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Effect of Physical Activity on Total Gestational Weight Gain, Adherence to IOM 2009 Recommendations, and Incidence of Gestational Diabetes Mellitus: A Systematic Review and Meta-Analysis

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Poster

Effect of Physical Activity on Total Gestational Weight Gain, Adherence to IOM 2009 Recommendations, and Incidence of Gestational Diabetes Mellitus: A Systematic Review and Meta-Analysis

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Abstract

Purpose: Physical activity can reduce the incidence of gestational diabetes mellitus (GDM) and gestational weight gain (GWG). This meta-analysis aims to (a) examine the effect of physical activity on GWG and GDM incidence and (b) identify potential moderators.

Methods: A systematic review was conducted using the PubMed, Embase, and Cochrane Clinical Trial databases. For total GWG, the standardized mean difference was used to estimate the effect size, calculating Hedge's g and its variance. The log OR was calculated for the proportion of women exceeding IOM recommendations and GDM incidence. A random-effects method (DerSimonian-Laird) was used to estimate the overall effect size and inter-study variance. Moderator analysis was also conducted.

Results: The effect size of physical activity on total GWG was statistically significant (0.24, $p < 0.001$), with high heterogeneity (72.65%, $p < 0.001$). The effect on the log OR of exceeding IOM recommendations was also significant (-0.48, $p < 0.001$), with significant heterogeneity (73.66%, $p < 0.0001$). The effect size on GDM incidence was moderate and significant (-0.48, $p < 0.05$), with significant but lower levels of heterogeneity (51.96%, $p < 0.05$). Pre-pregnancy overweight status significantly affected total GWG and the log OR of exceeding IOM recommendations. Supervised activity and timing of intervention were significant for GDM incidence ($p < 0.05$, $p < 0.001$). The type of physical activity also significantly affected the log OR of exceeding IOM recommendations ($p < 0.001$) and GDM incidence ($p = 0.027$).

Conclusions: Physical activity reduces total GWG, the proportion of women exceeding IOM recommendations for total GWG, and GDM incidence. Overweight status, supervised activities, and aerobic/mixed exercises enhance these effects. On the other hand, factors such as diet, activity duration, and frequency appear to be less relevant.

Keywords

gestational, activity, weight gain, diabetes

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