Mass deworming during pregnancy reduces anaemia but has no effect on other maternal or pregnancy outcomes

Pregnant women are at particular risk from soil transmitted helminthiasis (STH) – a group of diseases caused by infection with four intestinal parasites and schistosomiasis. Individual-level data analysis with data from three studies shows that mass deworming during pregnancy reduces anaemia but has no effect on any other maternal or pregnancy outcomes.

What is this review about?
Soil transmitted helminthiasis (STH) are a group of diseases caused by infection with four intestinal parasites (two types of hookworm, roundworm, and whip worm) which contributed to a total of 4.98 million years lived with disability (YLDs) in 2010. Anaemia is one of the most common side effects of infection with STH or schistosomes, due to blood loss in the intestine or urinary tract. Women in low- and middle-income countries (LMICs) are especially prone since they may be pregnant or lactating for as much as half of their reproductive lives, with over 50% of the pregnant women having iron-deficiency anaemia.

This review explores whether the effect of mass deworming during pregnancy varies with individual characteristics (nutritional status, anaemia), intensity of infection (as assessed by egg count), infection status (including species of worm), socioeconomic status, sanitation environment and co-interventions. The analysis uses individual patient data (IPD), which means that the original individual-level data are obtained for the included studies and combined into a single data set.

What studies are included?
Included studies have to be individually randomised controlled trials: cluster randomised controlled trials and quasi randomised studies providing preventive or therapeutic deworming drugs for STH and schistosomiasis during pregnancy.

What is the aim of this review?
This Campbell systematic review explores whether the effect of mass deworming during pregnancy varies with individual characteristics, intensity of infection, infection status, socioeconomic status, sanitation environment and co-interventions.

Soil transmitted helminthiasis are a group of diseases caused by infection with four intestinal parasites: two types of hookworm, roundworm and whip worm.
From a total of 16 studies on mass deworming during pregnancy, we identified seven trials with 8,515 participants which were eligible for individual data analysis. Of these seven trials, we received data from three trials so that data was captured for 5,957 participants.

What are the main findings of this review?
Mass deworming during pregnancy reduces maternal anaemia by nearly one quarter (23%).

There is no effect of mass deworming during pregnancy on any other outcomes including Trichiura infection, hookworm infection, low birth weight, and pre-term birth.

The size of the effect is not affected by Trichiura intensity at baseline, maternal anemia at baseline and maternal BMI at baseline. However these findings should be interpreted with caution due to small sample sizes. Other potential moderating characteristics could not be assessed because of lack of data.

The quality of evidence for our findings is rated as moderate. Further research on maternal baseline worm intensities and birth outcomes could change our findings.

What is the Campbell Collaboration?
Campbell is an international, voluntary, non-profit research network that publishes systematic reviews. We summarise and evaluate the quality of evidence about programmes in the social and behavioural sciences. Our aim is to help people make better choices and better policy decisions.

About this summary
This summary is based on the Campbell systematic review 'Mass deworming for soil-transmitted helminths and schistosomiasis among pregnant women: a systematic review and individual participant data meta-analysis', by Rehana Salam, Simon Cousens, Vivian Welch, Michelle Gaffey, Philippa Middleton, Maria Makrides, Paul Arora and Zulfiqar Bhutta.

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How up-to-date is this review?
The review authors searched for studies up to March 2018.

What do the findings of the review mean?
The analyses suggest that mass deworming during pregnancy is associated with reducing anaemia, with no effect on any other maternal or pregnancy outcomes.

The analyses were limited by the availability of data for the impact by sub-groups and effect modification. Thus, there is a need to assess mass deworming for STH and schistosomiasis during pregnancy in large-scale programmatic settings, along with an attempt to measure various individual and environmental factors that could potentially affect its impact.

There is also a need to support and promote open data for future individual level data analysis.