for at least 150 minutes per week and muscle strengthening exercise for at least 2 days per week for all individuals aged 18-64 years. In addition, pregnant women may need additional measures during pregnancy, so they are advised to receive medical support before conception[7].

About one-quarter of people around the world are thought not to reach the recommended level of physical activity. In recent years, behavioral interventions that are designed to increase the physical activity of pregnant women have increased. The number of studies showing that increasing physical activity in pregnant women is clinically and statistically significant is low and insufficient. There are some physiologic changes that occur during pregnancy. These are changes in ventilation, heart flow, heart rate, and energy expenditure[8,9]. In addition to these changes, physiologic responses to physical activity are more frequent in pregnancy than in the pre-pregnancy period. The risk of injury to pregnant women after exercise also increases because hormonal changes in women increase joint looseness[10]. Therefore, it is important to take support for exercise in the pre-pregnancy period to reduce the risk of injury of the mother and the baby in the pregnancy period and to facilitate physical adaptation.

Studies have shown that exercise during pregnancy improves cardiovascular function without sacrificing fetal well-being[1113]. Regular physical activity is not only beneficial to general health; an increasing number of studies have shown that exercise has positive effects on psychological functioning and reduces depression[14]. Studies in the literature have investigated the relationship between physical activity and depression/anxiety and quality of life separately in pregnant women, but there no study has evaluated them together. Our study is the first in our country, Turkey, in which the impact of physical activity during pregnancy on health-related quality of life and depression-anxiety was evaluated in a wide sample group.

MATERIALS AND METHODS

This study was conducted with 347 pregnant women who were admitted to our obstetrics and gynecology clinic of a tertiary health center between December 15th, 2018, and March 15th, 2019, after the approval of the Ethics Committee. Three hundred forty-seven healthy and voluntary pregnant women who agreed to participate in the study were included in the study. Pregnant women who were unwilling to participate in the study, aged under 16 years, with heart disease, hypertension, diabetes mellitus, and physical illness that would not allow them to perform physical activity, and those with a history of severe anemia were excluded with a total number of 223 patients. The study was conducted under the original Declaration of Helsinki and its later amendments or comparable ethical standards and was approved by the local ethics committee of the Selçuk University, Faculty of Medicine, (Reference number: 2018/21, date: 05.12.2018). All participants signed an informed consent.

This was a descriptive and cross-sectional study. All pregnant women completed a sociodemographic data form consisting of 20 questions. The quality of life of pregnant women was assessed using the Nottingham Health Profile (NHP). Physical activity level of pregnant women in the study was determined using the International Physical Activity Questionnaire short form (IPA-SF). The depression and anxiety data of the participants were collected using the Beck Depression Inventory and the Beck Anxiety Inventory. All data were collected through face-to-face interviews. This study was approved by the Ethics Committee of Non-Interventional Clinical Research at Selçuk University on December 5th, 2018 (Decision No. 421).

Measures

The Nottingham Health Profile (NHP)

The validity and reliability of the Turkish form of the

NHP, which is used to measure quality of life was confirmed by Küçükdeveci et al. [15,16] in 2000. The NHP is a general quality of life measure that assesses how much some problems affect the level of daily activity. There are a total of 38 items and 6 sub-sections on the scale. These sub-sections evaluate pain with 8 items, social isolation with 5 items, physical activity with 8 items, emotional reactions with 9 items, sleep with 5 items, and energy with 3 items, the lowest total profile score of this part is 0, and 600 as the highest. The second part is used to determine problems due to the current health condition, the lowest total score of this part is 0, and 7 is the highest. Higher scores for both parts indicate poor health status, low scores indicate good health status. Cronbach's alpha coefficient of the Nottingham Health Profile questionnaire was 0.91.

International Physical Activity Questionnaire-Short Form (IPA-SF)

This form is a self-administered questionnaire that measures the physical activity level of participants through 9 questions. This form consists of questions that determine the time that individuals have devoted to physical activity in the last week. The validity and reliability study of the Turkish form of IPA-SF was made by Karaca in 2005 [17,18] . The physical activity of the pregnant women was recorded with the criterion that they had at least 10 minutes in the last week. The physical activity of the pregnant women was calculated by questioning the physical activity as severe or moderate level in terms of minutes. The duration of sitting and walking during one day was calculated in terms of minutes.

