

Mansonic schistosomiasis: epidemiological study in the county Mulungu do Morro-BA

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Abstract— *Schistosomiasis mansoni* (MS) is a parasitic disease that spreads through water, the trematode *Schistosoma mansoni* being its etiological agent. This is a serious public health problem worldwide. This paper proposes to analyze the epidemiological profile of cases of schistosomiasis in the municipality of Mulungu do Morro, Bahia, from 2007 to 2017. This is a descriptive epidemiological study of quantitative nature with data collected from the Notification Disease Information System (SINAN) of the Unified Health System (SUS) regarding information on the number of reported cases and sociodemographic characteristics, where we analyzed the variables: gender, age, race, education, relationship with work and area of residence in the years surveyed, as well as pathology related data such as evolution and clinical form. Research shows that within the region, Mulungu do Morro occupies the 2nd place in number of notifications, with 59 cases of the disease in the period studied. The data show the predominance of males (64.4%), the economically active age group, from 15 to 50 years old (72.8%), cases from rural areas (79.7%) and from educated people. elementary school incomplete and complete (71.1%). Regarding the forms and evolution of the disease, both intestinal form and cure appear with 84.7%. The paper concludes that socioenvironmental factors are determinant for the maintenance of schistosomiasis in Mulungu do Morro municipality, providing subsidies for the formulation of strategies to combat the disease. Therefore, integrated actions between surveillance and medium- and long-term primary care should be implemented with the participation of the public and community sectors, ranging from the preparation of health professionals and the provision of tests for early diagnosis, the guarantee of treatment. to those infected in a timely manner, health education, even improvements in basic sanitation and supply of treated water, aiming to reduce the number of cases of the disease in the municipality.

Keywords— *Schistosomiasis mansonica*; *sociodemographic characteristics*; *integrated actions*.

I.

INTRODUCTION

Mansonic Schistosomiasis (MS) is a parasitic disease that spreads through water, by being the *Shistosoma Mansoni* Threamatode its etiological agent. This helminth has in its biological cycle the involvement of snails of the Biomphalaria genus, by being these ones the only intermediate hosts, and men the definitive host. Popularly known as "snail disease" and / or "water belly", it causes an acute or chronic condition, often with few symptoms, but it may also manifests with more severe forms, by leading to host death (ROCHA et al., 2016).

The MS is still a serious public health problem worldwide. There are many areas in Brazil that are endemic to the disease, by being an important cause of population

mortality (CANTANHEDE; FERREIRA; MATTOS, 2011; SOUZA et al., 2011). Its endemic character is associated to the poverty and the low economic development, by being found mainly in countries in Africa, Asia and South America (WHO, 2016).

Its distribution is more intense on a continuous and contiguous strip of land along almost the entire coast of the Northeast, from Rio Grande do Norte to the South, by including the hot and wet zones of the states of Paraíba, Pernambuco, Alagoas, Sergipe and Bahia, where it reaches inland reaching Minas Gerais, in the Southeast, by following the path of important watersheds (BRAZIL, 2014). In the Bahian territory, the endemicity reaches a vast extent, by being that among the total of 417 counties in the state of Bahia, 167 are endemic, 122 are focal and

128 are free for the schistosomiasis transmission (SAÚDE, 2018).

Among the several counties of Bahia that present relevant endemicity to the disease, Mulungu do Morro stands out due to the incidence of schistosomiasis cases. Thus, the goal of this study is to analyze the epidemiological profile of schistosomiasis cases in the county of Mulungu do Morro-BA and discuss the main prevention, promotion and health care measures that might be taken, by aiming its control and eradication.

II. MATERIAL AND METHODS

It is about a descriptive epidemiological study of quantitative nature, related to the county of Mulungu do Morro Bahia - Brazil. The descriptive epidemiological research observes, records, analyzes and sort data without manipulating it, that is, without the interference of the researcher. It seeks to find out how often a fact occurs, its nature, its characteristics, causes, relationships with other facts (PRODANOV; FREITAS; 2013).

Thus, the data were collected from the Notification Disease Information System (NDIS) of the Health Unique System (HUS) concerning information about the quantitative of reported cases and sociodemographic characteristics related to schistosomiasis manson notified in the county of the study from 2007 to 2017.

For proceeding the analysis, the data were initially entered on Microsoft Office Excel spreadsheets by using of simple percentage calculations, which will be presented through tables and graphs.

For the selection of profile features of the disease carriers, the following variables were analyzed: gender, age group, education, relationship with work and area of residence in the surveyed years, as well as regarding data to the pathology, as evolution and clinical form.

