

# Occupational Health Risk Factors for Schistosomiasis: Systematic Review and Analysis

Sarah Grace Sawyer<sup>1</sup>, Gisela Butera<sup>2</sup>, Amira Roess, PhD<sup>3</sup>

<sup>1</sup>Elliott School of International Affairs, <sup>2</sup>Himmelfarb Health Sciences Library, <sup>3</sup>Department of Global Health

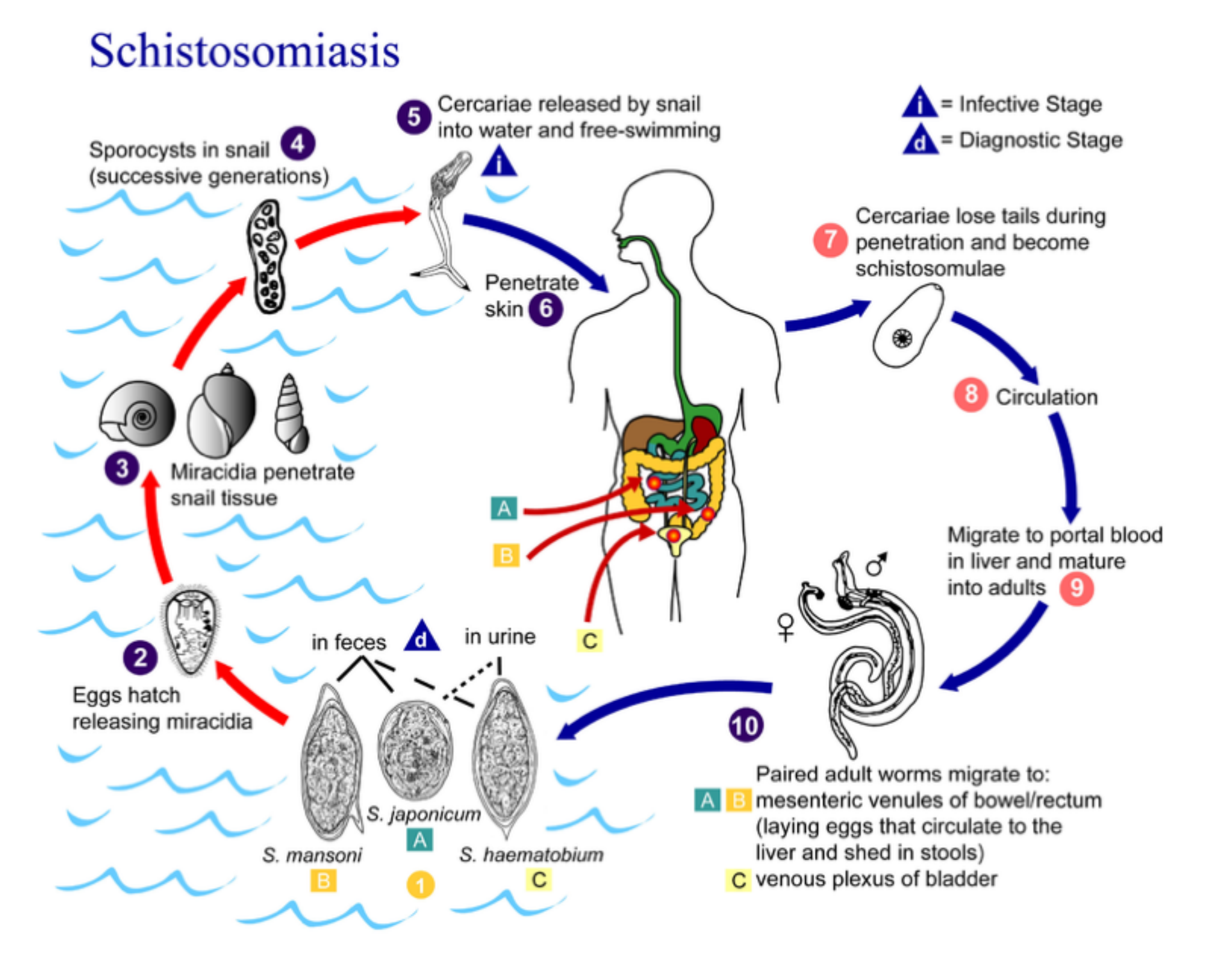
## INTRODUCTION

- Schistosomiasis is a neglected tropical disease caused by a parasitic flatworm
- Carried by snails living in fresh, stagnant water, the parasite penetrates human skin upon contact.
- Symptoms include severe pain, diarrhea, blood in the urine, organ damage, infertility, increased risk of HIV, and eventual death.
- Afflicts over 200 million people in the poorest regions of seventy-four countries in Africa, South America, Southeast Asia, and the Middle East.
- It is preventable, treatable, and curable.
- Those in certain occupations are at particularly high risk, including agricultural workers, irrigation workers, fishermen, miners, and people carrying out domestic tasks due to direct contact with unsafe water.

## OBJECTIVES

- To examine the occupational health risk factors for schistosomiasis in order to understand the factors at play leading to high rates of schistosomiasis in endemic communities in Africa.
- To explore the types of occupational activities involving high-risk contact with infected water.

Figure: The Transmission Cycle of Schistosomiasis (The Carter Center)



