LETTER TO THE EDITOR

Predictive factors of compliance with a program of supervised exercise during pregnancy

Sir,

Aerobic exercise during pregnancy, compared with being more sedentary, is associated with a significantly reduced overall risk of gestational hypertensive disorders and cesarean delivery.[1] Therefore, it is recommended to perform 150 min of moderate activity weekly in low-risk pregnancies.[2] In obese women, exercising during pregnancy decreases the rate of preterm birth.[3]

However, in many published reports, information on the intervention compliance is not available.[1,3] In a recently published trial from our group, the compliance rate in the intervention group was 56%.[4]

Which prepregnancy factors could improve the compliance with an exercise program during pregnancy is not well known. The knowledge of these factors would be useful to implement strategies with a focus on the less compliant population during pregnancy to improve maternal-fetal health.

A sub-analysis of the randomized controlled trial "Exercise during pregnancy and perinatal outcome"[3] (NCT02756143), was carried out to study prepregnancy predictive factors of compliance with an exercise program. The exercise group (n = 72) was analyzed retrospectively to study factors that could predict a better compliance with the exercise program. The women in the exercise group were divided into two subgroups: those performing ≥ 83%, and < 83% of the program. The program included three 60-min sessions weekly. Compliance of 83% cut-off was chosen because it represents 150 min weekly, which is the actual recommendation of exercise time during pregnancy.[2] Factors studied were maternal age, height, prepregnancy weight

TABLE 1 Univariate and multivariate analysis for predictive factors associated with a compliance ≥ 83% to a supervised exercise program during pregnancy

Factor	Univariate analysis			Multivariate analysis	
	≤ 83% (n = 44)	> 83% (n = 28)			
	Mean (SD)	Mean (SD)	P	OR (95% CI)	P
Maternal age	33.3 (2.9)	33.3 (3.4)	.980		
Maternal height (cm)	164 (6.8)	164 (6.4)	.980		
BMI prepregnancy	23.3 (3.9)	23.5 (3.4)	.841		
Maternal weight before pregnancy (kg)	62.7 (12.1)	62.9 (8.1)	.923		
CESD	11.8 (7.7)	10.4 (7.9)	.478		
	n (%)	n (%)	P		
Age > 30 y	37 (84)	23 (82)	.829		
Caucasian ethnic	43 (98)	27 (96)	.744		
Nulliparous	32 (73)	20 (71)	.905		
In vitro fertilization pregnancy	2 (5)	0 (0)	.518		
Smoking	6 (14)	1 (4)	.160		
BMI > 25 kg/m^2	9 (21)	7 (25)	.688		
University studies	16 (36)	17 (61)	.043	3.0 (1.0; 9.2)	.055
Prepregnancy physical exercise	11 (25)	9 (32)	.509	0.8 (0.2; 2.7)	.709
CESD scale results	9 (22)	7 (25)	.768		

BMI, body mass index; CESD, Center of Epidemiological Studies Depression scale; CI, confidence interval; SD, standard deviation.

and body mass index, previous prenatal depression (Center of Epidemiological Studies Depression scale), ethnicity, parity, in vitro fertilization pregnancy, smoking, level of studies and pre-pregnancy physical exercise.

As shown in Table 1, the only factor that was predictive of compliance > 83% in both univariate and multivariate analyses was university studies (OR 3.0, 95% CI 1.0-9.2, $P = .055$).

Our findings indicate that having university studies before pregnancy increases the likelihood of better compliance with a supervised exercise program during pregnancy.

One study analyzing these factors in the general population, concluded that women with postsecondary education, no children, nonsmokers, and who were also engaged in regular recreational activity, were more likely to have a regular supervised exercise program during pregnancy.[5] All of these factors are associated with the mother's education level. Also, our study shows that maternal education is a predictive factor for compliance to the program, among highly motivated women participating in a randomized controlled trial. However, neither smoking nor practicing exercise previous to actual pregnancy predicted compliance.

In conclusion, maternal education in a highly motivated population is crucial for a better compliance to an exercise program during pregnancy. Implementing strategies for improving compliance to an exercise program in a less educated pregnant population would improve exercising during pregnancy. Learning about compliance factors as well as improving healthcare staff knowledge on exercise during pregnancy, and facilitating exercise programs, could help to improve the health of the pregnant population.

ORCID

Maia Brik https://orcid.org/0000-0002-1840-5087

Marina Vargas-Terrones https://orcid.org/0000-0002-4977-3827

Rubén Barakat https://orcid.org/0000-0002-2111-7158

Belén Santacruz https://orcid.org/0000-0003-1817-3092

Aránzazu Martin-Arias[1]
Maia Brik[1,2]
Marina Vargas-Terrones[3]
Rubén Barakat[3]
Belén Santacruz[1]

[1]*Obstetrics and Gynecology Department, Torrejón University Hospital, Madrid, Spain*
[2]*Biosciences Research Institute, School of Experimental Sciences, Francisco de Vitoria University, Madrid, Spain*
[3]*Faculty of Sports Sciences INEF, Polytechnic University, Madrid, Spain*

Correspondence
Maia Brik
Email: mibrik@hotmail.com

REFERENCES

1. Magro-Malosso ER, Saccone G, Di Tommaso M, Roman A, Berghella V. Exercise during pregnancy and risk of gestational hypertensive disorders: a systematic review and meta-analysis. *Acta Obstet Gynecol Scand*. 2017;96:921-931.
2. Mottola MF, Davenport MH, Ruchat SM, et al. 2019 Canadian guideline for physical activity throughout pregnancy. *Br J Sports Med*. 2018;52:1339-1346.
3. Magro-Malosso ER, Saccone G, Di Mascio D, Di Tommaso M, Berghella V. Exercise during pregnancy and risk of preterm birth in overweight and obese women: a systematic review and meta-analysis of randomized controlled trials. *Acta Obstet Gynecol Scand*. 2017;96:263-273.
4. Brik M, Fernández-Buhigas I, Martin-Arias A, Terrones MV, Barakat R, Santacruz B. Does exercise during pregnancy impact on maternal weight gain and fetal cardiac function? A randomized controlled study. *Ultrasound Obstet Gynecol*. 2018; https://doi.org/10.1002/uog.20147. [Epub ahead of print]
5. Mottola MF, Campbell MK. Activity patterns during pregnancy. *Can J Appl Physiol*. 2003;28:642-653.