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Physical activity association with body image in postpartum women

Inmaculada Tornero-Quiñones* [1], María Rendón Gallego[1], Jorge Molina-López[1 2], Ángela Sierra-Robles[1] & Jesús Sáez-Padilla[1]

[1] *Universidad de Huelva, Huelva (Spain)*
[2] *Universidad de Granada, Granada (Spain)*

Keywords

Body image
Postpartum
Body Mass Index
Exercise
Women

Abstract

The perception of body image is usually affected in the different stages of a woman's life. The practice of physical exercise would be related to an improvement in the perception of body image, so it is important to investigate how the practice of physical exercise affects body image in the postpartum stage, since at this stage the perception is usually more negative . For this purpose, an online questionnaire was designed, consisting of socio-demographic questions, the International Physical Activity Questionnaire and the Body Shape Questionnaire. The sample consisted of 80 Spanish women, aged between 23 and 42 years, who were mothers in 2020 and 2021. The results show that the Body Mass Index is positively and significantly associated with body dissatisfaction. However, in relation to physical exercise, the results showed an inverse relationship. The women with the highest body dissatisfaction were those with the highest Body Mass Index and the highest level of physical activity, with Body Mass Index being the variable that most explained body dissatisfaction.

La relación de la actividad física sobre la imagen corporal en mujeres postparto

Palabras clave

Satisfacción corporal
Postparto
Índice de Masa Corporal
Ejercicio físico
Mujer

Resumen

La percepción de la imagen corporal suele verse afectada en las diferentes etapas de la vida de la mujer. La práctica de ejercicio físico está relacionada con una mejora de la percepción de la imagen corporal, por lo que resulta importante investigar para conocer cómo afecta la práctica de ejercicio físico a la imagen corporal en la etapa postparto, ya que en esta etapa la percepción suele ser más negativa. Para ello, se diseñó un cuestionario en línea compuesto por cuestiones sociodemográficas, se evaluó el nivel de actividad física a través del International Physical Activity Questionnaire y la satisfacción corporal a través del Body Shape Questionnaire. La muestra ha sido compuesta por 80 mujeres españolas, de edades comprendidas entre 23 y 42 años que han sido madres en los años 2020 y 2021. Los resultados muestran que el Índice de Masa Corporal está asociado positiva y significativamente con la insatisfacción corporal. Sin embargo, en relación con el ejercicio físico, los resultados mostraron una relación inversa a la esperada. Aquellas mujeres que presentaban mayor insatisfacción corporal fueron las que más Índice de Masa Corporal tenía y más práctica de actividad física realizaban, siendo el Índice de Masa Corpora la variable que más explicaba la insatisfacción corporal.

* *Corresponding author:* Inmaculada Tornero-Quiñones. Department of Integrated Teaching Methodologies, Faculty of Education, Psychology and Sports Science. University of Huelva, Huelva, Spain. inmaculada.tornero@dempc.uhu.es
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Pregnancy and the postpartum period are characterized by major physiognomic, psychosocial, and hormonal alterations that lead to changes in the physical appearance, differences in the way of interaction with the environment, and, among many other issues, adjustment processes to a new role and a different life situation (Gross & Marcussen, 2017). Moreover, the fast physics changes which originate in the body and its image in a relatively short period (40 weeks), make the pregnancy an ideal time to assess the body image prospectively (Skouteris, 2011).

During the pregnancy, important psychological and emotional sequels can happen as a result to these changes. The concern of body image is one of these sequels (Kiani-Sheikhabadi et al., 2019). It is probably that women reassess her body image, since the body's size and image change, and the related physical symptoms with the pregnancy are more pronounced. This potentially allows for a possible consequence of factors that drive to the lack of body satisfaction with other women's life moments, in which the body shape remains relatively stable (Kiani-Sheikhabadi et al., 2019).

During the postpartum period, women can have a deep pressure for "recovery" and lose weight rapidly (Montgomery et al., 2013). The "perfect body" stereotypes sold by the media emphasize the importance of achieving an unrealistically slim and toned postpartum body (Lovering et al., 2018). As a result, the concern related to the body can be high, especially because body changes after the pregnancy are often unexpected and out of hand (Borrelli et al., 2016; Skouteris, 2005).

