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Infection with Schistosoma haematobium among Children and Urination Pattern inAlshajarah District, Khartoum, Sudan

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Abstract: *A community-based study was carried out in Alshajarah District, in the capital of Sudan to measure the prevalence of urinary schistosomiasis in children. A framework of children population was listed, and 240 children were selected using systemic random sampling technique. The relevant data were collected using questionnaire and microscopic examination. The prevalence urinary schistosomiasis was 13.8%. About 75.8% of infected children were males and more than a half (51.5%) of them were in age group 5-10 years old. Most of infected children (90.9%) urinated in water so many times. The study concluded that urinary schistosomiasis infection was a public health problem among children at Alshajarah, the district where located near the White Nile central of the capital Khartoum.*

Key words: *prevalence, Schistosoma, haematobium, schistosomiasis, Sudan*

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I. Introduction

Schistosomiases are acute and chronic communicable diseases as the Schistosomes live from 3 to 10 years, sometimes up to 40 years, in their human hosts [1].

The diseasespread mainly in the sub-tropical and tropical countries where there is a problem access to safe water and proper sanitation[2]. The causative agent of schistosomiasis (bilharziasis) is a trematode worm of the genus Schistosoma and the intermediate host is aquatic snail[3].Globally, more than 230 million people in tropical and subtropical arears are infected, and over 500 million other people at risk of schistosomiasis, in addition to that, World Health Organization estimated 4.5 million disability-adjusted life years annually[4].The annual deaths due to schistosomiasis aremore than 200,000 deaths worldwide[5, 2, 6].

In Sudan several studies such as the nationwide survey for the Sudan-Korea schistosomiasis and soil-transmitted helminthiasis (STH) elimination project (SUKO Project) provide a considerable important information about schistosomiasis situation a long with therapeutic services to patients and people at risk in endemic areas.

II. Materials and Methods

The study design was a community-based descriptive study under the supervision of department of Epidemiology, Faculty of Public and Environmental Health, University of Khartoum. Children up to 16 years old were the study population. A framework of children in Alshajarah district (600 children) was listed, and total of 240 of them were selected by random sampling technique using random figure table. The required data were collected by questionnaire. Urine samples (at least 10 ml urine fromevery participated child), were collected from all members of study group to be examined under microscope using the filtration methodfor presence of S.haematobium eggs. The examination is donein parasitology laboratory of faculty of public health, university of Khartoum after obtaining an informal consent of children families.

III. Results

In table one, the prevalence of urinary schistosomiasis was 13.8%. The percentage of infection among male children was 75.8% and females 24.2% as shown in table two. Table three illustrated the infection in different age groups namely > 5 years old (18.2%), 5 – 10 years old (51.5%), and 11 – 16 years old (30.3%). Most of infected children (90.9%) urinated in water so many times, as displayed in table 4.

Table 1: The prevalence of urinary schistosomiasis in children at Alshajarah district, Sudan

Urine examination	No **(**%)
Positive	33 (13.8%)
Negative	207 (86.3%)
Total	240 (100%)

Table 2: Gender distribution of children infected with urinary schistosomiasis at Alshajarah district, Sudan.

Gender	No(%)
Males	25 (75.8%)
Females	8 (24.2%)
Total	33 (100%)

Table 3: Age distribution of children infected with urinary schistosomiasis at Alshajarah district, Sudan.

Age (years)	No (%)
< 5	6 (18.2%)
5 - 10	17 (51.5%)
11 - 16	10 (30.3%)
Total	33 (100%)

Table 4: Urination in water as a behavior of children at Alshajarah district, Sudan

Urination in water	No (%)
Yes	30 (90.9%)
No	3 (9.1%)
Total	33 (100)

IV. Discussion

Schistosomiasis is transmitted by snails living in fresh water such as lakes, rivers, streams and ponds, such environment is present in Sudan, which lead to the potential hazard of the disease occurrence however a national control program is currently working and supported by different international agencies and foreign donors e.g. Korea. World Health Organization (WHO) mentioned that Schistosomiasis is widely distributed in in Sudan with more than 5 million people, mostly children, requiring treatment. The disease is not only in rural areas but also is frequent in most areas throughout Sudan even in Khartoum, the capital of the republic. The present study was conducted in Khartoum in Alshajara region, where is located at the bank of White Nile where a lot of stagnant water dispersed. The study is carried out on urinary schistosomiasis.

According to results, there was a high prevalence of such type of schistosomiasis, it was about 13.8%. such prevalence in children, who are most vulnerable of schistosomiasis due to their swimming behavior in stagnant water which probably containing cercariae, the infective stage of the disease.This prevalence is like what obtained by Khalid et al (2018)[7] in Um-Asher (Al Kalakla) area which is nearest to our study area. They found that the overall prevalence of Schistosoma haematobium (the causative agent of urinary schistosomiasis) was 12.9%, among school children. In addition to that they also found that both genders were equally infected with S. haematobium (50%). However, Seungman et al (2017)[8] reported that women and childrenare an especially vulnerable group due to their frequentcontact with contaminated water[8]. Nevertheless, in our present study, males were more affected (75.8%), this almost due to their freedom to go any where at any time without restrictions from their families compared to females. Also, Kebede et al (2011)[9] found the disease was more frequent in males (61.7%) than females in South Darfur, Sudan.

In a study carried out in Kaedi town, southern Mauritania on prevalence and seasonal transmission ofSchistosoma haematobium infection amongschool-aged children being male, at primary school, and dry season weresignificantly associated with S. haematobium[10]. Age group from 5 to 16 years were more exposed. School-age children usually tend to swim in water containing infectious cercariae. Schistosoma haematobium infection was observed to be prevalent among children from 12 to 14 years [11]. By reviewing several studies that conducted in different countries in Africa, we found similar results. Swimming and urination in water are usual behaviors of most of studied children, which is a risk factors of Schistosoma haematobium.

V. Conclusion

The study concluded that urinary schistosomiasis infection was a public health problem among children at Alshajarah, the district where located near the White Nile central of the capital Khartoum. Males and age group from 11 to 16 years were more affected by urinary schistosomiasis, this may due to their outside activities such as swimming urinating in stagnant water.

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