

Health knowledge and hygiene behaviours among schoolchildren in relation to Ascariasis in Ogun State, Nigeria.

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Abstract: A study was carried out on the hygiene practices and behaviours among school children aged 5 – 17 years in Ogun State, Nigeria. Two thousand six hundred and ninety-three randomly selected primary school pupils from 20 schools in five Local Government Areas were utilised for the study. Structured questionnaires, focus group discussions, and direct observations were used to obtain information on the health knowledge, and hygiene behaviours of the pupils. The pupils examined had different parental background, namely farmers (37.8%), artisans (20.1%), drivers (16.7%), traders (10.6%) and civil servants (8.8%). Most (94.6%) of the pupils lived in crowded accommodation. The majority of the pupils (72.5%) had access to latrine while those practising direct defecation in bushes were 27.5%. Pupils' responses revealed that 29.1% of them pick food from the ground. Also, 86.8% put on footwear to school, as against 13.2% who do not put on footwear. Seventy-one percent of pupils dispose off waste generated at homes at the refuse sites, while 22.8% dispose them within their compounds, when compared with 6.2% that disposed off wastewater carelessly within the school compound. Pupils with history of worm infection were 81.4%. Interestingly, 70.9% claimed ignorance on information about worm infection, and its causes. Some 46.7% attributed worm infection to eating sugary foods, while 16.5% linked it to dirty environment, as against 19.5% who admitted no knowledge of its cause. On re-infection after treatment, 57.8% claimed being re-infected, while 50.1% did not know how the infection could be prevented.

Keywords: Worm infection, health knowledge, hygiene behaviour, Nigeria.

Introduction

Health education and sanitation, two important components of primary health care system has been recognised as the basis for the prevention and control of communicable diseases (Asaolu & Ofoezie, 2003). UNICEF (2002) observed that sanitation, in particular safe excreta disposal had the lowest priority in the water and environmental sanitation design in Nigeria.

Intestinal parasites have continued to prevail because of low level of living standards, poor environmental sanitation and ignorance of simple health promoting factors. Although the prevalence rates of individual parasites vary considerably in different parts of Nigeria, several studies show that *Ascaris lumbricoides* is the most prevalent intestinal parasite, followed by hookworms, *Trichuris trichiura* and *Strongyloides stercoralis* (Asaolu *et al.*, 1992; Mafiana, 1995; Mafiana *et al.*, 1998, 2000; Sam-Wobo, 1999; Ogbé *et al.*, 2002).

In their studies on the effect of water supply in schools, Asaolu *et al.* (2002) and Olayiwole *et al.* (2003) noted that where water was scarce and the environmental sanitation poor, the level of hygiene was generally poor among pre-school children and pupils in both the primary and secondary schools. Such observations call for great concern to avoid epidemics. Understanding the factors associated with this hygiene

concern can improve our knowledge of epidemiology and in turn be a valuable aid in national control strategies. The aim of this study therefore was to examine the relationship between health knowledge and hygiene behaviours among school pupils in view of prevalence of intestinal worms in Ogun State, Nigeria.

Materials and Methods

Study area

Ogun State lies approximately between longitude 2°30' and 4°30'E and between latitudes 6°30' and 8°N. It is predominantly populated by the Yoruba speaking tribes of Nigeria whose traditional occupations are agriculture and commerce. Four primary schools were selected from each of the five Local Government Areas (LGA). In Ado-Odo / Otta LGA schools selected included: St. Michael's Primary School, Otta; St. James Primary School, Otta; A.U.D. Primary School, Ado-Odo; and All Saints Anglican Primary School, Ado-Odo. In Ewekoro LGA the schools were Baptist Day Primary School, Ewekoro; All Saints Primary School, Itori; St. Michael's Primary School, Wasimi; and Baptist Central Primary School, Wasimi. In Odeda LGA: O.L.G Primary School, Itesi –Ajegunle; Methodist Primary School, Odeda; African Church Primary School, Rogun Rogun; and O.L.G. Primary

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School, Obantoko. In Obafemi / Owode LGA: Anglican Primary School, Obafemi; All Saints Primary School I, Owode; All Saints Primary School II, Owode; and N.U.D. Primary School, Owode. In Ogun Waterside LGA: St. Thomas Anglican Primary School, Abigi; Moslem Primary School, Abigi; St. Michael's Anglican Primary School, Ibiade; and L.G. Primary School, Makun-omi.