Different investigations (Clark et al., 2009; Gjerdinguen et al., 2009) have shown that body dissatisfaction increases in a significant way after childbirth until 12 months, which is of concern as it is associated with poorer mental health and the acquisition of eating disorders. For Carter-Edwards (2010) there are substantial changes during pregnancy related to weight gain, leading on multiple occasions to situations of overweight and obesity during pregnancy and after childbirth. Women who gain weight during pregnancy have more chances to keep more weight during postpartum period than women with a moderate weight gain (Rooney et al., 2002), being the Body Mass Index (BMI) a variable that can influence the body image. In addition to changes in body image, many women in postpartum period report a decrease in physical exercise (Walker et al., 2016). A systematic review by Engberg et al. (2012) identifies different studies in which physical exercise decrease significantly before pregnancy until postpartum period. Systematic physical exercise has a positive impact on women's physical health during pregnancy and postpartum (Bull et al., 2020). However, despite scientific evidence to this effect, there is little empirical evidence on this issue. Body image changes and alterations in physical exercise behaviour are two important areas of change that have a strong capacity to influence welfare (Downs et al., 2008). Nevertheless, the complexities and interrelationships between body image and exercise at this stage are not well understood. In this sense, the relationship is complex and bidirectional.

On the one hand, there is evidence that women who follow the physical exercise guidelines have better body satisfaction (Boscaglia et al., 2003; Hilton & Olson, 2001). In a cross-sectional study of 440 women, body satisfaction was significantly higher in those who engaged in systematic physical exercise (Erbil et al., 2012). In addition, there is evidence that body image dissatisfaction in the early postpartum period is a strong determinant of body image dissatisfaction one year later (Rallis et al., 2007). Similarly, women who are active before pregnancy may enjoy better health during pregnancy and postpartum period (Abraham et al., 2001). However, these findings are based in a small number of studies with little samples. On the other hand, there are studies which have shown significantly negative associations between body dissatisfaction and physical exercise (Walkert et al., 2016). Likewise, there are studies that could not find any association between body image and physical exercise (Collings et al., 2018). A qualitative study reveals that the relation between physical exercise and body image is complex, individualistic, dynamic, and context-dependent (Raspovic et al., 2020). Most of the women who participated in the study stated that they exercised or did not exercise largely because of body dissatisfaction and that this led to negative situations related to their body. On the contrary, moms who showed more body satisfaction described more adaptative exercise behaviours.

A problem that may be hampering research evidence in this area is the difficulty in measuring exercise behaviour, specifically the prevalence rate of physical activity level during this stage. Some 70% of pregnant women are inactive (Evenson et al., 2004), and null and low rates persist postpartum (Pereira et al., 2007). Therefore, there is a need for research examining the influence of physical exercise behaviour and its contribution to explain women's body image in postpartum period. Considering the contradictory results of the scientific evidence in relation to the practice of physical activity and changes in body image, the aim of this job is to know to what extent physical exercise gives benefits to women in postpartum period in relation to their body image taking into account their body composition.

Method

Design and participants

This study is part of a cross-sectional and observational research with a retrospective cohort focused on before, during, and after pregnancy stages. The sample consisted of 80 Spanish women, aged between 23 to 42 years ($M = 33.94$; $SD = 4.26$) who were mothers in 2020 and 2021. Inclusion criteria were as follows: (1) the voluntary participation in the study, (2) having a healthy baby, (3) being in the postpartum stage from 0 to 12 months, and (4) being over 18 years of age. Participants were informed about the study design and their consent was requested prior to participation. During data collection, current ethical and legal standards for research involving human subjects and data protection were respected.

Instruments

General sociodemographic information was collected on each participant, including age, employment status, number of children, months of breastfeeding, and physical activity before, during, and after pregnancy. Body composition was assessed by BMI. The BMI was calculated with the following formula: BMI = weight / height^2 (kg/m^2). For the BMI coding, the WHO classification was taken into account, in which a BMI equal to or greater than 30 kg/m^2 was considered as obesity.