III. RESULTS AND DISCUSSION

Schistosomiasis is endemic in large extension in the Bahian territory, by being still considered a serious public health problem. From the total of 417 municipalities in the state, 167 (40%) are endemic, 122 (29.3%) are focal and 128 (30.7%) are free for schistosomiasis transmission (SAÚDE, 2019).

In the analyzed period, from 2007 to 2017, 27,735 cases of schistosomiasis were registered in Bahia. Of these, 354 cases occurred in the region of Irecê, regional health where the county of Mulungu do Morro is inserted. By establishing a ranking by number of cases of the disease, the region occupies the 16th position in the federation unit (Table 1).

Table 1. Number of Schistosomiasis cases reported by Health Region – Bahia, 2007 – 2017

REGIONAL RESIDENCE	NUMBER OF CASES	RANKING
Salvador	3293	1º
Jequié	2941	2º
Santo Antônio de Jesus	2884	3º
Itabuna	2824	4º
Alagoinhas	2748	5º
Vitória da Conquista	2606	6º
Cruz das Almas	1625	7º
Itapetinga	1332	8º
Gandu	1241	9º
Eunápolis	692	10º
Brumado	615	11º
Teixeira de Freitas	585	12º
Barreiras	580	13º
Ilhéus	574	14º
Cícero Dantas	430	15º
Irecê	354	16º
Amargosa	348	17º
Seabra	347	18º
Caetité	307	19º

Senhor do Bonfim	285	20°
Santa Maria da Vitória	251	21°
Serrinha	221	22°
Jacobina	155	23°
Guanambi	133	24°
Feira de Santana	125	25°
Itaberaba	73	26°
Juazeiro	73	27°
Boquira	50	28°
Mundo Novo	20	29°
Ibotirama	12	30°
Paulo Afonso	11	31°
TOTAL	27735	-

Source: SESAB/SUVISA/DIVEP/SINAN – Notification Disease Information System

Beyond that, when analyzing the occurrence of the pathology inside the region, it is verified that Mulungu do Morro occupies the 2nd place in number of notifications,

along with the city of Barra do Mendes, by being responsible for 16.7% of cases, by showing the relevance of the research (Table 2).

Table 2. Number of Schistosomiasis cases reported by municipality – Irecê Region Bahia, 2007 – 2017.

MUNICIPAL OCCURRENCE	NUMBER OF CASES	%	RANKING
Irecê	104	27.8	1°
Mulungu do Morro	59	16.7	2°
Barra do Mendes	59	16.7	3°
Uibaí	26	7.3	4°
América Dourada	23	6.9	5°
João Dourado	21	6.3	6°
Canarana	20	6.0	7°
São Gabriel	14	3.9	8°
Cafarnaum	10	3.0	9°
Xique-Xique	4	1.2	10°
Barro Alto	3	0.9	11°
Jussara	3	0.9	12°
Lapão	2	0.6	13°
Presidente Dutra	2	0.6	14°
Central	1	0.3	15°
Gentio do Ouro	1	0.3	16°
Ibipeba	1	0.3	17°
Ibititá	1	0.3	18°
Total	354		-

Source: SESAB/SUVISA/DIVEP/SINAN - Notification Disease Information System

It is noteworthy that the county of this study is classified as focal, that is, it has a circumscribed endemic area, in an area until then indene (where there is no schistosomiasis record), as consequence of environmental or

socioeconomic changes that become possible the establishment of the disease transmission (BAHIA, 2019). Among the years of 2007 and 2017, a total of 59 cases of Mansonic Schistosomiasis were reported in the county. By analyzing the Figure 1 it is possible to observe that some

years presents silent or with an insignificant number of cases, such as 2010, 2012, 2013, 2016 and 2017. In this situation, it is possible to infer that occurs the subordination of cases or that no population surveys were performed, even if it is a city with outbreaks of the disease that needs of frequent actions to the control of the pathology (BRAZIL, 2014). According to Vidal et al.

(2011), the subordination generates major problems for the control of schistosomiasis, since the identification of the case, treatment until the preventive measures and fight against reinfection.