Data collection

All participants were encouraged to express their feelings, ideas, perceptions and opinions freely. Information required from respondents (which was interpreted in the local language) included name, age, sex, occupation of parent, type of dwelling place, type and usage of excreta facility at home and school. Also information was obtained on the need for a toilet system, in addition to simple hygiene practices such as cleaning of toilet facility, washing of hands after defecation, wearing of footwear to schools and picking of food from the ground. Other sundry information requested were causes of worm infection in addition to treatment methods. Personal observations on the

Results

A total of 2693 primary school pupils were randomly selected pupils from 20 schools in the five Local Government Areas. Male pupils were 50.2%, while female pupils were 49.8% of the study population. Majority of the pupils were within the ages of 6 to 10 years. The parents of most of the respondents were farmers, followed by artisans, drivers, traders, civil servants and soldiers (Table 1). Majority of the pupils (94.6%) lived in a room and parlour type of accommodation when compared with 5.4% that lived in flat system of accommodation.

On the availability of toilet facilities at home and in the schools by the pupils, 72.5% and 72.9% of the pupils used the pit latrine system at home and school, while 17.7% and 19.5% claimed that they did not have toilet facilities and so they defecated in open field or bush, respectively. Eighty-nine percent of the pupils expressed their need for a toilet system, out of which 84.6% wanted it for health reasons, when compared with 12.7% who preferred it for privacy.

Table 1: Demographic information about the respondents

Variable		%
Sex	Male	50.2
	Female	49.8
Age group (years)	6-10	65.3
	11-15	34.8
Occupation	Farmers	37.8
	Artisans	20.1
	Drivers	16.7
	Traders	10.6
	Civil servants	8.8
	Military servicemen	6.0

availability of toilet facilities and the level of sanitation and sanitation related practices were noted in all the schools visited.

Data analysis

EPI Info version 2000 and SPSS version 10 software employing simple percentiles were used in data analysis.

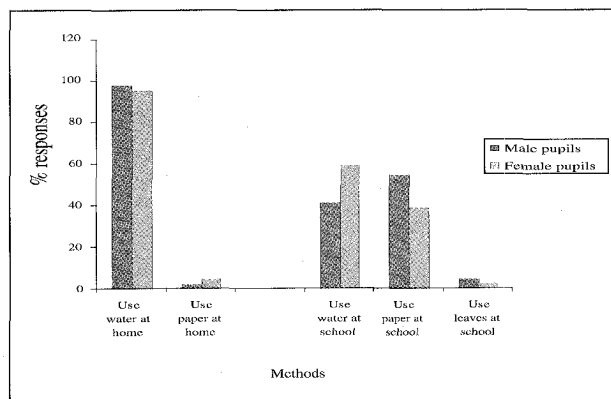


Figure 1: Methods of anal cleaning at home and in school

It is interesting to note that even when most pupils have access to toilet facilities at school, respondents interviewed claimed that they preferred to defecate in bushes. Reasons adduced for their actions were: the toilet in school were small, and it was difficult to use dirty latrines; many pupils used the toilet at the same time; the female pupils were feeling shy in sharing toilet with many users, and the heat from the pit latrine was unhygienic for female pupils. Concerning toilet facility usage, 13.6% (female) and 4.5% (male) pupils preferred defecating inside the potty first, before transferring the contents into the toilet. However, 95.5% male and 86.4% female respondents either squat over the pit latrine or seat on the water closet system when defecating.

Assessment of the pupils' behaviour on anal cleaning methods after defecation revealed that 98% (males) and 95.5% (females) admitted using water for anal cleaning at home, in contrast to 41% (males) and 59.1% (females) who had access to water for this same purpose at school. Also 54.5% (males) and 29.5% (females) used papers, as opposed to 4.5% (males) and 2.3% (females) who used leaves for anal cleaning at school (Figure 1). Some pupils admitted that difficulty in having access to water at school usually resulted in their use of papers. It was observed that 4.5% of the respondents objected seriously to the use of paper for anal cleaning, believing that it would cut into their anus.

Among the participants, 61.4% (males) and 72.7% (females) admitted washing their hands with soap and water after defecation at home (Figure 2). This was in sharp contrast to those who admitted not using soap and water to wash hands after defecation at school. Also, 70.5% (males) and 68.2% (females) used water only at school while 18.2% (males) and 9.1% (female) did not wash their hands at all after defecation. In schools without water supply, 6.8% claimed to have used water from the grass and leaves, 27.2% pupils bought water and 41.3% got water from their class teachers.

