



# health

Department:  
Health  
REPUBLIC OF SOUTH AFRICA



## STATISTICAL NOTES

## JANUARY 2009

Welcome to this edition of Statistical Notes!

### SCHISTOSOMIASIS IN MPUMALANGA PROVINCE

#### 1. Introduction

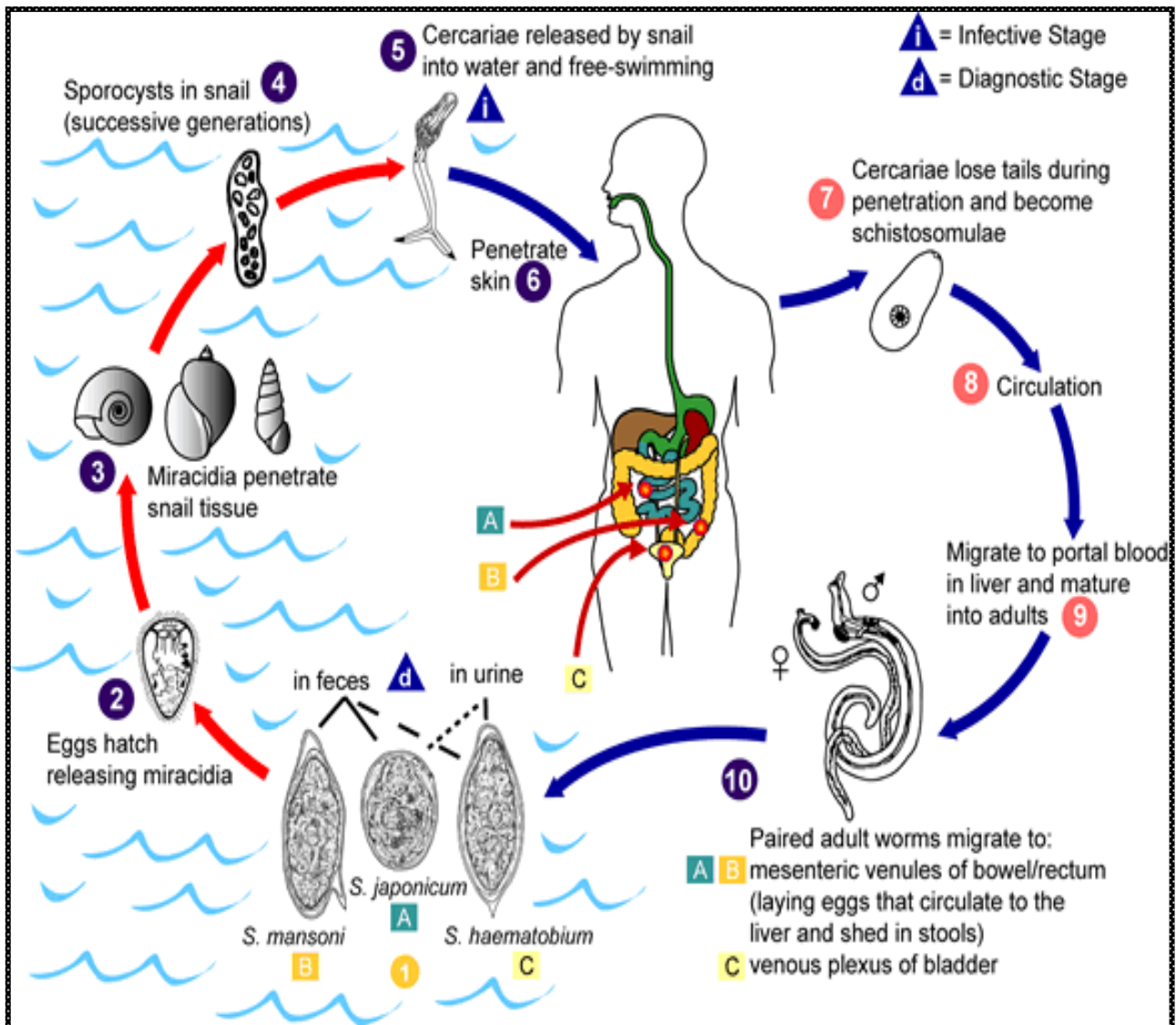
Schistosomiasis is a human disease caused by parasitic worms called Schistosomes. It is also a chronic disease that can result in liver failure due to fibrosis, and renal failure following hydronephrosis and secondary bacterial infection. It may affect the reproductive health of women with resultant infertility. The disease is endemic in 74 countries, affecting an estimated 200 million people, half of whom live in Africa.<sup>[1]</sup> Schistosomiasis is common in the tropics where ponds, streams and irrigation canals harbor bilharzia-transmitting snails. Parasite larvae develop in snails from which they infect humans, their definitive host, in which they mature and reproduce.