The total physical activity score of the participants was calculated by multiplying appropriate MET scores for severe and moderate physical activity in the last 7 days with the duration of walking in minutes and the duration of walking in days (MET-min/week). The standard MET (metabolic equivalent) coefficient values for these physical activities are shown below:

Walking score (MET-min/week) = 3.3 *walking duration* number of days of walking
Moderate physical activity score (MET-min/week) = 4.0* duration of moderate physical activity* number of days of moderate physical activity
Severe physical activity score (MET-min/week) = 8.0* duration of severe physical activity* number of days of severe physical activity
Total physical activity score (MET-min/week) = Walking + moderate physical activity score + severe physical activity score

According to the total physical activity score, the pregnant women were divided into three groups as having low, medium, and high physical activity levels. According to this classification, scores <600 MET-min/week were accepted as low physical activity, scores between 600-3000 MET-min/week were accepted as moderate physical activity, and scores >3000 MET-min/week were accepted as high physical activity [17]. Cronbach's alpha coefficient of the International Physical Activity Questionnaire-Short Form questionnaire was in the range of 0.79 to 099.

Beck Depression Inventory (BDI)

This scale was developed by Beck et al. [19] in 1961, and the validity and reliability study of the Turkish form of BDI was conducted by Hisli in 1989 [20]. The inventory is a quadruple Likert-type self-assessment measure consisting of 21 questions designed to determine how an individual felt in the last week. Scores range between 0-63 points. According to the results of studies, 17 is accepted as a cut-off value; it has been shown that a score of 17 or above is consistent with a diagnosis of depression by 90% [18].

Beck Anxiety Inventory

This scale was developed by Beck et al. [21] in 1988, and the validity and reliability of the Turkish form of BAI was confirmed by Ulusoy et al. [22] in 1998. This scale is made up of 21 items and is a Likert-type scale rated from 0 to 3. A total score of 0-14 is considered normal, 16-25 points show mild-medium anxiety levels, and 26-63 points show severe anxiety [22].

Statistical analysis

The descriptive and sociodemographic characteristics were evaluated using descriptive statistical methods such as frequency (n), percent (%), mean ± standard deviation, minimum (min) - maximum (2) and median values. For statistical significance, the Mann-Whitney U test was used for the abnormally distributed variables. For the comparison of more than two groups; Kruskal-Wallis H test were used to compare data of continuous variables. Data were analyzed using the Kolmogorov-Smirnov normality test. All analyses were performed with 95% confidence intervals. For statistical significance, $p<0.05$ was considered significant. Statistical analysis

was performed using the Statistical Package for the Social Science (SPSS) 22.0 computer program.

RESULTS

The sociodemographic and descriptive characteristics of the participants are shown in Table 1. Our study included 347 pregnant women. The mean age of pregnant women was 27.31±5.69 (min: 16, max: 43) years. The mean body mass index (BMI) of the participants was 28.11±5.78 (min: 17.58, max: 50.78) kg/m^2. The inactive group comprised 256 (73.8%) women, 67 (19.3%) were in the low physical activity group, and 24 (6.9%) were in the adequate physical activity group (Table 1).

Table 1. The sociodemographic and descriptive characteristics of the women (N=347)

Physical and sociodemographic features		**Mean±SD (min-max)**	
Age (year)		27.31±5.69 (16-43)	
Height (cm)		159.48±5.93 (140-175)	
Weight (kg)		71.43±14.80 (45-130)	
BMI (kg/m2)		28.11±5.78 (17.58-50.78)	
Category		n	%
Education level	Illiterate	22	6.3
	Primary school	245	70.6
	Secondary school	54	15.6
	University and ↑	26	7.5
Number of births	0	54	15.6
	1	90	25.9
	2	119	34.3
	≥3	84	24.2
Pregnancy period	First trimester	32	9.2
	Second trimester	107	30.8
	Third trimester	208	60.0
Physical activity level	Non-active	256	73.8
	Low activity	67	19.3
	Adequate activity	24	6.9
Total		347	100.0

Mean±SD: Mean ± standard deviation, BMI: Body mass index.

