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Research Article

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Prevalence of Schistosomiasis in Agalomiti Worda Benishangul Gumuz Regional State (A Five-Year Retrospective Study in 2015-2019)

Asmamaw Abat Getu*

Department of Biology, College of Natural and Computational Science, Assosa University, Assosa, Ethiopia.

***Corresponding Author**
Asmamaw Abat Getu, Department of Biology, College of Natural and Computational Science, Assosa University, Assosa, Ethiopia.

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Abstract

Schistosomiasis is endemic in 74 tropical developing countries. The patients who visited Agalometi Woreda Health Centre from 2015 to 2019 were included in the study to determine the prevalence of schistosomiasis disease among those over the age of 4. Data were gathered and analyzed from the recorded document. Finally, tables and percentages were used to display the outcome. In 2015, 2016, 2017, 2018, and 2019 correspondingly, the total population affected with schistosomiasis was 450,534, 632, 636, and 597. The overall prevalence of Schistosoma mansoni was 11.27%. The prevalence of Schistosoma mansoni infection among males and females was 11.81% and 10.79%, respectively. The prevalence of Schistosoma mansoni infection among different age groups ranged from 0.09% in≥ 30 years to 81.25% in 10-14 years. It can be concluded that Schistosoma mansoni is one of the etiologies of schistosomiasis that causes anemia both in adults and children. It signifies the fact that the age groups 10-14 and 15-19 years are the highest risk groups in the Agalometi woreda and serve as sources of infection and transmission. The youngest age group in the population should be the focus of any efforts to control schistosomiasis in the region.

Keywords: Agalometi Woreda, Prevalence, Schistosomiasis

1. Introduction

1.1 Background of the Study

One of the neglected tropical diseases, schistosomiasis, commonly known as bilharziasis, is brought on by blood flukes of the species Schistosoma. *Schistosoma haematobium, S. mansoni, and S. japonicum* are the three primary species that cause schistosomiasis in humans. These three species are further divided by their clinical manifestations into urinary and intestinal schistosomiasis, respectively [1,2]. Similar to other two *Schistosoma species, S. intercalatum* and *S. mekongi,* which have a restricted geographic distribution, also cause intestinal schistosomiasis [1]. According to McManus and Loukas and Verbrugge et al., several schistosome parasites that normally infect animals may also occasionally infect people and cause cercarial dermatitis, popularly known as swimmer's itch [3,4].

From human parasitic infections, schistosomiasis is the second parasitic disease by affecting large number of people in the world. According to a meta-analysis study by Steinmann et al, it is estimated that 779 million people are at risk of schistosomiasis and 207 million people harbor the parasite [5]. Among these estimates, 97% of the infections and 85% of the total population at risk are found in Africa. In addition, it is estimated that more than 280,000 deaths are caused annually in relation to schistosomiasis in Sub Sahara Africa. Similarly, the disease is believed to causes an estimate of 0.5% to 0.6% disability weights and a total of 4.5 million disability adjusted life years (DALYs) [6]. But according to King et al., the disability weights associated with the disease is higher reaching up to 2 -15% and similarly the DALYs are also several folds higher.

Even if the transmission of schistosomiasis has been eliminated or significantly reduced in some countries, the disease is currently increasing associated with water resource developments in other areas [5,7]. In many countries, such as Burkina Faso, Cameroon, Sene gal, Zambia, Nigeria, Kenya, Cote d'Ivoire, Ethiopia and Puerto Rico, schistosomiasis has been introduced to previously non-endemic areas following water resource developments [5,8]. In addition, from the total 779 million peoples at risk of schistosomiasis infection, 13.6% (106 million) live in close proximity to irrigation scheme and large dam reservoirs [5].

1.2 Statement of the Problem

The research proposal were conducted to analyses the prevalence of schistomiasis disease in past five years in Benishangul Gumuz Region, Agalometi woreda is located west of Benishangul gumuz region, the communities were depended up on stream, river water for washing, swimming, fishing and irrigation

since there were no enough clean water for the communities. In the study area, the communities were defected their faces in environment. The communities were depended up on streams and rivers for washing and swimming. These water bodies are contaminated by human faces and contain the snail which is used as intermediate host. The communities which lives near to stream and river while the stream and river water were affected by the snail which is the intermediate host of the schistosomiasis. These water bodies are caused of susceptibility of the bilharzias disease in the area.

1.3 Objectives of the Study

1.3.1 General Objective

The general objectives of this study were to assess the prevalence of schistosomiasis /bilharzias/ disease in Agalometi woreda in the past five years (2015-2019).