To assess physical activity, the *International Physical Activity Questionnaire* (IPAQ) (Craig et al., 2003) was used. The IPAQ consists of seven questions about the frequency, duration, and intensity of activity (low, moderate, and intense) performed in the last seven days, as well as walking and sitting time in a working day. On the basis of the results, three levels of physical activity were proposed: *Light physical activity*, with no activity or some activity, but not enough to be included in the following categories; *Moderate physical activity*, with three or more days of vigorous activity with an intensity of at least 20 minutes per day, five or more days of moderate intensity and/or walking at least 30 minutes per day, or five or more days of any combination of walking, moderate intensity activity, and vigorous activity, adding up to a minimum total physical activity of at least 600 MET-minutes/week; and *Intense physical activity*, with vigorous intensity activities at least three days achieving a minimum total physical activity of at least 1,500 MET-minutes/week or seven or more days of any combination of walking, moderate intensity, or vigorous intensity activities, achieving a minimum total physical activity of at least 3,000 MET-minutes/week (Delgado, Tercedor & Soto, 2005).

The *Body Shape Questionnaire* (BSQ), developed by Cooper and colleagues in 1987 and adapted to the Spanish population by Raich et al. (1996), was used to measure body image. The instrument measures concern about weight and dissatisfaction with body image. It consists of 34 items ("Has worrying about your figure made you go on a diet?") with a Likert-type scale with the following values: 1 = *never*; 2 = *rarely*; 3 = *sometimes*; 4 = *often*; 5 = *very often*; 6 = *always*. The questionnaire has a total score in which all partial scores for each item have to be added together. The Cronbach's alpha was 0.92.

Procedure

An online survey was completed and sent by email to exercise professionals at sports centres specializing in pregnancy and postpartum for distribution. Participants signed a statement giving their consent to collect personal information, as well as to submit to the questionnaires comprising this research, all of which were detailed in the initial pre-questionnaire information.

Data analysis

A descriptive analysis of the study variables was performed, using the mean and standard deviation to explain the quantitative characteristics of the sample and the number and percentage for the qualitative characteristics. The normality of the distributions and the homogeneity of the variables were tested with the Kolmogorov-Smirnov test. The Wilcoxon test and Mann-Whitney U test were used to study the relationship between physical activity before during and after pregnancy and body composition. To analyse whether the level of physical activity was related to body image, the Kruskall Wallis test was used, using a post hoc test to establish differences between levels of physical activity (light, moderate, or vigorous). An analysis of variance was performed to jointly assess the effects of BMI and physical activity level on body dissatisfaction. The Spearman correlation was used to quantitatively relate body image and physical activity. Finally, a multivariate linear regression analysis was performed to estimate the predictive power of body dissatisfaction as the dependent variable and age, BMI, months postpartum, and total physical activity as independent variables. The significance level was set at .05. The statistical package SPSS 22.0 for Windows was used to create the database and subsequent statistical analysis.

Results

Table 1 shows the descriptive results of the participants. It was observed a higher physical activity rate during pregnancy, it was also noted that more than a half of these women have an active job. The practice of physical activity is more important at all the stages –before, during, and after pregnancy–, being fewer the number of women who did not practice it. Finally, it is noted that, in all stages previous mentioned, the predominant type of physical activity among these women is strength training, gymnasiums, and fitness.

Table 2 analyses the relationship between physical activity before, during, and after pregnancy and the BMI of the polled people. Significantly statistically differences were observed in the BMI between women who practiced physical activity after pregnancy (U = 286.5; W = 2632.5; p = .05), being the BMI higher in those women who did not practice physical activity during postpartum. On the contrary, no differences were observed in the BMI of those who practiced physical activity before and during pregnancy (U = 226.5; W = 262.5; p = .166 y U = 321.5; W = 286.5; p = .343, respectively).

Figure 1 shows the association between the physical activity level and body image. It was observed that those women who were more physically active were more dissatisfied with their body image. In a post hoc test, it was stablished that the only significant differences are between the moderate physical activity group (average range BSQ = 47.64; p = .023) and the high-level group of physical activity (average range BSQ = 34.66).

Figure 2 shows the comparative analysis between the categorised BMI and body image dissatisfaction. Sadistically significant differences were observed between the different BMI groups and body image dissatisfaction (χ^2_{kw} (2) = 12.4; p = .006; n = 80), in other words, the higher the BMI, the higher the dissatisfaction with body image. In particular, we find differences when we compare the underweight group with the overweight one (p = .005) and the underweight group with the obesity one

(p = .004), being the average ranges in the underweight category 19.6, in the overweight category 51.3, and in the obesity category 74.5.