The physical activity of the pregnant women was compared using sub-scales of the NHP scale in Table 2. The a,b,c characters referring to; a means low physical activity; b means moderate physical activity and c means high physical activity. There was no relation between pain and physical activity sub-scales and physical activity (PA) levels of the women. There was a statistically significant relation between the PA levels of pregnant women and energy levels (p=0.001), social isolation (p=0.046), emotional status (p<0.001), sleep (p=0.036), and total NHP (p<0.001). Analyses showed that there were significant differences between groups with low (a)-moderate (b) PA levels and energy level sub-scale (U=6333.50; Z= -3.502; p<0.001); between groups with low(a)-high(c) and moderate(b)-high(c) PA levels and social isolation sub-scale (U=2472.00; Z= -2.370; p=0.018 and U=684.00; Z= -1.991; p=0.047, respectively); between groups with low(a)-moderate(b), low(a)-high(c) and moderate(b)-high(c) PA levels and emotional status sub-scale (U=6944.50; Z= -2.758, p=0.006; U=2239.50; Z= -2.745; p=0.006 and U=387.00; Z= -4.235; p<0.001, respectively); between group with low(a)-moderate(b) PA level and sleep sub-scale (U=7034.50; Z=-2.373; p=0.018).

The analysis of covariance adjusted for age are shown in Table 2. Analyses showed that there were significant differences between groups with low(a)-moderate(b), low(a)-high(c) and moderate(b)-high(c) PA levels and total NHP scale score (U=6697.50; Z= -2.762; p=0.006; U=1639.00; Z= -3.781; p<0.001 and U=453.00; Z= -3.199; p=0.001, respectively); between groups with low(a)-high(c) and moderate(b)-high(c) PA levels and anxiety status (U=1870.50; Z= -3.184; p=0.001 and U=358.50; Z= -4.065; p<0.001, respectively) (Table 2).

Table 2. Comparison of physical activity level of pregnant women with quality of level sub-scales, depression/anxiety levels and the analysis of covariance adjusted for age

Sub-parameters of the NHP	Physical Activity Level	*n*	Mean±SE	*Median*	χ^2	*p*†
NHP Pain	Low	256	31.19±1.51	27.70		
	Moderate	67	25.80±2.95	24.78	0.950	0.622
	High	24	26.07±5.18	21.19		
NHP	Low	256	27.85±1.55	21.99		
Physical Activity	Moderate	67	21.88±3.03	21.99	4.983	0.083
	High	24	14.27±5.30	11.20		
NHP	Low	256	53.19±2.63 a	60.80		
Energy Level	Moderate	67	26.70±5.14 b	24.00	14.314	<0.001[ab]
	High	24	29.89±9.00 c	24.00		
NHP	Low	256	14.06±1.74 a			0.018[ac]
Social Isolation	Moderate	67	9.39±3.40 b		6.175	0.046
	High	24				0.047[bc]
NHP	Low	256	13.61±1.59 a			0.006[ab,ac] <0.001[bc]
Emotional Status	Moderate	67	12.27±3.10 b	9.76	18.051	
	High	24	1.76±5.42 c			
NHP Sleep	Low	256	27.92±1.97 a	12.57	6.643	0.018[ab] 0.036
	Moderate	67	33.54±3.84 b	16.10		
	High	24	25.12±6.73 c	28.67		
NHP (total)	Low	256 a	166.85±6.98 a	148.96		0.006[ab]
	Moderate	67 b	127.65±13.63 b	96.63	20.919	0.001[bc]
	High	24 c	89.32±23.85 c	85.06		<0.001[ac]
BDI	Low	256	10.12±0.74	4.00		
	Moderate	67	8.79±1.45	8.00	2.999	0.223
	High	24	3.70±2.54	4.00		
BAI	Low	256	10.78±0.75 a	5.00		
	Moderate	67	10.93±1.47 b	10.00	13.411	0.001[ac]
	High	24	10.66±2.57 c	12.00		<0.001[bc]