1.3.2 Specific Objectives

- To determine the overall prevalence of schistosomiasis in Agalometi woreda health center.
- To assess the distribution of schistosomiasis in each consecutive year Agalometi woreda health center.
- To determine the disease among different sex and age groups in the study area

1.4 Significances of the Study

The study results in better information about the prevalence of schistosomiasis in Agalometi woreda based on the listed objectives. And it is very essential for preventing and controlling the distribution of schistosomiasis in the study area. Hence, this study will assist health officials in designing best policy regarding the controlling and preventing methods of schistosomiasis. Furthermore this study have significant role in providing or giving a base line data direction for other researchers who want to undertake detailed study on the near future.

2. Martials and Methods

2.1 Description of the Study Area

Agalo meti woreda which is one of the 20 woredas in Benishangul gumuz region is located 547 kms away from Addis Ababa, 283 kms from Assosa towon, the capital city of Benishangul Gumuz region. The study area is located 25 kms from Kamash zone towns. The woreda is mainly bounded (bordered) by kamash woreda in the south east, Oromia region in the south west, sedal woreda in the North West and Abay River in the north.

2.2. Study Population

Patients older than four years who had visited the Agalometi woreda health center between 2015 and 2019 G.C. made up the study's population. Schistosomiasis-treated individuals from this group made up the sample for the study conducted from 2015 to 2019 G.C. Agalometi woreda health center documents and reports were used to gather secondary data.

2.3 Source of Data

The source of data was the annual report, document and the health center case record book.

2.4 Data Collection Method

Using a data recording sheet, secondary data were directly obtained from the health center's published schistosomiasis disease document of individuals under the age of five. At each stage of data collection, the data were examined for consistency, accuracy, and completeness.

2.5. Data analysis

The data will be collected from clinical records of our patients from year 2015-2019 G.C. The organized on the bases of age and sex then it would express by using table and graph that show the prevalence of schistomiasis disease.

3. Results and Discussion

3.1 The Overall Prevalence of Schistosomiasis

Schistosomiasis is one of the most prevalent parasitic infections and an important public health problem in many developing countries. The overall prevalence of *S. mansoni* infection was 11.27% (321 out of 2849) (Table1). Previously there was no evidence in the study area whether increasing or decreasing for the prevalence of *S. mansoni* infection. This investigation was compared with the prevalence of this parasite reported in Bahir Dar Town, in residents of Kebeles 8, 9 and 10 was 12%, 10.8% in recently constructed irrigation schemes in Tigray region, 19.4% in Chilga district, 5.95% different water source users in Tigray region and 16.4% in south Gondar Zone [9-12]. Therefore, in this study, the high prevalence of *S. mansoni* could be due to the low-level sanitation, open filed defecation and low socio-economic status appear to favor transmission of infection.

The prevalence of schistosomiasis in 2015 was 7.56% (34 out of 450), in 2016 was 14.80% (79 out of 534), in 2017 was 14.08% (89 out of 632), in 2018 was 12.26% (78 out of 636), and in 2019 was 6.87% (41 out of 597). The peak prevalence was recorded in in 2016 and 2017. This is due to in this year the prevalence indicates the people is highly frequently exposure to water bodies.

Schistosomia parasites	2015 G .C n = 450	2016 G.C n = 534	2017 G.C n =632	2018 G.C n = 636	2019 G.C n = 597	2015-2019 G.C n = 2849
S. mansoni	34(7.56%)	79(14.80%)	89 (14.08%)	78(12.26%)	41(6.87%)	321(11.27%)

Table 1: The prevalence of Schistosomiasis Disease from 2015-2019 G.C in Agalometi Woreda Health Center

3.2. Prevalence of *Schistosomiasis* Infection among Sexes

Among the males (1338) and females (1511), the prevalence of *S. mansoni* was 11.81% and 10.79%, respectively (Table 2).This may be denoting a similar exposure risk to infection by these parasite. Factors like environmental sanitation, water supply, socio-economic status of the households, immunity and similarities in exposure to infection probably play important roles in affecting intensity of infection and distribution of schistosomiasis, and the reason may be both sexes were equally infected [13].

Schistosomia Parasite	Male n = 1338	Female n = 1511
Schistosomia mansoni	158(11.81%)	163(10.79%)

Table 2: Prevalence of *Schistosomia Mansoni* Infection among Sexes in from 2015-2019 G.C in Agalometi Woreda Health Center

3.3. Prevalence of Schistosomiasis among Age Group

In this study, the age groups were classified into 5-9, 10-14, 15-19, 20-29 and ≥ 30 years [14]. As indicated in Table 3, among the 20 individuals aged 5 to 9 years, 0% were positive for *S. mansoni.* Among the 160 individuals in the 10 to 14 years age category, 81.25% were found positive for *S. mansoni*. Among the 220 individuals of age between 15 to 19 years, 49.55% were found positive for *S. mansoni*. Among the 195 individuals of age between 20-29 years, 7.3% were found positive for *S. mansoni*. Within 2154 individuals of age ≥ 30 years, 0.09% was found positive for S. mansoni.

