Spatial and temporal risk factor mapping of *Taenia solium* infections in Malawi.

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Key messages

***Taenia solium* infections cause substantial economic and health burden with neurocysticercosis being a leading cause of epilepsy according to WHO in sub–Saharan Africa**

- There is limited number of studies on *Taenia solium* infections in Malawi; identified studies were mainly case reports on Neurocysticercosis (NCC).

- The confluence risk factors, including high levels of poverty, poor sanitation and high pig densities are evident in central and southern districts indicating potential *T. solium* endemic area requiring further studies.

- Targeted interventions and studies in the potentially endemic areas can help reduce the health and economic burden due to this parasite.

Context

- *Taenia solium*, is a zoonotic parasite with human as the definitive host and a porcine intermediate host. It causes **epilepsy** through **neurocysticercosis** in humans when people **ingest the tapeworm eggs.**

- Pigs perpetuate the life cycle as intermediate hosts of the cystic stage **(porcine cysticercosis-PCC)** of the parasite which causes **taeniasis** in humans. Malawi has been classified as endemic for *T. solium* by the WHO based on the presence of key risk factors; however, the subnational distribution is not known

- Taenia solium risk mapping is required to ensure the appropriate resources are mobilized and informed targeting of *T. solium* control measures.
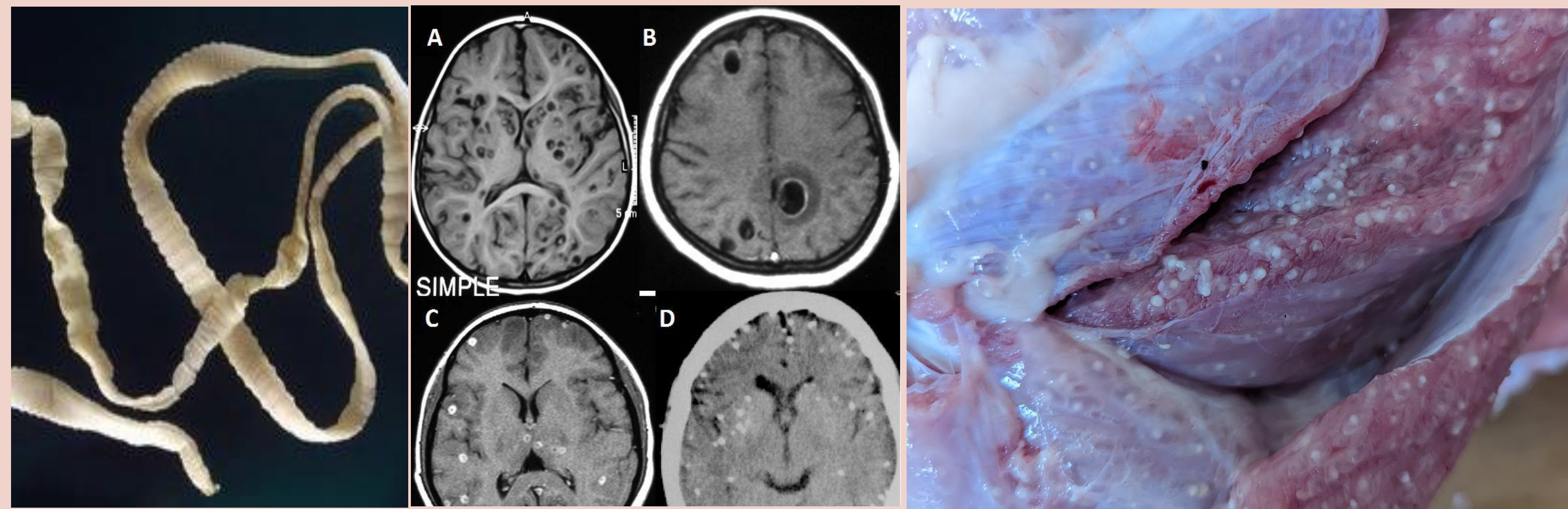
Our approach

- Systematic literature review (SLR) using a (pre-registered protocol; PROSPERO CRD42023411044) and following PRISMA guidelines.

