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STUDIES ON THE PREVALENCE OF HOOKWORM INFECTION AMONGST RURAL FARMERS IN EMOHUA L.G.A, RIVERS STATE

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Abstract

The prevalence of hookworm infection amongst rural farmers in Emohua local government Area, Rivers state was carried out. A total of 200 stool samples were randomly collected from farmers and gardeners aged 15-70 years in ten (10) communities. The ova of hookworm was sought in each sample using direct smear andformol-ether concentration techniques. The overall prevalence rate was 50(25%) with the highest rate recorded in Mgbogizu8(4%), followed by Omuoda6(3%),Omuobizuand Omuagalarecording 5(2.5%) while the communities that recorded the least rate of 4(2%) were Omuikea, Omueze, Omuefe, Mgbereand Omuchiolu. The males recorded a prevalence rate of 7.5% and female 17.5%. Statistically there was significant rate of infection between the males and females ($p<0.05$). Similarly the age bracket of 21-30 years recorded the highest rate of 18(9%) followed by 31-40 years 11(5.5%), 15-20 years 9(4.5) while the age bracket of 61-70 years recorded the least rate of 2(1%). The rate of infection based on toilet facilities used showed those that go to toilet in the bush with infection rate of 27(13.5%) which is highest. The farmers that never used booths or wear sandals also had a high rate of 26(13%). It can be seen that socio-economic status of the farmers in this area, coupled with poor environmental sanitation, behavioral pattern and lack of proper sanitary habits contribute to the distribution of the parasite

Keyword:Parasite, Hookworm, Communities, Environmental, Sanitation.

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Introduction

Hookworm infection (Ancylostomiasis) is a disease of the intestine caused by one of the most destructive helminthes. Hookworm is a nematode that lives in the small intestine of man or its host. The larva stage is mainly infective to man. Hookworm is estimated to infect over 800 million people around the world. The infection is common in warm moist places where sanitations is poor, standard of living too is poor and fecal matters come in contact with soil, drinking water and food (Obiajuruand Ogbulie, 2003). Two species of hookworm commonly infect humans namely *Ancylostomaduodenale* and *Necatoramericanus*. *Necatoramericanus* predominates in the Americas, Sub-saharan African, Southeast Asia, China and Indonesia while *Ancylostomaduodenale* predominates Middle-East, North Africa,India (WHO,1987).

The most common route of getting infected by hookworm is by walking barefooted on soil contaminated with faeces. Water can also be a mechanism of exposure, if contaminated.

The most significant risk of hookworm infection is anaemia (iron deficiency) because they attach themselves to the capillaries, leave one site and attach themselves to another site leaving behind more bleeding lesions. As the secretion of the worm contains anticoagulant activity, the bleeding from these site may continue for some time. This then causes damage to the intestinal mucosa and loss of blood resulting to iron deficiencyanaemia. (Brooker*et al.,* 1999).

World health organization (WHO) estimates that about one quarter of the world's population has hookworm infection, which is one of the commonest of the soil-transmitted helminthiasis (WHO 1999). Odelowo (1990) observed that the age more commonly heavily infected by hookworm are children. Numerous surveys have shown that in Nigeria, the rural communities are usually endemic more than the urban communities for those intestinal parasite (Udonsi*et al.,*1992). People living in homes without latrines have a higher prevalence of hookworm infection than those living in homes with latrines and the introduction of pit latrines can help lower the prevalence of diarrhea disease (Cromptom, 1994). Other studies also indicate that lack of education, lack of latrines and occurrence of diarrhea lower socio-economic status inadequate disposal of human excretaand the level of sanitation in households are related to parasitosis (Muniz, 2008). These factors in combination with conducive hot wet and humid climate condition with low level of environmental awareness produces serious effect, on the epidemiology of human parasitic infections (Albanico, 1999). The symptoms of hookworm infections are abdominal pain, intermittent diarrhea, nausea, progressive anaemia,coldness of skin, weakness, shortness of breath,dysentery,hemorrhages and edema.

The aim of this study is to ascertain whether the infection is occupational such that plantation workers and other farmers in the rural communities are at risk of infection of hookworm. (Green wood, 1997)

Materials and methods

Study Area

The study was carried out in Emohualocal government area of Rivers state where the villagers are predominantly farmers

Collection of samples

About 200 samples of stool were collected randomly from farmers aged 15-70 years. In a clean dry leak poor, wide mouthed and screw capped bottles free from traces of disinfectant.

Samples Analysis

The samples were analyzed in the laboratory by macroscopic examination for colour, presence of blood, mucus and presence of adult worm.

Microscopic examination

Direct smear in saline and iodine

A little quality of stool was emulsified in a drop of normal saline and iodine on a slide using applicators stick. A cover ship was applied and examined with x10 and x40 objective.