An analysis of variance was conducted to jointly assess the BMI and physical exercise level about body dissatisfaction (Table 3). The results of this analysis show the existence of significant differences according to BMI (p = .031) and not according to the level of physical activity. The interaction between the two was not statistically significant. The variance percentage of BMI was 11.7%.

Table 4 shows the analysed correlations between body dissatisfaction, body mass index, and physical activity according to time and typology. A positive association existed between body dissatisfaction and BMI (p < .01), the weekly frequency of physical activity practice after pregnancy, as well as the practice typology, mainly through reported light PA (p < .05).

Table 5 shows multivariate linear regression analysis between body dissatisfaction as a dependent variable and age, BMI, months postpartum, and total physical activity as independent variables. Overall, it was observed that both BMI (β = 0.40; p < .001) and overall physical activity (β = 0.35; p < .001) of the participants were predictors of their body image, being explained in 31.8% of them. On the contrary, age in last month of pregnancy did not prove to be predictor of body image when these variables were introduced into the model.

Table 1

Descriptive characteristics of the participants

Variables	*M (SD)*
Age (years)	33.9 (4.25)
Breastfeeding (months)	132.2 (96.6)
Pregnancy weight (kg)	11.9 (7.2)
PA before pregnancy (days/week)	3.78 (1.83)
PA during pregnancy (days/week)	4.20 (2.17)
PA after pregnancy (days/week)	3.59 (2.14)
	N (%)
Occupation	
Housewife	6 (7.5)
Active work	45 (56.3)
Non-active work	29 (36.3)
Physical activity before	
Yes	72 (90)
No	8 (10)
Physical activity during	
Sí	70 (87.5)
No	10 (12.5)
Physical activity after	
Sí	68 (85)
No	12 (15)
BMI (kg/m^2)	
Underweight	6 (7.5)
Normal weight	58 (72.5)
Overweight	14 (17.5)
Obesity	2 (2.5)

Table 2

Relationship of physical activity to BMI before, during and after pregnancy

	PA	BMI (kg/m^2)	*p* Valor
Before pregnancy	Yes	41.3	.166
	No	32.8	
During pregnancy	Yes	40.1	.343
	No	43.3	
After pregnancy	Yes	38.7	.051
	No	50.6	

Figure 1

Distribution of body dissatisfaction in relation to physical activity level

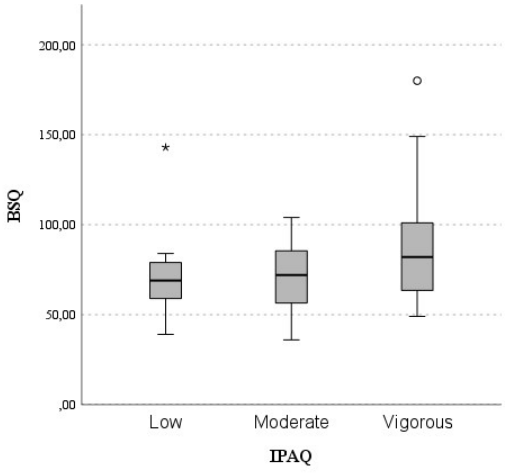

Figure 2

Distribution of body dissatisfaction in relation to BMI

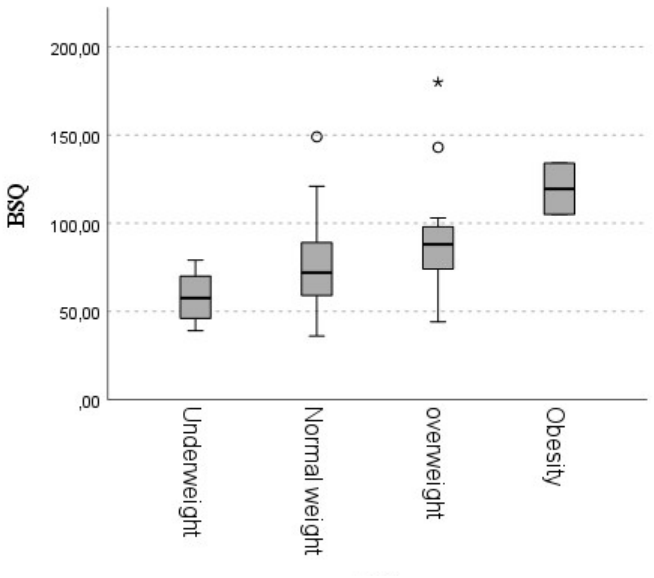

Table 3

Test of inter-subject effects between BMI and level of physical activity

	Type III sum of squares	*gl*	Quadratic mean	F	*p* Valor	Eta^2
BMI	4351.6	3	1450.5	3.14	.031	0.117
PA	2013.8	2	1006.9	2.18	.12	0.058
BMI*PA	1538.2	3	512.7	1.11	.351	0.045