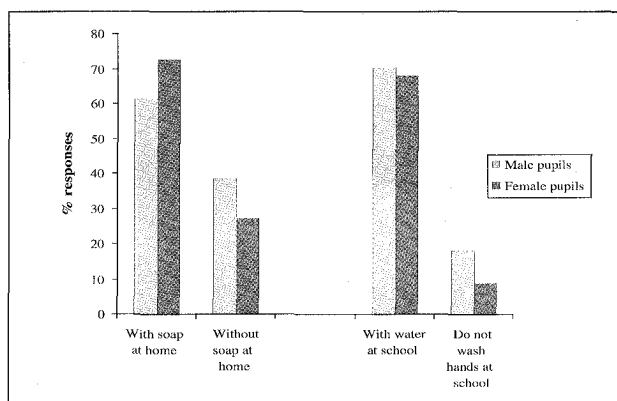


Figure 2: Responses on the hand washing methods

Of the pupils who had toilet facilities at home, 83.1% claimed to clean the facility daily, 14.2% cleaned the facility weekly and only 2.6% respondents cleaned their toilets on a monthly basis. On behavioural responses, 29.1% of the pupils picked any food item from the ground as against 70.9% who would not pick any food. Moreover, 86.8% of the pupils claimed to put on footwear when going to school, compared with 13.2% who did not. On waste management, 71.2% of the pupils claimed to dispose off solid waste (refuse) generated at homes at the refuse sites, 22.8% disposed them within their compounds, and 6% of the pupils disposed them in gutters. Interestingly, 61% of the pupils claimed to dispose wastewater generated at homes into the gutters, while only 27.3% did the same at schools. Much of the wastewater generated at schools (66.2%) was disposed off carelessly within the school compound.

With regard to the treatment procedures for worm infections, 70.5% (males) and 52.3% (females) agreed to have been treated. Some 61.3% and 82.6% male and female pupils were treated by their mothers as against 38.7% male and 17.4% female pupils who were treated by their fathers (Figure 3). On the place of purchase of the drugs, 81.4% of pupils admitted their parents bought them from patent medicine dealers, and 5% of pupils admitted that their parents got the drugs from hospitals. Majority (77.8%) of pupils were able to describe the drugs taken as 'Red tablets' (Levamisole).

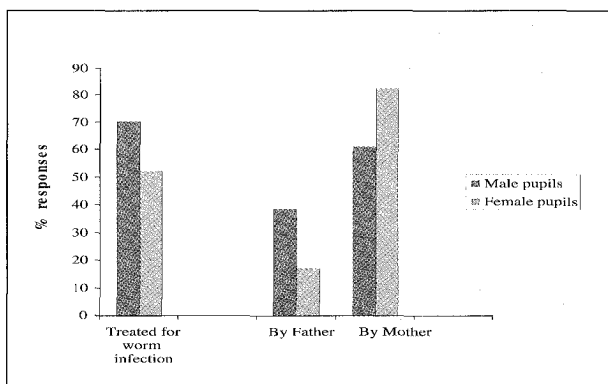


Figure 3: Health management procedure when infected

Information on the possible causes of worm infections revealed that 36.4% of respondents attributed it to the eating of mango fruits, eating sugary things (36.4%), not covering food (22.7%), playing on the sand (22.7%), not eating on time (2.3%) and eating *jollof* rice (2.3%) (Table 2). Also 95.5% of respondents were

of the opinion that helminth worm cannot be eradicated, since man was born with it, and 4.5% of the pupils claimed that no body could keep to all the rules of hygiene. On the effects of helminth infections to the body, 90.9% agreed that it leads to death through destruction of the body system, causing sickness, vomiting and loss of blood. However 36.4% believed that taking anthelmintic drugs could help in preventing infection, which was in contrast to 63.6% of pupils that claimed that individuals should avoid taking sugary things and mango fruits to stay out of worm infections. On the usage of footwear, 84.1% were of the opinion that it helped in preventing pupils from stepping on nails and broken bottles; while 11.4% claimed it was for prevention of germs, and 4.5% had no idea about why pupils wear shoes.

sweet things (75%), meat (44%), while 26% of teachers did not know the exact cause. In addition, 92% of the respondents were of the opinion that worms cannot be eradicated from one's life, even if individuals are regularly dewormed.