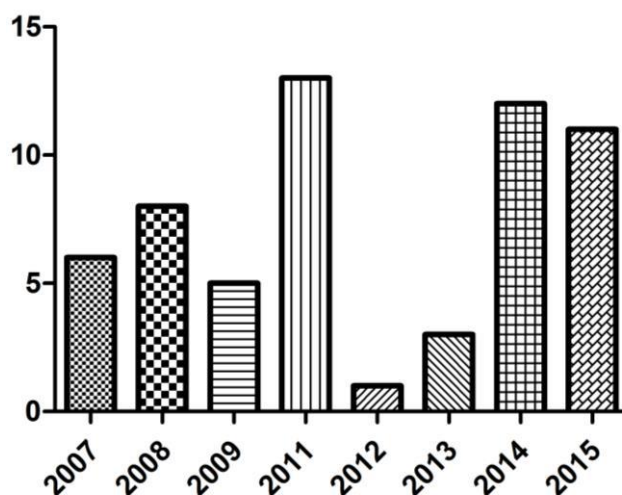


Fig.1. Number of reported Schistosomiasis Cases Mulungu do Morro - BA

Source: SESAB/SUVISA/DIVP/SINAN - Notification Disease Information System

Regarding to sex and age group of those ones infected with *S. Mansoni* (Table 3), in the years of the study, the data show a predominance of males (64.4%) and the economically active age group, from 15 to 50 years. (72.8%), by corroborating with other studies as Cardim et al (2011), in which the male population represented 63.4% (638 / 1,006) and in the economically active range 75%.

Besides this, Vasconcelos et al. (2009) verified 21 men from the total of 38 individuals examined in the city of Sabará, Minas Gerais, and Vidal et al (2011) in his research in the city of Jequié, Bahia, found that the most part of confirmed cases of schistosomiasis are concentrated on people aged from 20 to 39 years (2,910 cases) and belong to the male sex.

Table 3. Schistosomiasis cases reported by sex and age – Mulungu do Morro/BA – 2007 – 2017

Sex	Number	%
Feminine	21	35.6
Male	38	64.4
	59	100
Age range		
< 1 year	1	1.7
1 – 4 years	1	1.7
5 – 9 years	2	2.4
10 – 14 years	7	11.9
15 – 19 years	10	17.0
20 – 34 years	23	38.8
35 – 49 years	10	17.0
50 – 64 years	4	6.8
65 – 79 years	1	1.7
	59	100

Source: SESAB/SUVISA/DIVP/SINAN – Notification Disease Information System

Regarding to socioeconomical factors, the numbers represent the occurrence by residence area, urban or rural, by showing a hegemony of cases occurred in rural areas (79.7%).

It is worth mentioning that, in the year of 2010, the basic sanitation in Mulungu do Morro reached only 0.4% of the population, according to IBGE data (2010), and that despite of the public investments in the area, the sanitary conditions in the last years are still unsatisfactory. This situation is even more precarious in the rural area of the county, where the benefits for the population have not been prioritized yet, by existing a significant discrepancy when they are compared to the benefits of the urban area.

According to MORAES (2011), in all the country around 73% of the sanitation deficit is concentrated in the rural area, where approximately 8.8 million Brazilians do not have adequate access to water supply, while 3, 3 million inhabitants of the urban area are in the same situation.

In the rural area of Mulungu, this fact is verified when it is still verified a lack of supply to the residences of treated water or sewerage system, by being these conditions

favorable for the transmission of the pathology as it was verified in other researches.

According to Gomes (2016), the lack of sanitation is a determinant factor for the occurrence of schistosomiasis, since it provides the fecal contamination of hydraulic collections - natural breeding sites of the vector snail. Additionally, according to Silva et. al (2015), the conditions of better quality of life that are not enjoyed by the population, such as a decent income, quality education, access to basic services such as water treatment, sanitation and garbage collection constitute factors that initiates in this area a proliferation of schistosomiasis.

It is known that the most affected areas by schistosomiasis are those ones that presents very poor basic sanitation conditions, poverty and low levels of education (BRASIL, 2014). This way, another social issue to be considered is the relationship of the pathology and educational level of the individual affected. The figure 2 presents considerable indices of low education, by being that 71.1% are represented by people who have only elementary school.

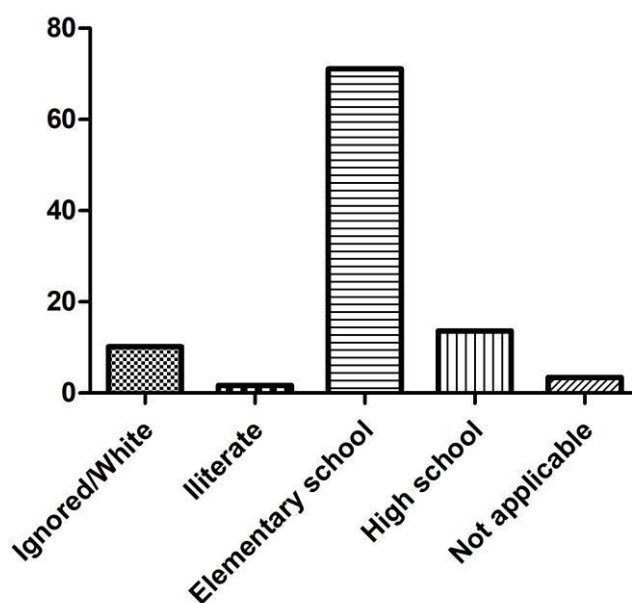


Fig.2: Percentage of Schistosomiasis cases notified by level of education

Source: SESAB/SUVISA/DIVEP/SINAN – Notification Disease Information System

Although illiteracy is not significant in the data survey, the low education level is evident in the high percentage of people with only the elementary level, a fact also identified by Silva (2011), who observed a high percentage of illiteracy (27.7%) on the analyzed population, while Silva, et al (2015) report that among the families surveyed by them, 70% had only incomplete elementary school.