## BACKGROUND

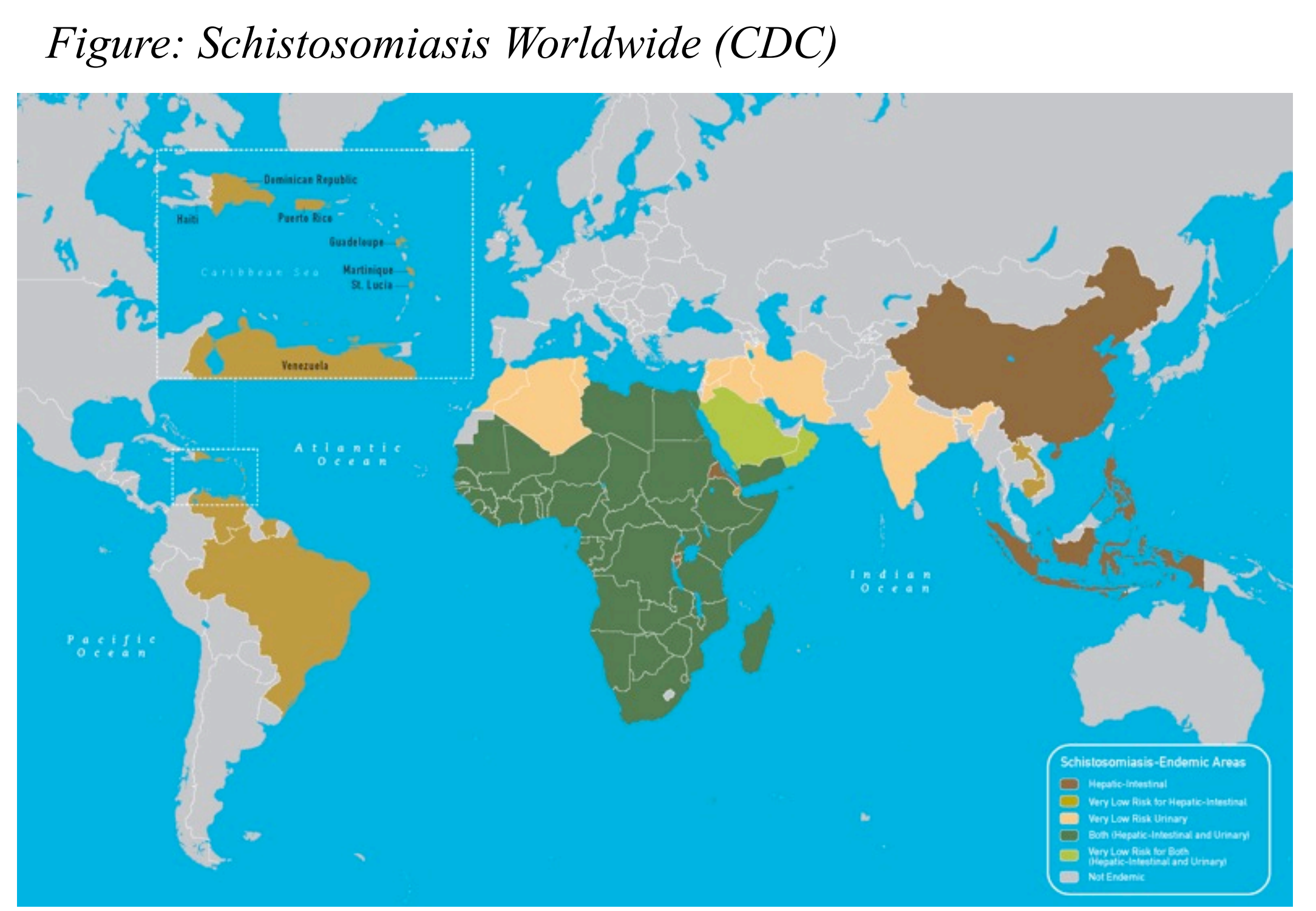


Figure: Rice Paddies in Betafo, Madagascar (Sawyer, 2013)



## METHODS

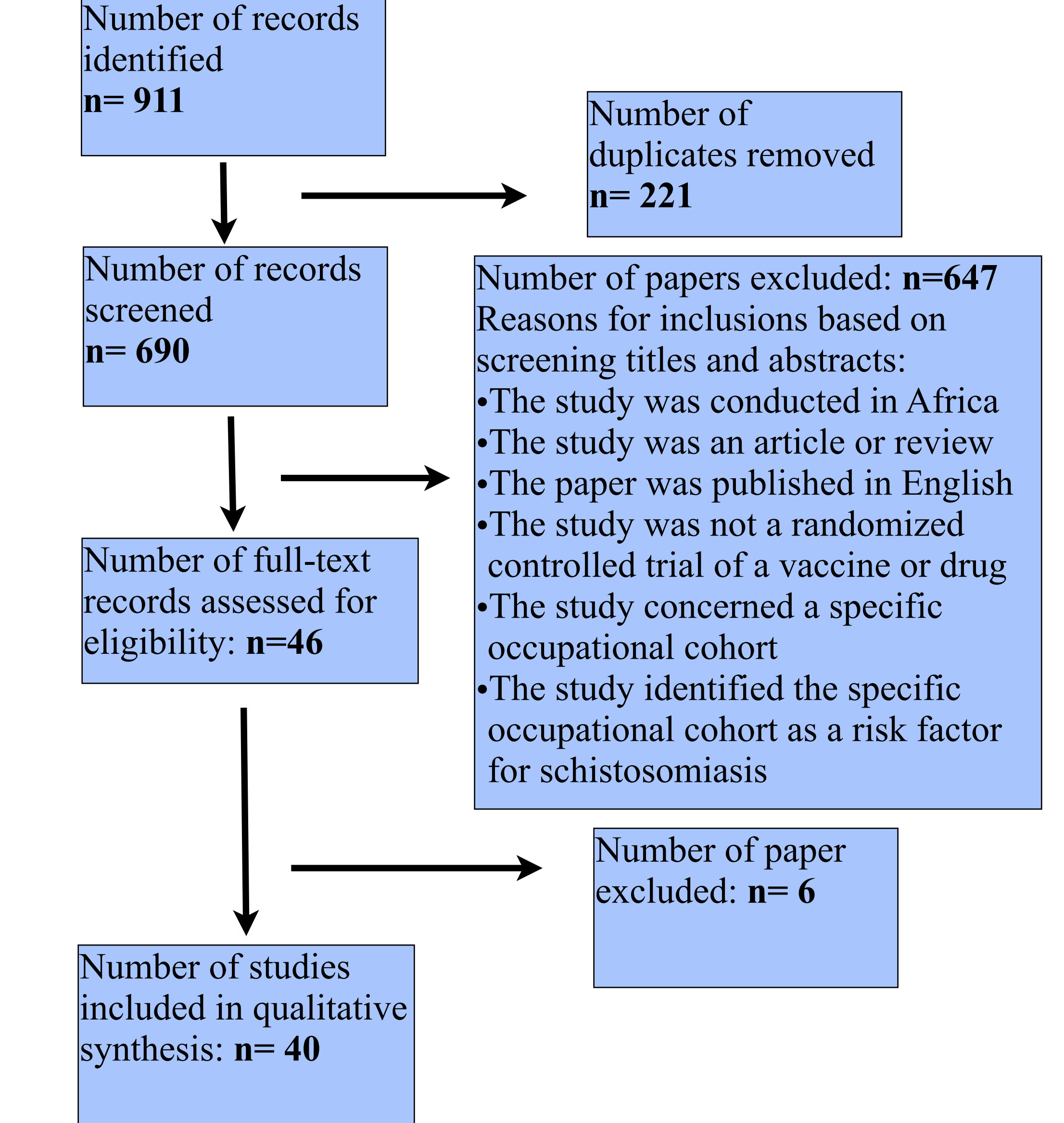
- Systematically searched for articles in English in all years, using keywords and MeSH terms, in the databases Scopus, Medline, and Web of Science. No regional limit criteria was set.
- The following were the criteria for inclusion:
  - The study was peer-reviewed and was published in English.
  - The article was not a randomized controlled trial of a vaccine or drug, or an intervention study related to schistosomiasis.
  - The study concerned schistosomiasis.
  - The study examined a specific occupational group in Africa.
  - The study identified the specific occupation as a factor to contracting schistosomiasis.

