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

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BACKGROUND:

- Treatment of parasitic infections in pregnancy necessitate consideration of numerous factors including the potential safety and developmental outcomes for fetus and newborns exposed to these drugs
- Schistosomiasis remains one of the most prevalent parasitic infections and has significant economic and public health consequences with an estimated 261 million infected worldwide[1]
- For these considerations, a substantial knowledge gap exists in the treatment of schistosomiasis infections during pregnancy, with few published and authoritative resources to guide clinical decision-making.
- We assessed the current literature for the impact that schistosomaisis can have on maternal and fetal outcomes during pregnancy, and evaluated the efficacy, tolerability and safety of praziquantel used for schistosomaisis during pregnancy

METHODS:

- A literature search was conducted on Medline, Embase, Cochrane Central, Cochrane DbSR and CINAHL databases with the search terms “intestinal parasites”, generic and organism specific; and “pregnant/pregnancy” from database inception to June 2019, 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-control 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 +Schistosomaisis + Fetal and/or Infants 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

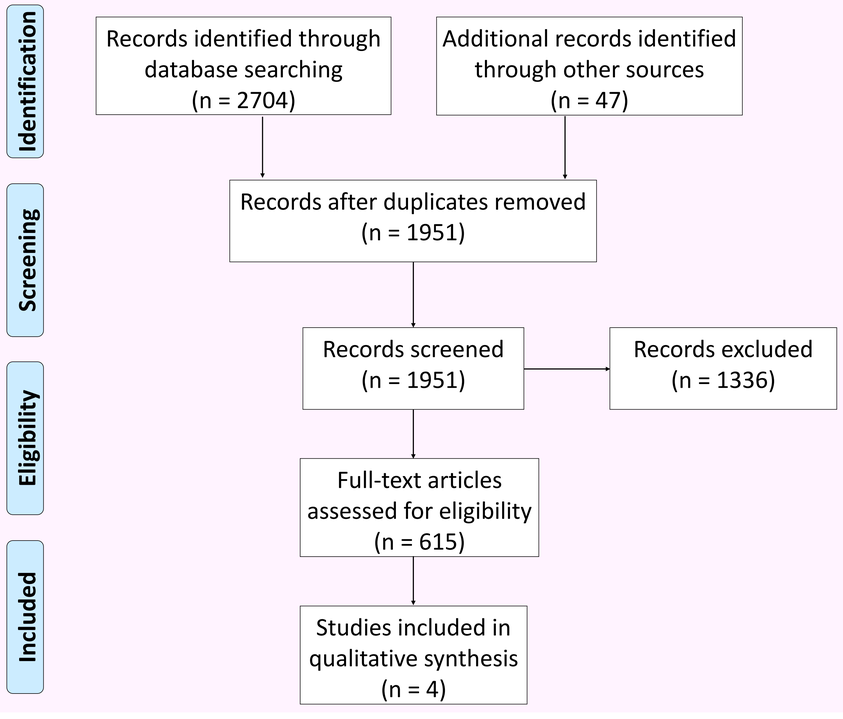

Table 1. Data Synthesis Table

Study	Study Period	Study Setting	Exclusion Criteria	Study Population	Study Design	Trimester of Treatment	Drug Treatment and Sample Size	Fetal/infant Outcomes
Ndibazza 2012[2] RCT	2003 to 2005	Entebbe Hospital, Uganda	Hemoglobin level <8 g/dL, liver disease, diarrhea with bloody stool, abnormal pregnancy, previous adverse reaction to anthelminthics, or enrollment during a previous pregnancy	Infants of 2507 pregnant women – 458 with *S mansoni.*	RCT, double-blind, albendazole vs matching placebo and praziquantel vs matching placebo, 2x2 factorial design	2nd or 3rd	N=104 women with *S. mansoni* infection in Praziquantel/placebo arm N=117 women with *S. mansoni* infection in Albendazole/Praziquantel arm Albendazole – 400 mg Praziquantel – 40mg/kg Placebo	Praziquantel had **no effect** on the **mean birth weight, perinatal mortality or congenital abnormalties** of babies born to mothers with *S. mansoni* infection
Mpairwe 2012[3] RCT	2003 to 2005	Entebbe Hospital, Uganda	Same as Ndibazza 2012	2345 newborns of 2507 pregnant women) assessed at birth 1722 infants had reported outcomes at 1 year	Same as Ndibazza 2012	2nd and 3rd	Same as Ndibazza 2012	Maternal praziquantel treatment for *S mansoni,* associated **with increased risk of infant eczema vs. placebo** **No effects on allergic conditions** (eczema, wheeze, urticaria) at 1 year mark
Webb 2012[4] RCT	2003 to 2005	Entebbe Hospital, Uganda	Same as Ndibazza 2012	Delivery for 2356 women, 2345 live births, 2115 infants for 1 year follow-up	Same as Ndibazza 2012	2nd and 3rd	Same as Ndibazza 2012	**No effect on infant response to BCG, tetanus or measles immunization**, including cytokine and antibody production or antigen-specific response, or adverse reactions
Tweyongyere 2013[5] RCT	2003 to 2005	Entebbe Hospital, Uganda	Same as Ndibazza 2012	1343 children born to mothers in the Entebbe Mother and Baby study at age 5	Same as Ndibazza 2012	2nd and 3rd	Same as Ndibazza 2012	Maternal treatment of *S. mansoni* by praziquantel during pregnancy caused higher IL-10 response in children exposed to a schistosome worm BUT had no other effects on immune responses (cytokine and antibodies)

CONCLUSION:

- Praziquantel administration during pregnancy for the treatment of *Schistosoma mansoni* does not appear to have any adverse birth outcomes for the fetus/infant or lead to any major adverse outcomes for the child later in life
- We performed data synthesis and analysis on 4 studies from the same randomized control trial, a more comprehensive analysis on the remaining studies that meet our inclusion criteria will be performed to validate its safety accurately

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