Formol-ether concentration technique(Cheesbrough,1987)

About 1gram of faeces was emulsified in 10ml of 10% formal saline in a test tube, the emulsified faeces was sieved into a beaker using guaze.

About 7ml of the sieved suspension was transferred into a centrifuge tube and 3ml of diethyl ether added. The tube was thoroughly mixed and centrifuged at 3000 revolution per minutes for 2 minutes,an applicatorsstick was used to loosen the faeces from the sides of the tube and the supernatant decanted. The depositwas tapped and re-suspended and a drop placed on a slide and covered with coverslip. This was examined using x10 and x40 objective (Cheesbrough,2005).

Result

The study was carried out in 10 communities in Emohua local government area of Rivers state. The result indicates that the overall prevalence of infection in the study was 50 (25%) with Mgbogizu recording the highest rate of 8(4%), followed by Omuadieand Omuadaat 6(3%), then Omuagalaand Omuobizuhaving 5(2.5%) while Omukea,

Omeze, Omuefe, Mgbereand Omuchioluall had a rate of 4(%).Similarly more females 35(17.5) were infected than males 15(7.5%). Statistically there was a significant difference between male and female. All these are as shown in table1.

Table 1: Sex related prevalence and community distribution of Hookworm infection.

Communities	Total examined	Males infected (%)	Females infected (%)	Total infection (%)
Omuagala	20	2(1)	3(1.5)	5(2.5)
Omuikea	20	1(0.5)	3(1.5)	4(2)
Omuadie	20	2(1)	4(2)	6(3)
Omueze	20	1(0.5)	3(1.5)	4(2)
Omuoda	20	1(0.5)	5(2.5)	6(3)
Omuefe	20	1(0.5)	3(1.5)	4(2)
Mgbere	20	1(0.5)	3(1.5)	4(2)
Omuobizu	20	2(1)	3(1.5)	5(2.5)
Mgbogizu	20	3(1.5)	5(2.5)	8(4)
Omuchiolu	20	1(0.5)	3(1.5)	4(2)
Total	200	15(7.5)	35(17.5)	50(2.5)

($P<0.05$)

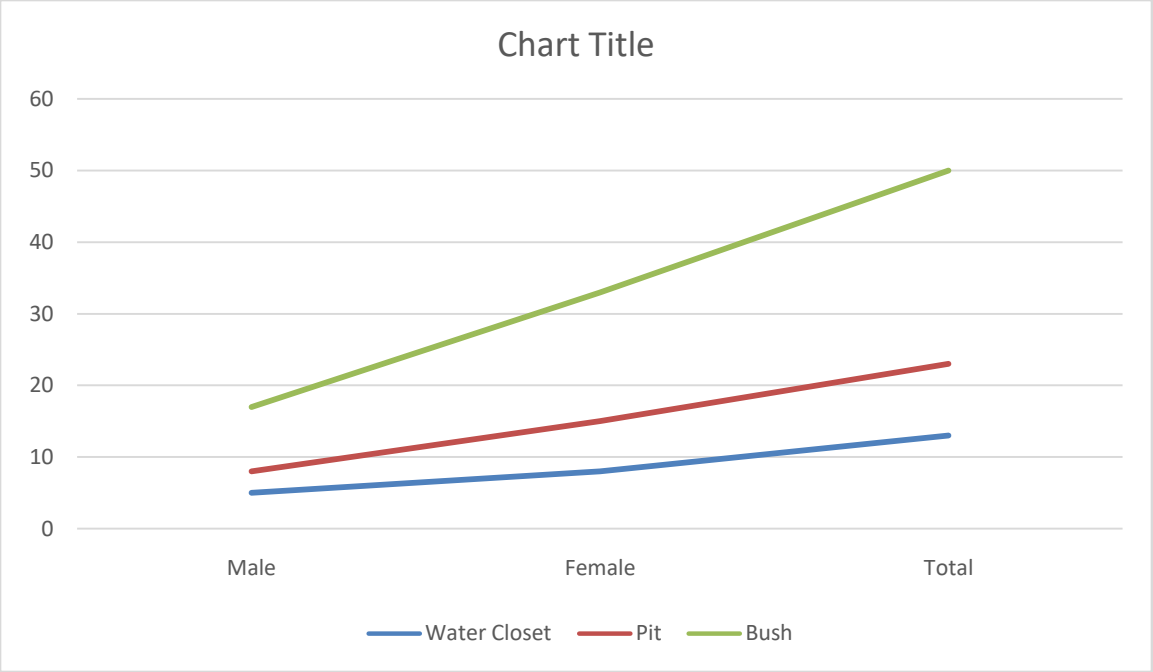
Table 2 shows the age bracket and sex distribution of Hookworm infection. The age bracket of 21-30 years showed the highest prevalence rate of 18(9%) followed by age bracket of 31-40 at 11(5.5%) while 15-20 years showed 9(4.5%). The bracket of 61-70 years showed a rate of 2(1%).