## 1.1 Geographical distribution and epidemiology in South Africa

The geographical distribution of schistosomiasis lies largely within the eastern half of the country. The disease is endemic in KwaZulu-Natal and has been found along the coastal belt of the province, in the Eastern Cape, in parts of Mpumalanga, as well as the North and Northwest<sup>[2]</sup>. *Schistosoma haematobium*, which is responsible for urinary bilharzia, is much more widespread than *S. mansoni* which causes intestinal (rectal) bilharzia. Prevalence's of *S. haematobium* in children on the eastern escarpment are highest (>70%) in the lowlands and near the coast, but decrease with increasing altitude to around 1000m. Transmission is also common across the eastern highveld with outliers west of Johannesburg in part of the North West Province.<sup>[3]</sup> Transmission in the Eastern Cape is patchy. Intestinal or rectal bilharzia is limited to the low-lying areas of the three eastern provinces, Limpopo, Mpumalanga and KwaZulu-Natal.<sup>[4]</sup>

## 1.2 Pathogenesis

Parasite eggs are released into the environment from infected individuals, hatching on contact with fresh water to release the free-swimming miracidium. Miracidia infect fresh-water snails by penetrating the snail's foot. After infection, close to the site of penetration, the miracidium transforms into a primary (mother) sporocyst. Germ cells within the primary sporocyst will then begin dividing to produce secondary (daughter) sporocysts, which migrate to the snail's hepatopancreas. Once at the hepatopancreas, germ cells within the secondary sporocyst begin to divide again, this time producing thousands of new parasites, known as cercariae, which are the larvae capable of infecting mammals.



**Figure 1: Schistosomiasis life cycle.**

Source: Center for Disease Control

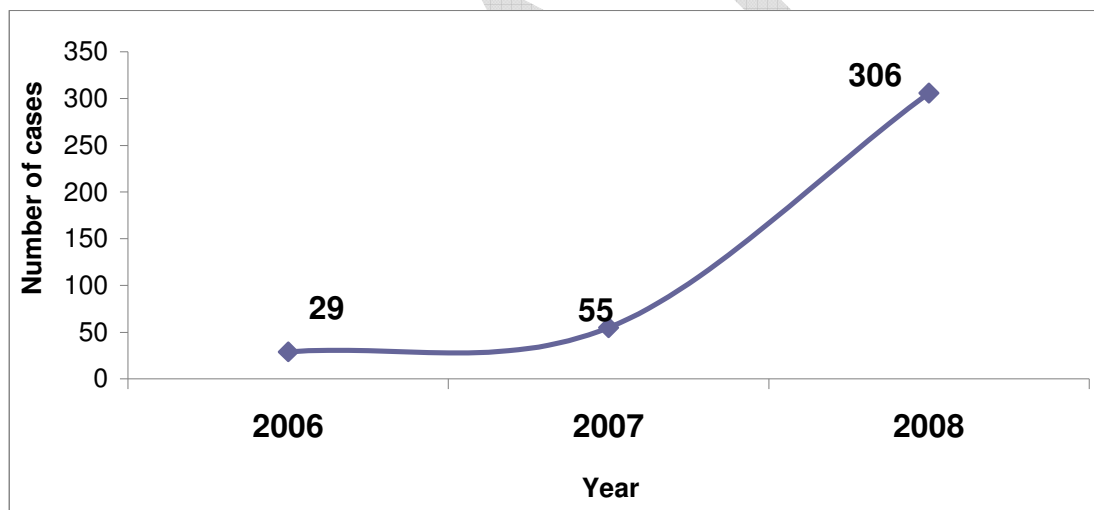
### 1.4 Laboratory diagnosis and Treatment