Note. PA = Physical Activity; BMI = Body Mass Index.

Table 4

Bivariate correlation analysis between BSQ, Body Mass Index, and physical activity according to time and typology

	BMI	Days PA before	Days PA during	Days PA after	METs Total	METs light PA	METs PA moderate	METs PA intense
BSQ	0.468**	0.19	0.174	0.235*	0.206	0.259*	0.143	0.115

**$p < .01$; *$p < .05$.

Table 5

Multivariate linear regression analysis between body image and age, body mass index, last month of pregnancy and overall physical activity

Model		B	SE	β	*t*	*p* Valor	R^2	R^2 Ajustado
1	(Interception)	78.7	2.89	−	27.2	< .001	0.000	0.000
2	(Interception)	-7.2	18.1	−	-0.4	.692		
	Age (years)	0.42	0.59	0.07	0.7	.483		
	BMI (kg/m2)	3.32	0.8	0.4	4.14	< .001	0.564	0.318
	Last pregnancy (months)	0.37	0.83	0.04	0.45	.652		
	PA (Mets)	0.01	0.01	0.35	3.76	< .001		

Note. SE = Standard Error; PA = Physical Activity; BMI = Body Mass Index.

Discusion

The aim of the study was to determine to what extent engaging in physical exercise provides benefits to women during the postpartum stage in terms of their body image, taking into account their body composition.

Consistent with previous research (Clark et al., 2009; Skouteris, 2005), the results demonstrate that women with higher BMI exhibited greater body dissatisfaction during the postpartum stage. We observed a significant and positive association between body image dissatisfaction and BMI. Similar findings were reported by Ballester et al. (2008), who found that women with higher BMI had greater dissatisfaction with their body image. The study by Sarwer et al. (2011) further emphasizes that body dissatisfaction is more significant when there is gestational weight gain, that is, when BMI is higher.

Although our sample consists of Spanish postpartum women, this relationship can be found in several studies from different countries. While it is true that body image varies according to ethnicity and country of residence, this study indicates that regardless of these factors, individuals with higher BMI experience greater body dissatisfaction (Casillas-Estrella et al., 2006). However, there are articles that reach opposite conclusions (Carter-Edwards et al., 2010). In this regard, the literature demonstrates that there are racial differences in postpartum weight, ideal body images, and body satisfaction. Body discrepancy among African American women was significantly lower than that of white women, indicating greater body satisfaction among African American women.

Regarding physical exercise, we obtained results showing an inverse relationship with body image. We already know all the benefits of physical exercise on health, including that of pregnant and postpartum women. We found physiological benefits, physical exercise is protective and positively associated with physical fitness. It also has significant psychological benefits such as reducing depression, improving quality of life, and enhancing perceived health (Nygaard et al., 2013). However, in our study, when measuring the effects of physical activity on body image, the relationship was inverse. This means that higher body dissatisfaction was associated with greater engagement in physical exercise. This could be because women with poorer body composition or higher BMI, when dissatisfied with their physical condition, decide to engage in more physical exercise or increase its intensity as a means to modify their bodies.

In the present study, it was observed that individuals who consider physical activity as a fundamental aspect of their lives exhibited greater body dissatisfaction. One possible explanation could be the fear of gaining weight as it could be a motivating factor for engaging in physical activity, and this fear of weight gain would be related to body image (Arbinaga et al., 2011).

Although our sample may not be similar to the one in the previous article, we can observe that a relationship could be established between the fear of gaining weight or increasing BMI and an increase in physical exercise. Gaining weight or increasing BMI in these women would increase the likelihood of engaging in more physical exercise, which aligns with the results of our sample.

