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Measuring physical activity and sedentary behaviors in pregnancy: a comparison of accelerometry and questionnaires.

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Abstract

Background: Physical activity (PA) during pregnancy may reduce the risk of maternal and fetal disorders. Few studies have validated questionnaires for use during pregnancy, a time characterized by different patterns of activity than nonpregnancy.

Purpose: This study compares PA and Sedentary Behaviors (SB) using two questionnaire methods with objectively recorded physical activity using accelerometry in primary health care, in a population with low income and low educational level.

Methods: The design was a longitudinal observational study of SB, PA intensity, type and duration using subjective and objective measurement methods. The women between 18 and 40 years old were recruited at primary care health. The Global Physical Activity Questionnaire (GPAQ) and Pregnancy Physical Activity Questionnaire (PPAQ) were used to measure PA and SB. For objectives measurement, the women wore accelerometer (ActiGraph GT3X plus) for at least 7 days. The questionnaires (GPAQ-PPAQ) and accelerometry was measured in three times: first trimester between 8 and 10 weeks, second between 25 and 29 weeks and third trimester between 34 and 38 weeks gestation.

Results: One hundred twelve women participated. The median (P25–P75) for Age = 26 (22–31) years, level of education = 12 (10–12) years, BMI = 27.4 (24.3–31.7). The 11% reported being married, and 63.9% have not work. PA by accelerometry and GPAQ:

•According GPAQ by trimesters was median: 1◦ = 162.8 min/day, 2◦ = 107.1 min/day and 3◦ = 117.9 min/day.

•According accelerometry PA level of moderate or vigorous intensity was median = 0 in all trimesters.

SB by accelerometry and GPAQ:

- According GPAQ by trimesters was median: 1◦= 180 min/day, 2◦= 240 min/day and 3◦= 240 min/day.
- According accelerometry by trimesters was median: 1◦= 604 min/day, 2◦= 594 min/day and 3◦= 575 min/day.

•The correlation between GPAQ and accelerometry was Spearman's rho = 0.4, $p < 0.01$.

PA and SB according PPAQ:

•According PPAQ, energy expenditure associated with PA in each trimesters was median: 1 ◦

= 217 METs/hour/week, 2◦= 181 METs/hour/week and 3◦= 130 METs/hour/week.

•The correlation between energy expenditure PPAQ and accelerometry was Spearman's rho = 0.3

p= 0.03

• For SB, the correlation between PPAQ and accelerometry was Spearman's rho = 0.3, p= 0.02.

The decrease in PA according GPAQ and PPAQ during pregnancy is statistically significant $p < 0.05$.

Conclusion(s): The objective measurement of PA shows that this group does not adhere to the recommendations PA level according American College of Obstetricians and Gynecologists or World Health Organization.

Pregnant women overestimated the time spent in physical activities and underestimated the time spent in sedentary behaviours.

Objective methods should be used where possible in studies measuring physical activity in pregnancy.

Implications: This study indicates a need for more information and motivation for moderate exercise throughout pregnancy in this group. The physical therapist is the professional who can and should do health promotion in this area.