Microscopic identification of eggs in stool or urine is the most practical method for diagnosis. The stool exam is the more common of the two. Stool examination should be performed when infection with *S. mansoni* or *S. japonicum* is suspected, and urine examination should be performed if *S. haematobium* is suspected.

Schistosomiasis is readily treated using a single oral dose of the drug Praziquantel annually.<sup>[6]</sup> There is a second drug available for treating *Schistosoma mansoni* called Oxamniquine. Studies have shown medicinal castor oil as an oral anti-penetration agent to prevent schistosomiasis and that Praziquantel's effectiveness depended upon the vehicle used to administer the drug (e.g., Cremophor / Castor oil).<sup>[6]</sup>

## 2. THE PREVALENCE OF SCHISTOSOMIASIS DISEASE IN MPUMALANGA PROVINCE, 2006 - 2008

Three hundred and ninety (390) cases of schistosomiasis were reported in Mpumalanga province during the period January 2006 to December 2008. The largest number of cases was reported in 2008.

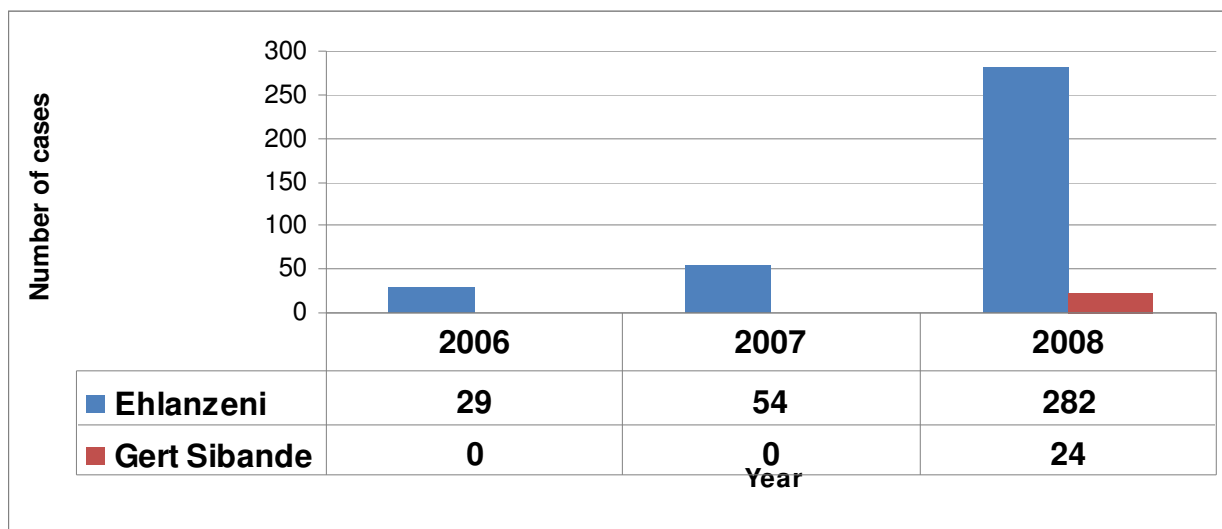


**Figure 1: Schistosomiasis trends, Mpumalanga Province, 2006 - 2008**

Source: Mpumalanga Department of Health

### 2.1 The distribution of schistosomiasis cases by district

Of the 390 cases reported, the majority (94%) were from Ehlanzeni district and the remaining 6% from Gert Sibande district (Figure 2). There were no cases reported in Nkangala district.