At table 3 the a,b,c characters referring to; a means first trimester; b means second trimester and c means third trimester. There were significant differences between 1st(a)-2nd(b), 1st(a)-3rd(c) and 2nd(b)-3rd(c) trimesters and depression status of pregnant women (U=1023.50; Z= -3.468; p=0.001; U=1562.00; Z= -4.851; p<0.001 and U=8946.50; Z= -2.865; p=0.001, respectively). There were significant differences between 1st(a)-2nd(b) and 1st(a)-3rd(c) trimesters and the anxiety status of the pregnant women (U=693.00; Z= -5.127; p<0.001 and U=1342.50; Z= -5.450; p<0.001, respectively). There were significant differences between 1st(a)-2nd(b) and 2nd(b)-3rd(c) trimesters and the PA level of the pregnant women (U=1310.00; Z= -2.038; p=0.042 and U=8128.00; Z= -3.985; p<0.001, respectively). There were significant differences between 1st(a)-2nd(b), 1st(a)-3rd(c) and 2nd(b)-3rd(c) trimesters and the energy level sub-scales of the pregnant women (U=1282.00; Z= -2.265; p=0.024; U=2093.00; Z= -3.588; p<0.001 and U=9036.00; Z= -2.891; p=0.001, respectively). There were significant differences between 1st(a)-2nd(b) and 1st(a)-3rd(c) trimesters and the social isolation sub-scales of the pregnant women (U=1292.00; Z= -2.886; p=0.004 and U=2478.00; Z= -3.546; p<0.001, respectively). There were significant differences between 1st(a)-2nd(b) and 1st(a)-3rd(c) trimesters and the emotional status sub-scales of the pregnant women (U=824.00; Z= -4.925; p<0.001 and U=1668.50; Z= -5.442; p<0.001, respectively). There was no relation between pain, physical activity, and sleep sub-scales and total NHP scale scores and trimesters of the pregnant women (Table 3).

Table 3. Comparison of physical activity level of pregnant women with quality of level sub-scales, depression and anxiety levels according to trimesters

Measure	Period	n	mean±SD	F	df	p
BDI	1.Trimester	32	19.90±15.98 a	15.00		0.001[ab]
	2.Trimester	107	9.67±10.68 b	7.00	28.467	<0.001[ac]
	3.Trimester	208	7.68±11.03 c	3.00		0.004[bc]
BAI	1.Trimester	32	22.96±15.92 a	14.00		<0.001[ab,ac]
	2.Trimester	107	10.22±9.99 b	10.00	33.848	
	3.Trimester	208	9.20±11.47 c	5.00		
IPA-SF	1.Trimester	32	256.50±278.72 a	198.00		0.042[ab]
	2.Trimester	107	1959.47±2731.65 b	495.00	15.988	<0.001[bc]
	3.Trimester	208	461.11±803.40 c	202.50		
NHP Pain	1.Trimester	32	30.40±18.09	31.70		
	2.Trimester	107	27.72±23.39	21.19	0.731	0.694
	3.Trimester	208	30.62±25.53	26.31		
NHP PA	1.Trimester	32	25.23±15.68	22.74		
	2.Trimester	107	22.91±24.47	21.99	2.833	0.243
	3.Trimester	208	27.17±26.55	21.99		
NHP EL	1.Trimester	32	67.80±32.89 a	63.20		0.024[ab]
	2.Trimester	107	51.40±42.52 b	24.00	18.218	0.004[bc]
	3.Trimester	208	40.35±44.51 c	24.00		<0.001[ac]
NHP SI	1.Trimester	32	31.45±41.49 a			0.004[ab]
	2.Trimester	107	12.39±28.43 b		13.388	
	3.Trimester	208	8.58±24.51 c			<0.001[ac]
NHP M	1.Trimester	32	43.77±38.87 a	45.77		<0.001[ab,ac]
	2.Trimester	107	6.71±16.04 b		31.690	
	3.Trimester	208	10.30±23.61 c			
NHP Sleep	1.Trimester	32	18.67±25.12			
	2.Trimester	107	24.57±26.48	16.10	4.185	0.123
	3.Trimester	208	32.34±33.98	16.10		
NHP (total)	1.Trimester	32	217.34±144.69	163.41		
	2.Trimester	107	144.80±97.71	99.46	5.230	0.073
	3.Trimester	208	148.17±113.24	133.80		

DISCUSSION

It is known that physical activity during pregnancy is safe and beneficial and increases the health of the mother and the baby. Regular physical activity allows women to lose weight, decrease blood pressure and cholesterol levels, and, most importantly, increase self-esteem. As pregnancy progresses, the level of physical activity decreases; however, it is important to continue to walk in terms of both easy birth and the protection of mother's and baby's health[23,24].