- Informed prevalence calculated on a Bayesian framework

- Additional data from meat inspection and review of hospital records on NCC

- Geospatial risk mapping using data Malawi demographic health surveys (DHS) and pig density data from Food and Agriculture Organization (FAO) database to create geospatial risk maps of endemic subnational areas 2000, 2004, 2010, and 2016.
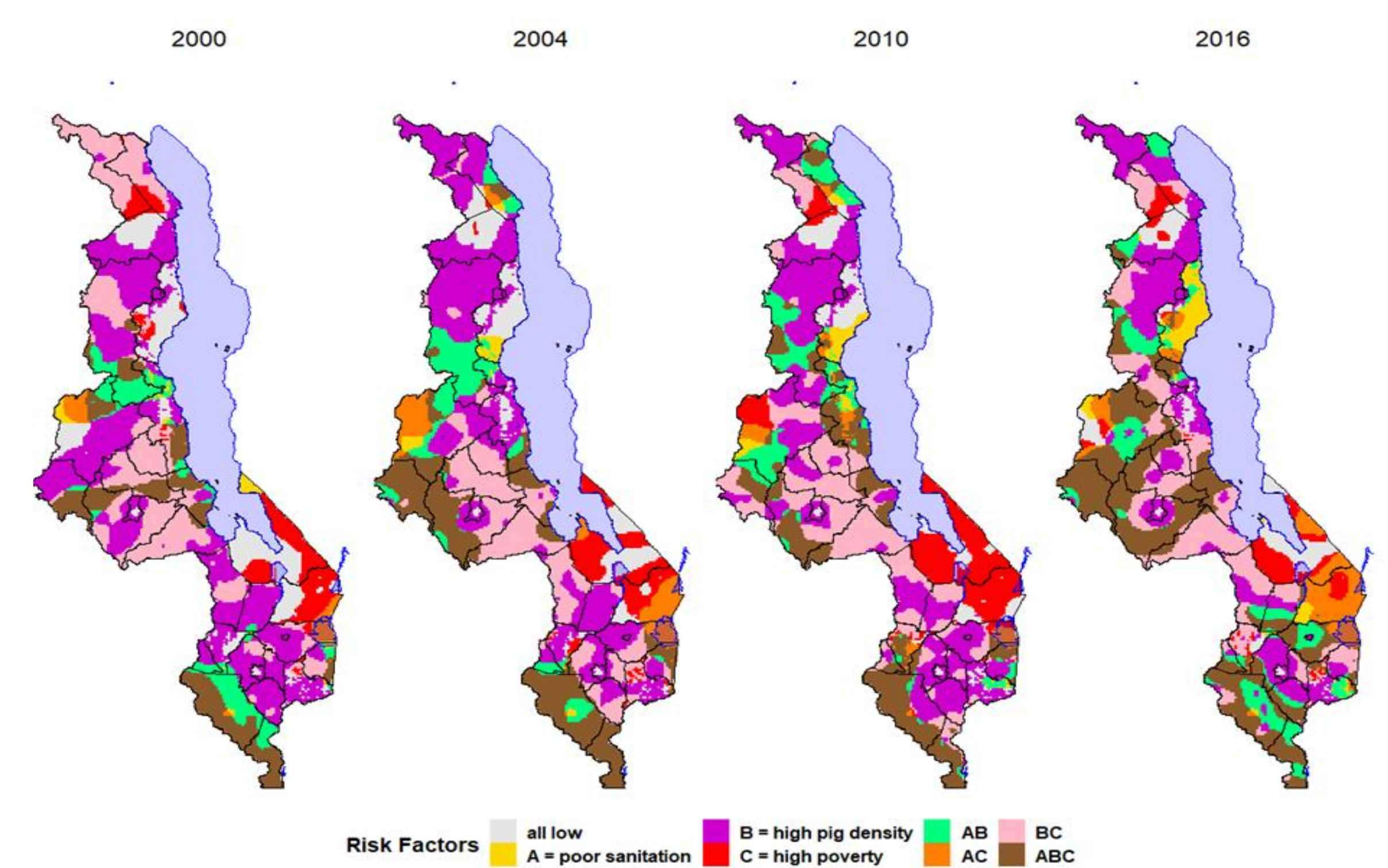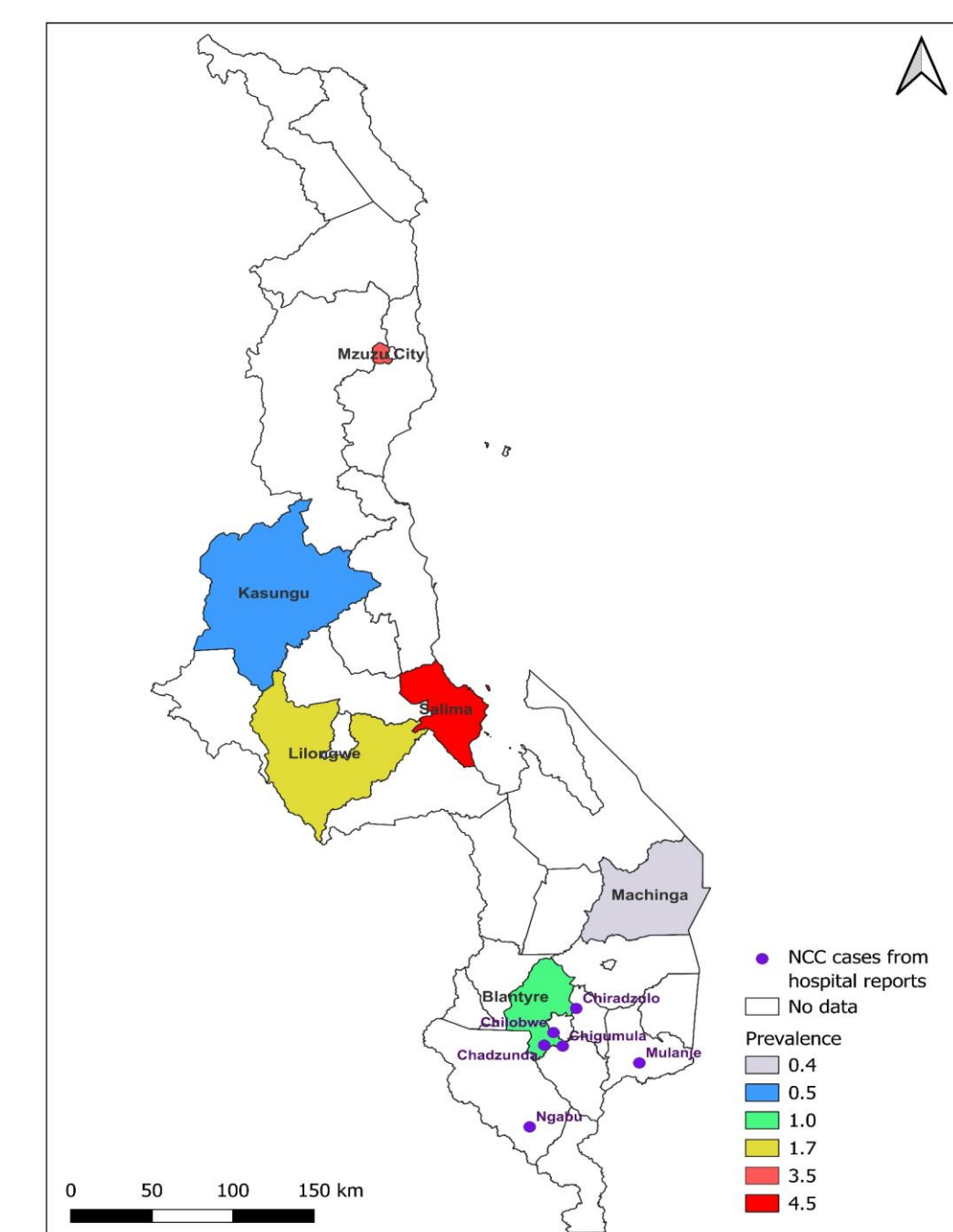
Outcomes

- A total of 12 studies identified through the SLR, with 11 studies focused on HCC and 1 on PCC

- Additional data from pigs slaughtered across ADDs show highest rates in Mzuzu, Salima and lowest in Machinga districts.

- The 6 cases of NCC obtained from hospital records show clustering around Queen Elizabeth Central hospital.

- Areas at highest risk, with the presence of all three risk factors were predominantly found in the central and southern districts of Malawi from 2000 to 2016

Table 1. Summarizing all included studies from the systematic literature review.

Conclusion

- Malawi lacks comprehensive research efforts and prevalence data on *Taenia solium*.

- The confluence of the risk factors, including high levels of poverty, poor sanitation and high pig densities are evident in central and southern districts of Malawi throughout 2004 – 2016.

- Baseline prevalence data, improved diagnostic capacities, and embracing One Health approaches needed to control parasite.

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