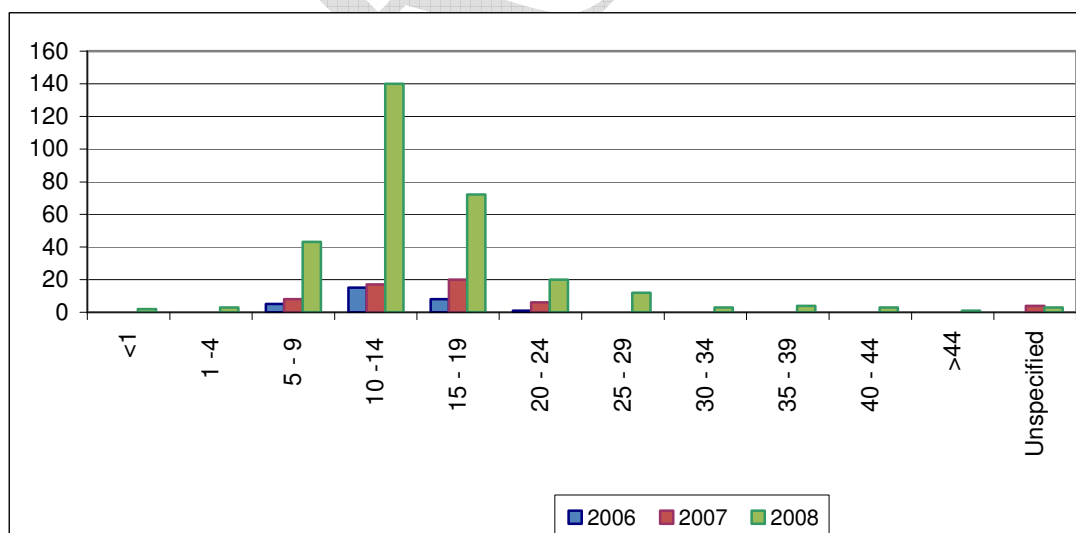


**Figure 2: Total number of schistosomiasis cases by district, Mpumalanga province, South Africa, 2006 – 2008**

Source: Mpumalanga Department of Health

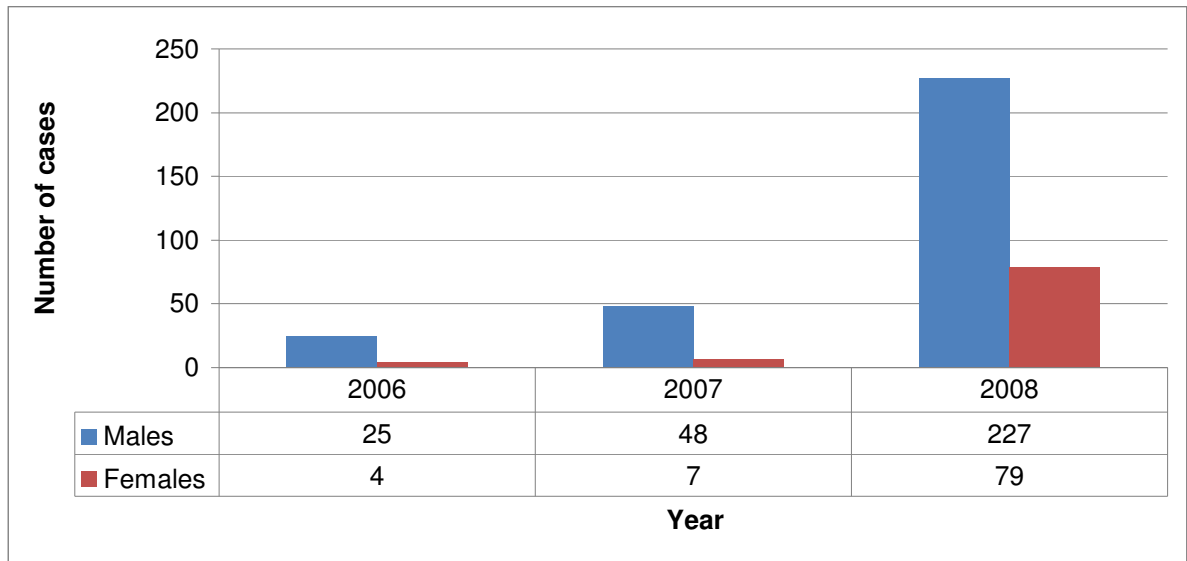
## 2.2. Distribution of schistosomiasis cases by age group and sex