There was a significant correlation between the total physical activity scores of the pregnant women and the pregnancy periods. There was a significant correlation between the quality of life sub-scales including energy levels, social isolation, emotional state, and sleep, and the total score of NHP and PA levels of pregnant women in our study. In the literature, different results were obtained in studies of PA levels of pregnant women according to pregnancy trimester. In a study conducted on 210 pregnant women by Ozdemir et al. [25], women performed more PA in the second trimester than in the first trimester, and they were found to be a little more active in the third trimester than in the first trimester. Ko et al.[26] investigated the PA levels of 150 pregnant women before and during the pregnancy period and evaluated changes in PA levels. They found that the PA levels of women decreased 31% in the first trimester compared with pre-pregnancy period, and that they were more physically active in the second and third trimesters. In our study, it was found that pregnant women performed very low PA during the first trimester, and significantly more PA in the second trimester than in the first and third trimesters.

It may be interpreted that in the first trimester of pregnancy, PA level is low due to the weakness, fatigue, nausea, vomiting, and similar physical disturbances related with pregnancy, and due to the desire to safely protect the fetus. PA level is high in the second trimester of pregnancy due to the reduction of symptoms of pregnancy and adapting to the pregnancy.

In the literature, there are studies showing an inverse relationship between quality of life and the week of pregnancy, others showing that the quality of life increases as pregnancy progresses, and also there are studies showing a lower quality of life in the first and third trimesters compared with the second trimester [25-28]. According to our results, as pregnancy weeks progressed, there was positive improvement in some sub-parameters of quality of life. There was a positive progress in energy levels as the pregnancy week increased. Pregnant women were socially more active and had less social isolation between the first and second trimesters and between the first and third trimesters. Pregnant women were more cheerful between the first and second trimesters and between the first and third trimesters. It can be said that increased physical activity, especially in the second trimester, could contribute positively to quality of life.

There are also studies that show that there is a relationship between quality of life and PA. Ozdemir et al. [25] reported that there was significant relation between PA level and NHP total score and its sub-scales including social isolation, energy level, and sleep, and that as PA increased, quality of life increased. Kolu et al. [29] examined the effects of PA on quality of life in a total of 338 pregnant women, 80 of whom performed moderate PA for at least 150 minutes per week and 258 performed low-level PA. The authors found that pregnant women who performed moderate PA had better quality of life than those performing low-level PA. We found a significant relation between PA level and the NSH total score and its sub-scales including energy level, social isolation, emotional status, and sleep. It was found that the quality of life increased as the physical activity level of the women increased, and unlike studies the literature, the quality of sleep was significantly worse in pregnant women who performed moderate PA than in those who performed low-level PA.

In this study, it was found that the depression and anxiety levels of pregnant women decreased significantly as the pregnancy week increased. When anxiety and depression levels were compared with PA levels, it was found that anxiety levels increased but depression levels did not change as the pregnancy week increased. El-Rafie et al. [30] analyzed 100 pregnant women aged between 20 and 35 years in the second trimester and investigated the effects of aerobic exercise on antenatal depression in pregnancy. The results showed that controlled exercise during pregnancy had a positive effect on antenatal depression. Perales et al. [31] demonstrated that physical activity during pregnancy reduced the level and frequency of depression among a total of 167 pregnant women. Davenport et al. [32] investigated the effects of prenatal exercise on both prenatal and postnatal anxiety and depressive symptoms by reviewing 52 studies and concluded that pregnant women should exercise at least 644 MET-min/week, and that prenatal exercise reduced the likelihood of depression and severity, but did not affect the level of anxiety.

Authors' recommendations and results in line with the findings obtained from the study are as follows;

Physical activity at low (<600 MET-min/week) and moderate (600-3000 MET-min/week) levels in pregnant were found to significantly reduce anxiety and activities such as lifting light weights, dancing, cycling with normal speed, and at least 30 minutes of walking per day, on at least 5 days of the week (495 MET-min/week) may be recommended for pregnant women.

Moderate (600-3000 MET-min/week) and severe (>3000 MET-min/week) physical activity during pregnancy significantly increased the energy levels of pregnant women as the pregnancy week progressed.

Moderate and severe physical activity during pregnancy reduced social isolation significantly as the pregnancy week progressed.

Moderate and severe physical activity affected pregnant women's emotional state positively in the 2nd and 3rd trimesters.

Moderate and severe physical activity during pregnancy significantly increased the quality of life of pregnant women.