Still about the level of education, the study by Melo et. al (2019) shows that schistosomiasis is prevalent in individuals who does not know to read and write (illiterate) and among the ones with few years of schooling (incomplete primary school).

In dealing with the forms of the disease, the data pointed on Figure 3 are referring to the chronic phase of the

disease, where the intestinal form is the most prevalent, with prominence to the ignored / blank information with very high percentage, by suggesting that there was no

definition of the clinical phase or that there was incompleteness in information.

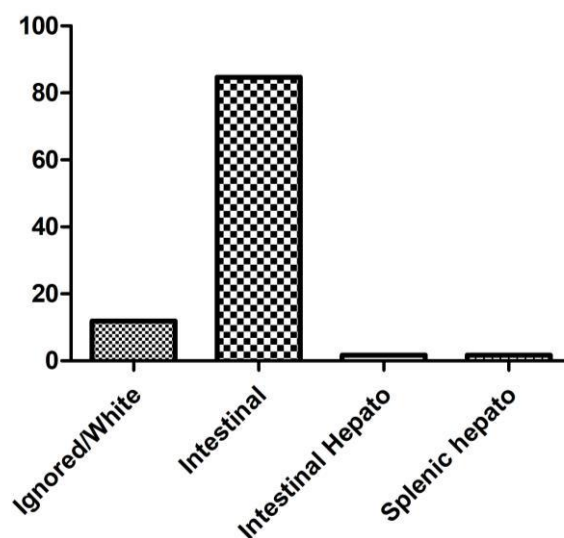


Fig.3. Percentage of Schistosomiasis Cases by Clinical Form

Source: SESAB/SUVISA/DIVEP/SINAN – Notification Disease Information System

It is worth mentioning that, according to the information collected, there were not reported any case of schistosomiasis in the acute phase, by highlighting the control of the disease in the early phase. About this issue, Marculino et al. (2016) shows that the parasitological method of feces, according to the Kato-Katz technique, has been used as a unique method for diagnosing the disease. However, in areas where the disease is of low severity, with mild and few specific manifestations, the actual

prevalence of the disease is underestimated when it is used only this method to diagnose schistosomiasis.

Additionally, the figure 4 shows aspects related to the evolution of the disease in the period proposed by the study. The high cure rate refers to the use of praziquantel provided by the HUS network and confirming what other studies explain that the rate of adherence to drug treatment in this research was satisfactory, by being above what is recommended (80%) by the Ministry of Health (MELO). , (2019).

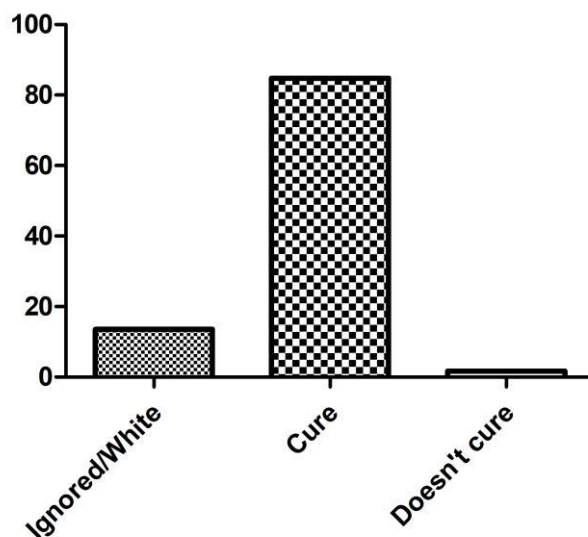


Fig.4. Percentage of Schistosomiasis cases confirmed by disease progression

Source: SESAB/SUVISA/DIVEP/SINAN – Notification Disease Information System

The high cure rate ensures the life of the patient and prevents serious complications of the disease. According to Vidal et. al (2011) it is important that in the treatment of the individuals infected with schistosomiasis, be avoided the worsening of the clinical condition and, consequently, the death.

Throughout the investigation of this study, it was observed the frequency of ignored / blank data, by ranging from 10 to 13.5%, what may interfere in the quality of the information, thus making it impossible a critical evaluation and more trustworthy about the epidemiologic profile of the disease in the county of study.

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