Children between the ages of 5 and 14 years are most at risk as can be seen in Figure 3. The distribution by sex shows that males were more affected than females (Figure 4).



**Figure3: Schistosomiasis by age-group, Mpumalanga province, South Africa, 2006 – 2008**

Source: Mpumalanga Department of Health

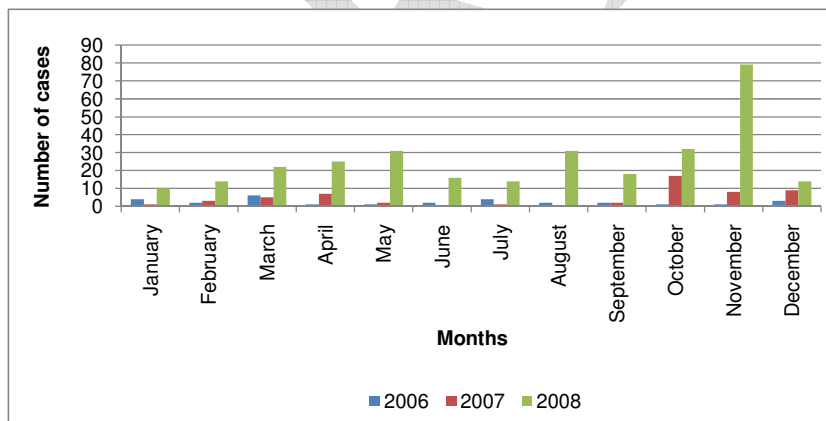


**Figure 4:** Total number of schistosomiasis cases reported by sex by year, Mpumalanga province, South Africa, 2006 – 2008

Source: Mpumalanga Department of Health

### 2.3 Distribution of bilharzia cases by month

On average, 20 cases of schistosomiasis were reported per month, except for the peak in November where a total of 79 cases were reported (Figure 4)



**Figure 5:** Total number of schistosomiasis cases reported by month, Mpumalanga province, South Africa, 2006 – 2008

Source: Mpumalanga Department of Health

### 3. Summary

Both abiotic and biotic factors contribute to the schistosomiasis transmission cycle and these determine the spatial distribution of the disease. The presence of suitable water bodies is crucial to the cycle of transmission as people become infected by contact with contaminated water. The disease is associated with polluted water resources and poor or inadequate provision of basic services such as sanitation<sup>6</sup>. In addition to human contributory factors such as swimming in high risk areas, irrigation, building of dams and migration, favourable climatic conditions for survival of the schistosome parasites and their respective snail hosts must also prevail. The abiotic factors affecting transmission include temperature, rainfall and geomorphology. The most important of these abiotic factors has been found to be temperature and to a lesser extent, rainfall in the form of habitat stability or habitat permanence. The effect of rainfall on schistosomiasis is indirect as it affects the amount of surface water that is available in suitable water bodies. Thus, rainfall is a proxy indicator of the availability of water, which in turn defines the pattern of schistosomiasis

The high-risk groups are school children and adolescents as well as people whose occupations involve contact with infected water (e.g. farmers, irrigation workers). Since this infection results from poor hygienic conditions and the lack of safe water, deworming alone is unlikely to have a lasting impact on transmission. More permanent control can be achieved only by improvements in sanitation, and access to clean water coupled with appropriate health education.

#### 4. References

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