When we look at the limitations of this study; we don't have any idea about the physical activity status before the pregnancy and also we do not have any idea about the affect of physical activity which has done during pregnancy to the postnatal period. We also used a standart physical activity scale and it

would be better to use a specific pregnancy physical activity scale but there is no a pregnancy physical activity scale in Turkish literature.

Our results show that physical activity during pregnancy has a positive effect on anxiety, does not affect the level of depression, and improves quality of life. Physicians should tell pregnant women about the benefits of physical activity and recommend physical activity for the mother's and baby's health. Our study was performed in a wide sample group. The results of our study could be considered to act as a guideline for the regulation and necessity of physical activity in pregnant women.

Yazar Katkıları: Çalışma konsepti/Tasarımı: DİY; Veri toplama: DİY, ŞB; Veri analizi ve yorumlama: DİY, MAE; Yazı taslağı: DİY; İçeriğin eleştirel incelenmesi: DİY, MAE, OG; Son onay ve sorumluluk: DİY, ŞB, OG, MAE; Teknik ve malzeme desteği: DİY, ŞB; Süpervizyon: DİY, ŞB, OG, MAE; Fon sağlama (mevcut ise): yok.
Etik Onay: Bu çalışmanın protokolü Selçuk Üniverseti Tıp Fakültesi Girişimsel Olmayan Klinik Araştırmalar Kurulu'dan 05.12.2018 tarih ve 2018/23 sayılı kararıyla onay alınmıştır.
Hakem Değerlendirmesi: Dış bağımsız.
Çıkar Çatışması: Yazarlar çıkar çatışması beyan etmemişlerdir.
Finansal Destek: Yazarlar finansal destek beyan etmemişlerdir.
Author Contributions: Concept/Design : DİY; Data acquisition: DİY, ŞB; Data analysis and interpretation: DİY, MAE; Drafting manuscript: DİY; Critical revision of manuscript: DİY, MAE, OG; Final approval and accountability: DİY, ŞB, OG, MAE; Technical or material support: DİY, ŞB; Supervision: DİY, ŞB, OG, MAE; Securing funding (if available): n/a.
Ethical approval: The study porotocol has been approved by Selçuk University Faculty of Medicine Non-Interventional Clinical Research Board by decision no.05.12.2018 and no. 2018/23.
Peer-review: Externally peer-reviewed.
Conflict of Interest: Authors declared no conflict of interest.
Financial Disclosure: Authors declared no financial support