In this investigation, the peak prevalence registered for *S. mansoni* infection in the age group 10-14 years, and followed by the age group and 15-19 years, and the lowest in the age group 5-9, 20-29 and ≥ 30 years. In this age group related study as the age increase the prevalence of *S. mansoni* was increase 5 to 14 years and thereafter decreased. The high prevalence in the age group 10-14 and followed by 15-19 years could be due to which have the responsibility to look after cattle which gives ample time for water contact, increasing the likelihood of infection. Due to the high susceptibility and high contact during swimming with infected water. The low infection rate in the age group 5-9 years might be attributed to the low water contact behavior of individuals of this age [10]. The low infection rate in the age group 20-29 and ≥ 30 years could be possibly owing to partial immunity and decreased exposure to infected water [14].

There are different investigations, which were done in different areas that support this study. The peak prevalence registered for *S. mansoni* infection in the age group 10-14 (15%) followed by the age group 15-19 (11%) years and, the lowest in the age group 5-9 (8.4%), was investigated in Tigray Region [10]. Similar proportion of the age dependent prevalence of *S. mansoni* infection was demonstrated in both before and after infection schoolchildren in Tumuga and Waja [12]. The highly affected age groups were 10-14 and 15-19 years old and the least affected age groups were 5-9 and 20-24. Other study also demonstrated in Ravena (Sabara, State of Minas Gerais, Brazil), 2.2% for age 5-9, 32.5% for age 10-14 years, 13.5% for 15-19, 17.1% for 20-29 and 7.5% for age ≥ 30 years old [14]. Marcia et al., who reported, in rural areas of Brazil the peak prevalence was in 10 to 14 years old [15]. This corresponds to the age group, which most uses water for playing, swimming and fishing. According to Birhanu et al., the study conducted a period of one year in the town of Bahir Dar, the peck prevalence in school population and non-school population occurred in the group 10-14 years; and in Tigray Region, age specific prevalence of *S. mansoni* infection; the highest being the age group 10-14 years [9,12]. The present study also in contrary to one study conducted in Babile town, the rate of *S. mansoni* infection increased linearly with age from 1.8% for age 5 to 9 years, 4.3% for age 10 to 14 years, and 11.6% for age 15 to19 years old [16].

Parasite species	Age group (in years)	% (No. positive/No. examined)		
		Male	Female	Total
S. mansoni	5-9	0 (0/10)	0 (0/10)	0 (0/20)
	10-14	81.25 (65/80)	81.25(65/80)	81.25 (130/160)
	15-19	46.36(51/110)	5.27(58/110)	49.55 (109/220)
	20-29	22.22 (40/80)	34.78 (40/115)	7.3 (80/195)
	≥30	0.21 (2/958)	0 (0/1196)	0.09(2/2154)
Total		**11.81(158/1338)**	**10.79 (163/1511)**	**11.27(321/2849)**

Table 3: Prevalence of *Schistosomia mansoni* Infection with age Group 2015-2019 G.C in Agalometi Woreda Health Center

4. Conclusion and Recommendation

4.1 Conclusion

This study indicates that schistosomiasis is still a major health problem in the Agalomete woreda with high prevalence. It signifies the fact that the age groups 10-14 and 15-19 years are the highest risk groups serve as sources of infection and transmission. These parasites are well known to be associated with lowered work capacity and productivity both in children and adults and increased susceptibility to other infections.

It can be concluded also that, the prevalence rate of *S. mansoni* infection increased with the utilization of irrigation schemes, freely swimming, washing clothes and bodies from unprotected water, fishing, walking bare foot in rivers, streams, stagnant

water, and irrigation areas will be of great public health concern unless appropriate control measures are designed.

4.2 Recommendation

- To reduce the schistosomiasis infections, proper management of the water and the canal system is recommended.
- There is a need for community mobilization towards provision of safe and adequate water supply, latrine construction to reduce open field defecation and health education aimed at bringing behavioral change in the communities, and any control attempts towards schistosomiasis in the areas should target at the youngest segment of the population (school-aged children).
- It can be recommended also that, combined efforts from the community, education, and health sectors are urgently needed to identify the factors, which led to the apparent failure, and to come up with participatory approaches, which will involve all stakeholders.
- Although health education by itself cannot guarantee the control of schistosomiasis, it is a fundamental starting point around which other measures can be built to create a favorable environment for the promotion of higher levels of health consciousness and more critical thinking towards improving the quality of life of peoples.

Declarations

Ethics Approval and Consent to participate'

Not applicable.

Consent to publish

Not applicable.

Availability of Data and Material (ADM)

Data supporting the findings of this study are available within the article and its Supplementary Information Files, from the corresponding author upon reasonable request and from the organization.

Competing Interests

The author declares that they have no competing interests.

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This work was done by self.

Authors' Contributions

A. A. developed the research topic idea, collected the data, wrote and editor of the paper, and wrote the manuscript.

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