Global prevalence of intestinal parasitic infections and associated risk factors in pregnant women: a systematic review and meta-analysis

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Abstract

Background: Intestinal parasitic infections (IPIs) during pregnancy, if left untreated, can cause adverse effects for the mothers, foetuses and newborns. However, limited information is available about the global status of IPIs in pregnant women. Here we undertook a meta-analysis to estimate the global prevalence of IPIs and associated risk factors in pregnant women.

Methods: We searched the PubMed, Science Direct, Scopus, Web of Science and Google Scholar databases for relevant studies that were published between 1 January 1987 and 30 December 2019. A random effects meta-analysis model was used to estimate the pooled prevalence, odds ratios (ORs) and 95% confidence intervals (CIs).

Results: A total of 114 studies comprising 98 342 pregnant women across 35 countries were included in the systematic review and meta-analysis. Among IPIs identified from pregnant women, three helminth infections (hookworm 19% [95% CI 15 to 23], Ascaris lumbricoides 17% [95% CI 13 to 21] and Trichuris trichiura 11% [95% CI 7 to 16]) and three protozoan infections (Blastocystis sp. 21% [95% CI 4 to 46], Entamoeba histolytica/dispar 9% [95% CI 3 to 19] and Giardia sp. 8% [95% CI 4 to 13]) were identified as the most prevalent intestinal parasites. Moreover, we found that there was a significant association between IPIs with increased risk of anaemia in pregnant women (OR 2.65 [95% CI 2.08 to 3.37]). The prevalence of IPIs was slightly higher in geophagic pregnant women compared with controls, but this was not significant (OR 1.22 [95% CI 0.87 to 1.71]). According to species, the pooled OR of A. lumbricoides infection had a significantly higher risk in geophagic pregnant women compared with controls (OR 2.66 [95% CI 1.37 to 5.16]). There was a positive relationship between the high prevalence of IPIs in pregnant women living in rural areas compared with urban residents (OR 3.36 [95% CI 1.57 to 7.19]).

Conclusions: The current review revealed a relatively high prevalence of IPIs in pregnant women, especially in some low- and middle-income countries. These results suggest a need for improved prevention and control efforts to reduce the health risks to pregnant women.

Keywords: intestinal parasites; meta-analysis; pregnancy; systematic review.