All this concern about body image during the postpartum period could be explained by the literature suggesting that women perceive sociocultural pressures to achieve ideal but unrealistic perfect bodies during this stage, which contributes to their body image concerns (Faleschini et al., 2019; Lovering et al., 2018; Riesco-González et al., 2022).

The level of physical exercise performed by these women before, during, and after pregnancy has been studied, with a particular focus on the physical exercise conducted after childbirth. Women who did not engage in any form of exercise during their postpartum period had higher BMI. In this study, body image was statistically explained to a greater extent by BMI than by level of physical exercise practiced, which is consistent with the following study that solely examines the BMI of women without measuring their physical exercise in relation to body image (Walter et al., 2004).

It is important to note some limitations that should be taken into account. The data were collected remotely due to the COVID-19 pandemic, which led us to conduct this research entirely online. The data obtained came from a convenience sample and non-probabilistic sampling, since we only included women who were within one year postpartum, resulting in a sample composed of women who were in the postpartum stage for one year or less.

However, the data from this study have provided valuable insights and have allowed us to increase knowledge about how different factors, such as BMI and physical exercise, affect the body image of postpartum women. In conclusion, further research is necessary, and new studies with larger samples should be conducted, incorporating different exercise interventions aimed at improving the body image of these women. Additionally, objective assessments of physical activity should be incorporated, as the IPAQ is a self-reported questionnair and the results are subject to the accuracy and honesty of the responses.

Conclusions

The findings of this study reveal that higher BMI values are associated with greater body dissatisfaction during the postpartum period. Furthermore, women who engaged in more physical activity during this stage experienced more issues with their body image and provide women with the necessary tools to improve their body image during the postpartum period.

Further large-scale and long-term research is needed to explore the relationship between body image and exercise, as well as to develop interventions aimed at enhancing body appreciation and reducing body dissatisfaction.

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Conflict of interest

The authors declare that they have no conflict of interest.

References

Abraham, S., Taylor, A., & Conti, J. (2001). Postnatal depression, eating, exercise, and vomiting before and during pregnancy. *The International Journal of Eating Disorders*, *29*(4), 482-487. https://doi.org/10.1002/eat.1046

Arbinaga, F., García, D., Vázquez, I., Joaquín, M., & Pazos, E. (2011). Actitudes hacia el ejercicio en estudiantes universitarios: relaciones con los hábitos alimenticios y la insatisfacción corporal. *Revista Iberoamericana de Psicología del Ejercicio y el Deporte*, *6*(1), 97-112.

Ballester, D., De Gracia, M., Patiño, J., Suñol, C., & Ferrer, M. (2002). Actitudes alimentarias y satisfacción corporal en adolescentes: Un estudio de prevalencia. *Actas españolas de psiquiatría*.

Borelli, M. F., Mayorga, M., Vega, S. M. D. L., Contreras, N. B., Tolaba, A. M., & Passamai, M. I. (2016). Estado nutricional y percepción de la imagen corporal de embarazadas asistidas en centros de salud de Salta Capital, Argentina. *Revista Española de Nutrición Humana y Dietética*, *20*(3), 174-179. https://doi.org/10.14306/renhyd.20.3.207

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 & New Zealand Journal of Obstetrics & Gynaecology*, *43*(1), 41-45. https://doi.org/10.1046/j.0004-8666.2003.00016.x

Bull, F. C., Al-Ansari, S. S., Biddle, S., Borodulin, K., Buman, M. P., Cardon, G., Carty, C., Chaput, J. P., Chastin, S., Chou, R., Dempsey, P. C., DiPietro, L., Ekelund, U., Firth, J., Friedenreich, C. M., Garcia, L., Gichu, M., Jago, R., Katzmarzyk, P. T., Lambert, E., … & Willumsen, J. F. (2020). World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *British Journal of Sports Medicine*, *54*(24), 1451-1462. http://dx.doi.org/10.1136/bjsports-2020-102955

Carter-Edwards, L., Bastian, L. A., Revels, J., Durham, H., Lokhnygina, Y., Amamoo, M. A., & Ostbye, T. (2010). Body image and body satisfaction differ by race in overweight postpartum mothers. *Journal of Women's Health, 19*(2), 305-311. https://doi.org/10.1089/jwh.2008.1238

Casillas-Estrella, M., Montaño-Castrejón, N., Reyes-Velázquez, V., Bacardí-Gascón, M., & Jiménez-Cruz, A. (2006). A mayor IMC mayor grado de insatisfacción de la imagen corporal. *Revista Biomédica*, *17*(4), 243-249.

