Treatment of Schistosomiasis in Pregnancy: A Systematic Review of Fetal and Infant Outcomes

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BACKGROUND:

- Schistosomiasis remains one of the most prevalent parasitic infections, with an estimated 261 million infected worldwide,[1] and has significant economic and public health consequences.
- Treatment of parasitic infections in pregnancy necessitate considerations of numerous factors, including the potential developmental outcomes for the fetus and newborn.
- A substantial knowledge gap exists in the treatment of schistosomiasis infections during pregnancy, with few published and authoritative resources to guide clinical decision-making.

OBJECTIVE:

- To map the available literature regarding the safety of intestinal schistosomiasis treatments during pregnancy, namely praziquantel, for fetal and infant development.

METHODS:

- A literature search was conducted on Medline, Embase, CINAHL, Cochrane DbSR and Cochrane Central databases with the search terms "intestinal parasites," generic and organism specific; and "pregnant/pregnancy" from database inception to August 2025 without language restrictions.
- Duplicate articles were removed and title, abstract and full-text articles were systematically double-screened and arbitrated by a third reviewer.
- Systematic reviews, randomized controlled trials, cohort studies, smaller observational studies, case series and case reports assessing or reporting the efficacy, safety, or tolerability of praziquantel treatment during pregnancy were screened.
- Inclusion criteria: Pregnant women + Treated with praziquantel during pregnancy + Schistosomiasis + Fetal and/or infant Outcome(s) reported.
- Two independent reviewers extracted the data and assessed quality using the GRADE approach. Risk of bias for each study was determined.
- Data were summarized using qualitative and quantitative measures for safety of praziquantel on the fetus and infant.

RESULTS:

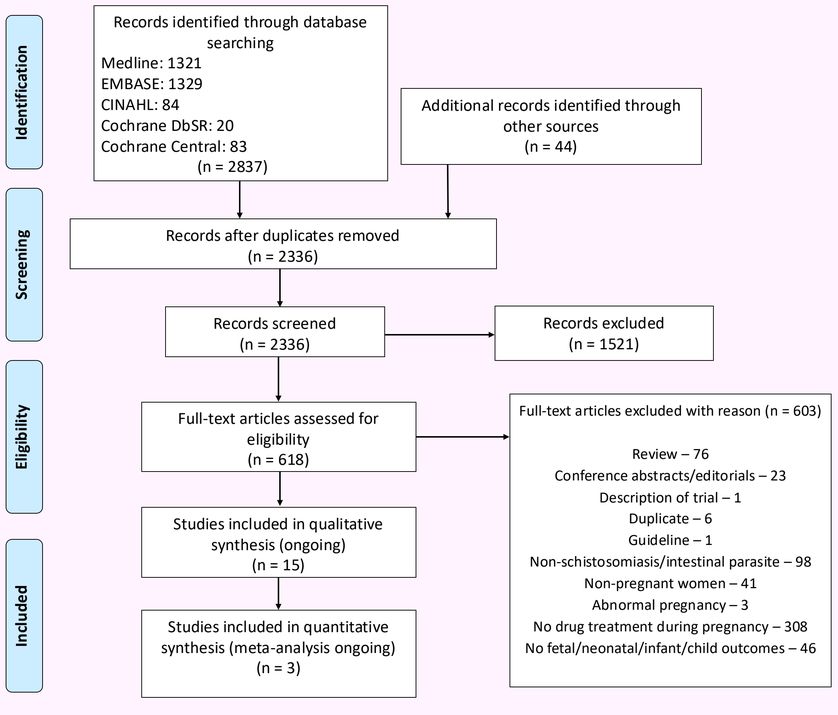

Figure 1. PRISMA Flow Diagram

RESULTS:

Fetal and Infant Outcomes	Study Design and Sample Size	Effect of Maternal Praziquantel Treatment Compared to Placebo	Certainty of Evidence (GRADE)
Birth weight; low birth weight (<2.5kg); very low birth weight (<1.5kg)	1 RCT; n = 1953	No difference in birth weight, nor were there differences in incidence of low birth weight and very low birth weight babies.	⊕⊕⊕◯ **MODERATE** [b]
Height and weight at 15 months	1 RCT; n = 483	No difference in height and weight of infants measured at 15 months.	⊕⊕⊕◯ **MODERATE** [a]
Fetus small for gestational age	1 RCT; n = 370	No difference in incidence of fetus being small for gestational age.	⊕⊕⊕⊕ **HIGH**
Apgar score at 10 minutes	1 RCT; n = 483	No difference in Apgar score measured at 10 minutes.	⊕⊕⊕◯ **MODERATE** [a]
Live birth rate	1 RCT; n = 366	No difference in live birth rates.	⊕⊕⊕⊕ **HIGH**
Stillbirth at >20 weeks gestation	2 RCTs; n = 2759	No difference in incidence of stillbirths.	⊕⊕⊕◯ **MODERATE** [c]
Unhealthy newborn	1 RCT; n = 366	No difference in newborn health.	⊕⊕⊕◯ **MODERATE**
Congenital anomalies	2 RCT; n = 2726	No difference in incidence of congenital anomalies.	⊕⊕⊕◯ **MODERATE**
Serious infant adverse events	1 RCT; n = 362	No difference in incidence of serious infant adverse events.	⊕⊕⊕◯ **MODERATE**
Early neonatal death (<7 days)	1 RCT; n = 2345	No difference in incidence of early neonatal death.	⊕⊕⊕⊕ **HIGH**
Infant cytokine levels (IFN-γ; IL-1, 2, 4, 5, 6, 10, 12, 13; CXCL8, 9; TNF; sTNFRI; sTNFII; IFN-γ:IL-4 ratio)	1 RCT; n = 238	No difference in infant cytokine levels.	⊕⊕⊕⊕ **HIGH**
Hemoglobin levels (in newborn; in cord blood; in infant at 1 year)	1 RCT; n = 1342 1 RCT; n = 483	No difference in hemoglobin levels measured in newborns, in cord blood nor in infants at 1 year.	⊕⊕⊕⊕ **HIGH;** ⊕⊕◯◯ **LOW** [e]**;** ⊕⊕⊕◯ **MODERATE** [a]
Newborn serum transferrin receptor level; newborn serum ferritin levels; newborn transferrin receptor:ferritin ratio)	1 RCT; n = 361	No difference in serum transferrin receptor levels of newborns, serum ferritin levels nor transferrin receptor:ferritin ratio.	⊕⊕⊕⊕ **HIGH;** ⊕⊕⊕◯ **MODERATE** [d] ⊕⊕⊕⊕ **HIGH**
Non-anemic at 6 months; non-anemic at 12 months	1 RCT; n = 361 1 RCT; n = 303	No difference in incidence of non-anemic babies, measured at 6 months and 12 months.	⊕⊕⊕⊕ **HIGH**
Iron-deficiency anemia at 6 months; iron-deficiency anemia at 12 months	1 RCT; n = 320 1 RCT; n = 304	No difference in incidence of iron-deficiency anemia, measured at 6 months and at 12 months.	⊕⊕⊕⊕ **HIGH**
Non-iron-deficient anemic at 6 months; non-iron-deficient anemia at 12 months	1 RCT; n = 314 1 RCT; n = 310	No difference in incidence of non-iron-deficient anemia, measured at 6 months and at 12 months.	⊕⊕⊕⊕ **HIGH**

GRADE Working Group: Grades of Evidence

- **High certainty:** We are very confident that the true effect lies close to that of the effect estimate.
- **Moderate certainty:** We are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
- **Low certainty:** Our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
- **Very low certainty:** We have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

Explanations

a. Nampijja et al. (2012) had about 50% of loss to follow up, through characteristics of the remaining cohort population in this study were similar.
b. Ndibazza et al. (2010) had about 15-20% incomplete report of birth weight (reporting bias).
c. Data discrepancy in Olveda etl al. (2016) for fetal death in utero.
d. Had a wide 95% CI.
e. Ndibazza et al. (2010) had about 40% incomplete reporting of cord blood hemoglobin.

Table 1. Fetal and infant outcomes following praziquantel treatment in pregnant mothers with *S. mansoni* compared to placebo

CONCLUSION:

- Praziquantel administration during pregnancy for the treatment of *S. mansoni* does not appear to have any adverse birth outcomes for the fetus/infant nor lead to any other adverse outcomes for the child later in life.
- Synthesizing the current literature on the treatment of schistosomiasis may improve the effects of pregnancy care.

REFERENCES:

1) WHO. Female genital schistosomiasis. A pocket atlas for clinical health-care professionals. Geneva: World Health Organization, 2015