Discussion

Poverty and low socio-economic status had been incriminated as among main factors in the continuous prevalence of helminth diseases (Nwosu, 1981). The type of occupation and earning power of parents are considerable factors in epidemiological control. Result from this study showed that the majority (94.6%) of the population lived in compact and densely populated single rooms that are grossly lacking basic sanitary facilities. Also access to toilet facilities at schools of

Table 2: Respondents knowledge on causes of worm infection and prevention

Respondents	Cause of worm infection	% of respondents
Pupils	Eating mango fruits	36.4
	Eating sugary foods	36.4
	Not covering food	22.7
	Playing in the sand	22.7
	Not eating on time	2.3
	Eating <i>Jollof</i> rice	2.3
Teachers	Worms are natural to body	82
	Eating mango fruits	78
	Eating sweet foods	75
	Eating meat	44
	Do not know	26

Most male (93.2%) and female (75%) pupils remembered vividly being taught lessons on health and hygiene, with 80% of the school pupils admitting been taught at early classes of Primary 1 and 2. All schools studied had first aid box services for emergency treatment. Sixty percent of the first aid boxes were provided with drugs and necessary first aid treatment materials and equipment. In a particular school, teachers complained of the lack of financial support from the community/Government towards health matters. On the possible access to secondary health facilities in treating serious health problems affecting school pupils, all the teachers confirmed that in such cases, they quickly inform the parents/guardians of the pupils concerned to take up such responsibilities after the initial first aid treatment. It was observed among the schools, that the longest access distance to a primary health care facility was 13km from the school.

On the knowledge of the possible causes of worm infections, 82% of teachers alluded to the fact that worm is natural and everybody has worms. Seventy-eight percent attributed it to the eating of mango fruits,

the semi-urban and rural communities studied are usually at low levels. In schools where latrines were observed, the number was too few compared with the school population and in some cases, the latrines were restricted to staff use only. It has been recommended that one pit latrine is to be used by about 150 pupils (Fellows & Onibokun, 2003), however the ratio observed in 90% of the schools in Ogun State ranged from 1:400 to 1:1750 (data not shown).

The existing toilet facilities in most schools (88%) in Ogun State were poorly kept and some pit latrines had broken down resulting into pupils' indiscriminate defecation in bushes. This is in conformity with Rottler & Ince (2003) who identified open defecation, improper washing of hands after defecation and poor maintenance of sanitary structures as major risk-factors relating to the continued transmission and prevalence of helminth infections. Waste are disposed off indiscriminately as observed from the study where 66.2% of the wastewater generated at schools are disposed off carelessly within the school compound, when compared with the claim of 71.2% that dispose

off waste generated at homes at refuse sites and in gutters.

Although the majority of the study population admitted to having expelled *Ascaris* worm, most of them were ignorant of the source of helminths. About half of them attributed it to eating sugary food, and only a few claimed that it is caused as a result of dirty or bad environment. This confirms field reports where ignorance had been considered as a major bane in the continued epidemiology of communicable helminth diseases in Nigeria and third-world countries (Ogbe *et al.*, 2002; Olayiwole *et al.*, 2003).

Self or private medication caused mainly by poor economic status of families coupled with a far distance to access medical facilities by the rural and semi-urban communities was observed in this study. In Ogun State, over 67% of the pupils receive medication from their parents at home.

Contrary to the feeling of the people of Ogun that deworming is not effective, it has been observed that deworming alongside iron supplements in children improves physical growth and iron storage, and in pregnant women, it reduces the prevalence of iron-deficiency anaemia (De Silva, 2003).

In conclusion, this study has revealed that basic knowledge by staff and pupils on the mode of transmission and prevention of worm infection is low, and in some cases misleading whereby some staff even attributed acquiring worm infection through eating sugary foods. In most schools, basic sanitary/toilet facilities were found lacking, and where they existed they were grossly inadequate or the access to its use being restricted.

Despite the fact that chemotherapy has been and will remain the best option for morbidity control, sanitation has an important role to play not only to sustain the benefits of chemotherapy but also to protect the uninfected. Health education that is effective, simple and low-cost remains the only tool for creating the enabling environment for both chemotherapy and sanitation to thrive.

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