Clark, A., Skouteris, H., Wertheim, E. 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

Craig, C. L., Marshall, A. L., Sjöström, M., Bauman, A. E., Booth, M. L., Ainsworth, B. E., Pratt, M. E., Ekelund, E., Yngve, A., Sallis, J. F., & Oja, P. (2003). International physical activity questionnaire: 12-country reliability and validity. *Medicine & Science in Sports & Exercise*, *35*(8), Article 13811395. 10.1249/01.MSS.0000078924.61453.FB

Gross, C. L., & Marcussen, K. (2017). Postpartum depression in mothers and fathers: The role of parenting efficacy expectations during the transition to parenthood. *Sex Roles: A Journal of Research, 76*(5-6), 290-305. https://doi.org/10.1007/s11199-016-0629-7

Collings, R., Hill, B., & Skouteris, H. (2018). The influence of psychological factors on postpartum weight retention 12 months post-birth. *Journal of Reproductive and Infant Psychology, 36*(2), 177-191. https://doi.org/10.1080/02646838.2018.1424323

Cooper, P. J., Taylor, M. J., Cooper, Z., & Fairburn, C. G. (1987). The development and validation of the Body Shape Questionnaire. *International Journal of Eating Disorders, 6,* 485-494. https://doi.org/10.1002/1098-108X(198707)6:4<485::AIDEAT2260060405>3.0.CO;2-O

Delgado, M., Tercedor, P., & Soto, V. (2005). *Traducción de las guías para el procesamiento de datos y análisis del Cuestionario Internacional de Actividad Física (IPAQ)*. Versiones corta y larga. Universidad de Granada.

Downs, D. S., DiNallo, J. M., & Kirner, T. L. (2008). Determinants of pregnancy andpostpartum depression: Prospective influences of depressive symptoms, bodyimage satisfaction, and exercise behavior. *Annals of Behavioral Medicine*, *36*(1), 54-63. https://doi.org/10.1007/s12160-008-9044-9

Engberg, E., Alen, M., Kukkonen-Harjula, K., Peltonen, J. E., Tikkanen, H. O., & Pekkarinen, H. (2012). Life events and change in leisure time physical activity. *Sports Medicine*, *42*(5), 433-447. 10.2165/11597610-000000000-00000

Erbil, N., Senkul, A., Basara, G. F., Saglam, Y., & Gezer, M. (2012). Body image among Turkish women during the first year postpartum. *Health Care for Women International, 33*(2), 125-137. https://doi.org/10.1080/07399332.2011.603977

Evenson, K. R., Savitz, D. A., & Huston, S. L. (2004). Leisure-time physical activity among pregnant women in the US. *Paediatric and Perinatal Epidemiology*, *18*(6), 400-407. https://doi.org/10.1111/j.1365-3016.2004.00595.x

Faleschini, S., Millar, L., Rifas-Shiman, S. L., Skouteris, H., Hivert, M. F., & Oken, E. (2019). Women's perceived social support: associations with postpartum weight retention, health behaviors and depressive symptoms. *BMC Women's Health*, *19*(1), 1-8. https://doi.org/10.1186/s12905-019-0839-6

Gjerdingen, D., Fontaine, P., Crow, S., McGovern, P., Center, B., & Miner, M. (2009). Predictors of mothers' postpartum body dissatisfaction. *Women & Health*, *49*(6-7), 491-504. https://doi.org/10.1080/03630240903423998

Hinton, P. S., & Olson, C. M. (2001). Postpartum exercise and food intake: Theimportance of behavior-specific self-efficacy. *Journal of the American Dietetic Association, 101*(12), 1430-1437. https://doi.org/10.1016/S0002-8223(01)00345-5

Kiani-Sheikhabadi, M., Beigi, M., & Mohebbi-Dehnavi, Z. (2019). The relationship between perfectionism and body image with eating disorder in pregnancy. *Journal of Education and Health Promotion*, *8*, Article 242. https://doi.org/10.4103/jehp.jehp_58_19