REFERENCES

1. Bayán-Bravo A, Pérez-Tasigchana RF, López-García E, Martínez-Gómez D, Rodríguez-Artalejo F, Guallar-Castillón P. The association of major patterns of physical activity, sedentary behavior and sleeping with mortality in older adults. J Sports Sci. 2019;37:424-33.
2. Guallar-Castillón P, Bayán-Bravo A, León-Muñoz LM, Balboa-Castillo T, López-García E, Gutierrez-Fisac JL et al. The association of major patterns of physical activity, sedentary behavior and sleep with health-related quality of life: a cohort study. Prev Med. 2014;67:248-54.
3. Davies GA, Wolfe LA, Mottola MF, MacKinnon C. Joint SOGC/CSEP clinical practice guideline: exercise in pregnancy and the postpartum period. Can J Appl Physiol. 2003;28:329-41.
4. Pivarnik JM, Chambliss HO, Clapp JF, Dugan SA, Hatch MC, Lovelady CA et al. Impact of physical activity during pregnancy and postpartum on chronic disease risk. Med Sci Sports Exerc. 2006;38:989-1006.
5. Davies G, Artal R. It's time to treat exercise in pregnancy as therapy. Br J Sports Med. 2019;53:81.
6. Erdener U, Budgett R. Exercise and pregnancy: focus on advice for the competitive and elite athlete. Br J Sports Med. 2016;50:567.
7. Vuori I. World Health Organization and Physical Activity. Prog Prev Med. 2018;3:e0012.
8. Mottola MF. Performance in the pregnant woman: maternal and foetal considerations. In Physiological Bases of Human Performance During Work and Exercise (Eds NAS Taylor, H Groeller):225-37. Philadelphia, PA, Elsevier, 2008.
9. O'toole ML. Physiologic aspects of exercise in pregnancy. Clin Obstet Gynecol. 2003;46:379-89.
10. Vladutiu CJ, Evenson KR, Marshall SW. Physical activity and injuries during pregnancy. J Phys Act Health. 2010;7:761-9.
11. Nascimento SL, Surita FG, Cecatti JG. Physical exercise during pregnancy: a systematic review. Curr Opin Obstet Gynecol. 2012;24:387-94.
12. Prather H, Spitznagle T, Hunt D. Benefits of exercise during pregnancy, PM R. 2012;4:845-50.
13. Kalisiak B, Spitznagle T. What effect does an exercise program for healthy pregnant women have on the mother, fetus, and child? PM R. 2009;1:261-6.
14. Krogh J, Nordentoft M, Sterne JA, Lawlor DA. The effect of exercise in clinically depressed adults: systematic review and meta-analysis of randomized controlled trials. J Clin Psychiatry. 2011;72:529-38.
15. Kücükdeveci AA, McKenna SP, Kutlay S, Gürsel Y, Whalley D, Arasil T. The development and psychometric assessment of the Turkish version of the Nottingham Health Profile. Int J Rehabil Res. 2000;23:31-8.
16. Hunt SM, McKenna P, McEwen J, Williams J, Papp E. The Nottingham Health Profile: subjective health status and medical consultations. Soc Sci Med A.: 1981;15:221-9.
17. Karaca A, Turnagöl HH. Çalışan bireylerde üç farklı fiziksel aktivite anketinin güvenirliği ve geçerliği. Spor Bilimleri Dergisi. 2007;18:68-84.
18. Ware Jr, John E, Sherbourne CD. The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection. Med Care. 1992;30:473-83.
19. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. Arch Gen Psychiatry. 1961;4:561-71.
20. Hisli N. Beck depresyon envanterinin universite ogrencileri icin gecerliligi, guvenilirligi.J Psychol. 1989;7:3-13.
21. Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. J Consult Clin Psychol. 1988;56:893.
22. Ulusoy M, Sahin NH, Erkmen H. The Beck Anxiety Inventory: psychometric properties. J Cogn Psychother. 1998;12:163-72.

23. Du MC, Ouyang YQ, Nie XF, Huang Y, Redding SR. Effects of physical exercise during pregnancy on maternal and infant outcomes in overweight and obese pregnant women: A meta-analysis. Birth. 2019;46:211-21.
24. Szumilewicz A. Who and how should prescribe and conduct exercise programs for pregnant women? Recommendation based on the European educational standards for pregnancy and postnatal exercise specialists. Dev Period Med. 2018;22:107-12.
25. Özdemir ÖÇ, Sürmeli M, Özel A, Yavuz İE, Topçuoğlu A, Ankaralı H. Gebelerde fiziksel aktivite ve yaşam kalitesi arasındaki ilişki. Anadolu Kliniği Tıp Bilimleri Dergisi. 2017;22:95-102.
26. Ko Y-L, Chen C-P, Lin P-C. Physical activities during pregnancy and type of delivery in nulliparae. Eur J Sport Sci. 2016;16:374-80.
27. Da Costa D, Dritsa M, Verreault N, Balaa C, Kudzman J, Khalife S. Sleep problems and depressed mood negatively impact health-related quality of life during pregnancy. Arch Womens Ment Health. 2010;13:249-57.
28. Rodriguez N, Ambrosio L, Sutton RT, Dieleman LA, Halloran BP, Kroeker KI et al. A33 Does pregnancy adversely impact the health-related quality of life among women with IBD? J Can Assoc Gastroenterol. 2018;1:55-6.
29. Kolu P, Raitanen J, Luoto R. Physical activity and health-related quality of life during pregnancy: a secondary analysis of a cluster-randomised trial. Matern Child Health J. 2014;18:2098-105.
30. El-Rafie MM, Khafagy GM, Gamal MG. Effect of aerobic exercise during pregnancy on antenatal depression. Int J Womens Health. 2016;8:53.
31. Perales M, Refoyo I, Coteron J, Bacchi M, Barakat R. Exercise during pregnancy attenuates prenatal depression: a randomized controlled trial. Eval Health Prof. 2015;38:59-72.
32. Davenport MH, McCurdy AP, Mottola MF, Skow RJ, Meah VL, Poitras VJ et al. Impact of prenatal exercise on both prenatal and postnatal anxiety and depressive symptoms: a systematic review and meta-analysis. Br J Sports Med. 2018;52:1376-85.