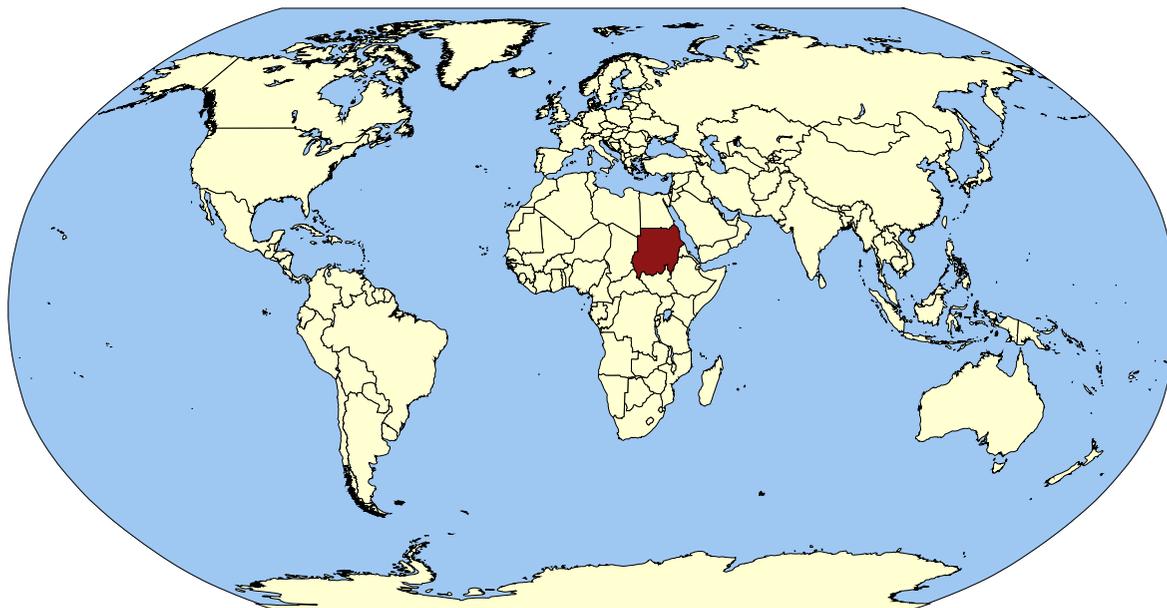


# The Sudan (and South Sudan)



## The History of Schistosomiasis in Sudan

After two long civil wars, South Sudan was granted independence from the Sudan on July 9, 2011 [1]. Before this, the two countries were united (as Sudan), and thus, the schistosomiasis history among the two countries is similarly united. Here we describe the historical schistosomiasis endemic situation and its control in the [pre-split] Sudan for most of the 20th and some of the early 21st century. Only the most recent statistics (after 2011) apply to the Sudan and South Sudan separately.

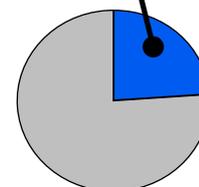
Endemic schistosomiasis was first described from Sudan in 1909, but it was thought to exist in the country long before, probably imported by pilgrims en route to Mecca [2]. The parasite became a major health problem in the Blue Nile region by 1925 after establishment of one of the largest irrigation schemes in the world, to support mainly cotton plantations in Gezira [2, 3]. The Gezira focus was of mixed intestinal and urinary schistosomiasis. This focus was thought to have been established just after the Sennar dam was installed and the irrigation scheme's canals were hand-dug by over 10,000 migratory Egyptian workers brought in to do the job [3].

## Schistosomiasis in Sudan [7]

56% of the population requiring preventative chemotherapy are school-aged children

24% of the population requires preventative chemotherapy for schistosomiasis

In 2014, <1% of people requiring preventative chemotherapy received treatment



## Overview of Sudan [1]

- » Population in 2015: 36,108,853
- » Official Language: Arabic and English
- » Capital: Khartoum
- » Presidential Republic
- » Percentage of Population with Access to Improved Drinking Water in 2015: 55.5%
- » Percentage of Population with Access to Improved Sanitation in 2015: 23.6%

## Schistosomiasis Prevalence

Countrywide prevalence estimates for schistosomiasis in Sudan (before the split) ranged from 20% in 1986 [4], to 14.9% in 2003 [5] and 19% in 2010 [5]. In 2012, separate estimates for the countrywide prevalence rates in Sudan and South Sudan had increased to 23.7% and 23.4%, respectively [6].

## Schistosomiasis Control

Coordinated control projects for schistosomiasis in Sudan began in 1979 with “The Blue Nile Health Project,” a focal program in the Gezira region, aimed at integrated waterborne disease management (schistosomiasis, malaria, and diarrheal disease) [3]. The project took an integrated strategy, focusing on provision of clean water and latrines, strengthening of community health services, and health education [3]. Praziquantel was used widely [3]. The results in Gezira were dramatic, with a local reduction in schistosomiasis from 50% prevalence in 1981 to 6% in 1989 when the program ceased. Even after the project ended, schistosomiasis rates locally continued to drop to 2% in 2009, attributed by some to a safer lifestyle imparted by the successful provision of latrines and safe water and thus a long term decrease in exposure to contaminated water [3]. In contrast to focal programs in the Gezira region, it wasn’t until 2000 that the Sudanese government declared a national schistosomiasis control program, with the stated goal to reduce the prevalence of *S. haematobium* to <10% nationally by 2013.

According to World Health Organization (WHO) records, Sudan reported some mass drug treatments with praziquantel in 2006 and 2009, but these reached less than 3% of the large population that required treatment [8]. By 2011, the WHO’s Preventive Chemotherapy Database reports that 1,748,962 of the 5.67 million in need of treatment received praziquantel in Sudan, which scaled up their national coverage to 30% [8].

In 2013, the national distribution program for praziquantel reached 25% of the population in need in the [now independent north part of] Sudan, with 2,074,774 treated out of 8.37 million at risk of schistosomiasis infection [7].

As for South Sudan, only a few thousand people were reported to have been treated with praziquantel in 2011, and none reported in 2012 and 2013 [7]. Yet, some publications have reported that South Sudan has plans for schistosomiasis control in the future [8].

Sudan has recently invested in delivery of praziquantel via mass drug administrations as its primary strategy to combat schistosomiasis, evidenced by the impressive 1-2 million treatments delivered in each of the last few years, and 6 million more tablets recently committed by WHO [9]. However, even more drug treatments will be needed to reach the huge population (more than 8 million) at risk in today’s Sudan and South Sudan. In 2013 a WHO representative from the Sudan was quoted to say “Up to now, the schistosomiasis control programme in the country has invested significant time, manpower and resources in snail control. A redirection of the strategy with a focus on elimination is necessary” [9].

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