Lovering, M. E., Rodgers, R. F., George, J. E., & Franko, D. L. (2018). Exploring the tripartite influence model of body dissatisfaction in postpartum women. *Body Image, 24,* 44-54. https://doi.org/10.1016/j.bodyim.2017.12.001

Montgomery, K. S., Aniello, T. D., Phillips, J. D., Kirkpatrick, T., Catledge, C., Braveboy, K., O'Rourke, C., Patel, N., Prophet, M., Cooper, A., Parker, C., Mosely, L., Douglas, G. M., Schalles, L. F., & Hatmaker-Flanigan, E. (2013). Experiences accompanying postpartum weight loss: benefits, successes, and well-being. *Health Care for Women International*, *34*(7), 577-591. https://doi.org/10.1080/07399332.2012.736568

Nygaard, I. E., Wolpern, A., Bardsley, T., Egger, M. J., & Shaw, J. M. (2021). Early postpartum physical activity and pelvic floor support and symptoms 1 year postpartum. *American Journal of Obstetrics and Gynecology, 224*(2), Article 193.e1-193.e13. https://doi.org/10.1016/j.ajog.2020.08.033

Pereira, M. A., Rifas-Shiman, S. L., Kleinman, K. P., Rich-Edwards, J. W., Peterson, K. E., & Gillman, M. W. (2007). Predictors of change in physical activity during and after pregnancy: Project Viva. *American Journal of Preventive Medicine*, *32*(4), 312-319. https://doi.org/10.1016/j.amepre.2006.12.017

Raich, R. M., Mora, M., Soler, A., Ávila, C., Clos, I. & Zapater L. (1996). Adaptación de un instrumento de evaluación de la insatisfacción corporal. *Clínica y Salud, 7*, 51-66.

Rallis, S., Skouteris, H., Wertheim, E. H., & Paxton, S. J. (2007). Predictors of body image during the first year postpartum: A prospective study. *Women & Health, 45*(1), 87-104. https://doi.org/10.1300/J013v45n01_06

Raspovic, A. M., Prichard, I., Yager, Z., & Hart, L. M. (2020). Mothers' experiences of the relationship between body image and exercise, 0-5 years postpartum: A qualitative study. *Body Image*, *35*, 41-52. https://doi.org/10.1016/j.bodyim.2020.08.003

Riesco-González, F. J., Antúnez-Calvente, I., Vázquez-Lara, J. M., Rodríguez-Díaz, L., Palomo-Gómez, R., Gómez-Salgado, J., García-Iglesias, J. J., Parrón-Carreño, T., & Fernández-Carrasco, F. J. (2022). Body Image Dissatisfaction as a Risk Factor for Postpartum Depression. *Medicina*, *58*(6), 752. https://doi.org/10.3390/medicina58060752

Rooney, B. L., y Schauberger, C. W. (2002). Excess pregnancy weight gain and long-term obesity: one decade later. *Obstetrics and Gynecology*, *100*(2), 245-252. https://doi.org/10.1016/S0029-7844(02)02125-7

Sarwer, D., Dilks, R., & Spitzer, J. (2011). Weight loss and changes in body image. In T.F. Cash, & L. Smolak (Eds.), *Body image: A handbook of science, practice and prevention* (pp. 369-377). Guilford Press.

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

Skouteris, H. (2011). Body Image Issues in Obstretics and Gynecology. In T.F. Cash & L. Smolak (Eds.), *Body image: A handbook of science, practice, and prevention* (pp. 342-349). Guilford Press.

Walker, L. O., Freeland-Graves, J. H., Milani, T., Hanss-Nuss, H., George, G., Sterling, B. S., Timmerman, G. M., Wilkinson, S., Arheart, K. L., & Stuifbergen, A. (2004). Weight and behavioral and psychosocial factors among ethnically diverse, low-income women after childbirth: I. Methods and context. *Women & Health*, *40*(2), 1-17. https://doi.org/10.1300/J013v40n02_02

Walker, L. O., Xie, B., Hendrickson, S. G., & Sterling, B. S. (2016). Behavioral andpsychosocial health of new mothers and associations with contextual factorsand perceived health. *Journal of Obstetric, Gynecologic, & Neonatal Nursing: Clinical Scholarship for the Care of Women, Childbearing Families, & Newborns*, *45*(1), 3-16. https://doi.org/10.1016/j.jogn.2015.10.012