Table 2:Age bracket and sex distribution of infection of hookworm in Emohua L.G.A.

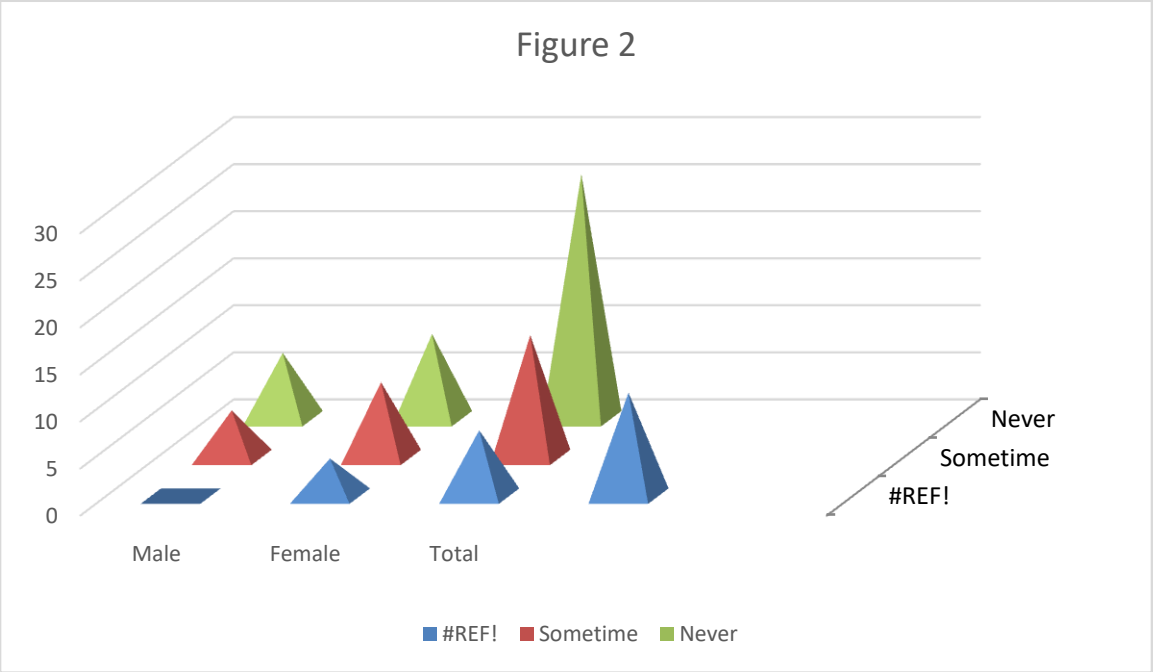
Age	Males Infected (%)	Females Infected (%)	Total Infection (%)
15-21	3(1.5)	6(3)	9(4.5)
21-30	5(2.5)	13(6.5)	18(9)
31-40	3(1.5)	8(4)	11(5.5)
41-50	2(1)	4(2)	6(3)
51-60	1(0.5)	3(1.5)	4(2)
61-70	1(0.5)	1(0.5)	2(1)
Total	15(7.5)	35(17.5)	50(25)

($P<0.05$)

Table 1 shows the distribution according to toilet facilities used. The farmers that use bush as defecation point were more infected 27(13.5%). compared to those that use water closet are pit latrine and female were more infected than males.



The distribution of hookworm infection based on farmers that wear booths and sandals showed that those that never wore any shoes (barefooted) had the highest rate of 26(13%) as compared to those that wear always or sometimes as shown in figure 2



Discussion

This study has revealed an overall hookworm infection rate of 25%. From this survey also the females were more infected than males because they are the ones who do the weeding of the farm and walk barefooted without latrine especially between June-August when the soil is highly humid and might contain the filariform larva since majority of them defecate in the bush, thereby promoting easy transmission. Hookworm infection is occupational, so that plantation workers, groundnut farmers, cocoyam farmers and other groups maintain a high prevalence rate of infection among themselves by contaminating their work environment. In most endemic areas, adult women are most severely affected by anaemia caused by hookworm infection because they have much higher physiological needs for iron especially during menstruation. Hookworm in this study is higher between the ages of 15-40. This is because they fall within the active ages of life who are meaningfully engaged in farm work. Hookworm infection and its resulting anemia could be controlled through health education, effective sanitation and treatment with anti-helminthics and of course iron replacement.

Conclusion

From the finding of this survey it could be seen that Emohualocal government area does not have high prevalence rate of hookworm infection compared to other areas but more efforts and machinery should be put in place to further reduce the trend. This could be achieved by public health awareness to farmers as a way of advising them to wear shoes, use of latrines, good hygienic practices and of course involvement in deworming exercises.

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