After eliminating internal and external duplicate studies, articles were excluded first based on the titles, then by reading the abstracts, and last by reviewing the entire study.

## METHODS

OCCUPATIONAL TERMS	AND	SCHISTOSOMIASIS TERMS
Occupational Hazard OR		Schistosomiasis OR
Occupational Health OR		Schistosoma japonicum OR
Occupational Exposure OR		Schistosoma mansoni OR
Agricultural Workers' Diseases OR		Schistosoma haematobium OR
Activities of Daily Living OR		Schistosomicides OR
Agricultural Worker OR		Schistosomiasis japonicum OR
Fishing OR		
Farming OR		
Farm Workers OR		
Mining OR		
Irrigation Worker OR		
Domestic Task OR		
Laundry OR		
Washing Dishes OR		
Water Exposure OR		

## RESULTS



## RESULTS

OCCUPATIONAL ACTIVITY	COUNTRY
<b>Domestic tasks</b> (washing clothes, utensils, vegetables, grains, mats, blankets)	Egypt, Nigeria, Ethiopia, Sudan, Kenya, Cameroon, Zimbabwe, Burundi
<b>Farming/agricultural activities</b> (working in rice paddies, cutting papyrus reeds, processing cassava, farming cotton, maize, and tobacco)	Egypt, Nigeria, Uganda, Ethiopia, Côte d'Ivoire, Sudan, Malawi, Cameroon
<b>Carrying water</b> (as a profession)	Ethiopia
<b>Fishing</b> (sorting fish, cleaning fish, using boats, washing fishnets, folding nets, cleaning and repair of equipment)	Nigeria, Zimbabwe, Zambia, Egypt, Namibia, Sudan, Uganda, Malawi, Cameroon, Kenya, South Africa
<b>Irrigation canal cleaning</b>	Sudan, Egypt
<b>Car-washing</b>	Kenya
<b>Harvesting sand</b>	Kenya
<b>Gold prospecting</b>	Zimbabwe
<b>Tin-mining</b>	Democratic Republic of the Congo

## CONCLUSIONS

- Occupational activities including domestic tasks, farming, carrying water, fishing, irrigation canal cleaning, car-washing, harvesting sand, gold prospecting, and tin-mining are risk factors for acquiring schistosomiasis in Africa.
- The village economy is often built on the occupation.
- Domestic tasks and fishing are cited as sometimes negatively and sometimes positively associated with schistosomiasis. This could be due to different levels of water contact because of fishing with or without boats.
- Many studies noted differences in men's and women's risk factors for infection.
- Few studies state an intervention for a specific occupational cohort.

## REFERENCES

Parasites - Schistosomiasis Biology," The Centers for Disease Control and Prevention. <http://www.cdc.gov/parasites/schistosomiasis/biology.html> (2012).

"Schistosomiasis," The Centers for Disease Control and Prevention. <http://wwwnc.cdc.gov/travel/yellowbook/2014/chapter-3-infectious-diseases-related-to-travel/schistosomiasis> (2013).

## CONTACT INFO

Sarah Grace Sawyer  
 Elliott School of International Affairs, 2015  
[ssawyer@gwmail.gwu.edu](mailto:ssawyer@gwmail.gwu.edu)