Impact of socio-demographic and economic factors on the prevalence of intestinal parasites among the female gender in Makurdi, Benue State-Nigeria

E Amuta, R Houmsou, S Mker

Citation

E Amuta, R Houmsou, S Mker. *Impact of socio-demographic and economic factors on the prevalence of intestinal parasites among the female gender in Makurdi, Benue State-Nigeria*. The Internet Journal of Third World Medicine. 2008 Volume 8 Number 2.

Abstract

Intestinal parasites are regarded as important public health problems in tropical Africa and cause malnutrition, diarrhea and anaemia in humans. A study and was undertaken to determine the impact of socio-demographic and economic factors on the prevalence of intestinal parasites among women in Makurdi, Benue State-Nigeria. Using formol ether concentration technique to process the faeces, an infection rate of 426 (56.80%) was recorded out of the 750 women examined. Five parasite species were found: Entamoeba coli 28.48%, Entamoeba histolytica 22.00% and Ascaris lumbricoides 17.20%. The peak prevalence of 75.00% was observed among women with no level of education, those that had primary and secondary level of education recorded 73.13% and 66.66% respectively, no significant difference was observed between infection rate and level of education($X^2 = 85.93$, $P > 0.05$). An infection rate of 68.60% was observed among female students. Traders, housewives and farmers recorded 65.50%, 64.50% and 60.00% respectively, there was no significant difference between the occupation of the women and prevalence of infection ($X^2 = 32.30$, $P > 0.05$). It is recommended that government should enforce many of the docile environmental laws in order to make people live in healthy environments and observe hygiene rules which are necessary for good health and longevity.

INTRODUCTION

Intestinal parasites are regarded as important public health problems in tropical Africa and cause malnutrition, diarrhea and anaemia in humans. They are among the most prevalent human infections affecting approximately one fourth of the world's population1. In the developing world, young women, pregnant women, their infants and children frequently experience a cycle where repeated infection lead to adverse consequences that can continue from one generation to next2. However, the role of women in any society can not be overemphasized.

In Nigeria, women make up more than one third of the work force, comprising 70% of agricultural workers, 80% of food producers, 95% of those who process basic food stuff and 60-90% of those marketing3. It is in the course of performing these duties, including domestic house obligations that contact with infective stages of most parasites occur. Early reporting of infections is also hampered by illiteracy, ignorance, weak economic power and poor health facilities4. Thus, this study centers on intestinal parasitic infections and their effects on the fe¬male gender. The main objective was to determine the prevalence of intestinal parasites among women at different reproductive stages and the impact of related factors such as socio-demographic and economic factors that can influence the prevalence of these parasites.

MATERIALS AND METHODS

STUDY AREA

The study was carried out in Makurdi, capital of Benue State-Nigeria. Makurdi is located at the North Eastern part of Benue State and lies on latitude 7º30'N and longitude 8º35'E. It shares boundaries with Gwer West and Guma Local Government Areas including Nassarawa State.

The town is divided by the River Benue into the North and South banks, which are connected by two bridges: the railway bridge and the dual carriage bridge. The southern part of the town is made up of several wards including Central Ward, Old GRA, Ankpa Ward, Wadata Ward, High Level, Wurukum and new GRA.

Makurdi lies in the tropical guinea savanna zone of Central Nigeria, experiences a typical climate with two distinct seasons. The dry season lasts from late October to March and the rainy season which begins in April to October is the period of intensive agricultural activities by the inhabitants mostly Tivs, Idomas, Jukuns and Igedes. The area has an annual rainfall of 1000 mm and temperature fluctuates between a minimum of 27º,38 C to 28º,00 C and a maximum of 30º,10 C to 34º,09 C (Meteolorgical Department,Nigerian Airforce Base Makurdi, Unpub. Data).

STUDY POPULATION AND PARASITOLOGICAL EXAMINATIONS

This study focused on women at different reproductive stages (pre-menstruals, menstrual and post-menstruals). A total of 750 females aged 5-70 years were randomly selected, individual consent of each adult woman that participated in the study was sought. For school children permission was obtained from the school authorities and parents of the respective students were dully informed on the significance of the study before the start of the research. Each participant was given a sterile and labeled bottle for stool collection and questionnaires were also administered to obtain information on socio-demographic and socio-economic data.

Stool specimens were examined for parasites eggs, cysts and larvae using formol ether concentration technique as described5.

STATISTICAL ANALYSIS

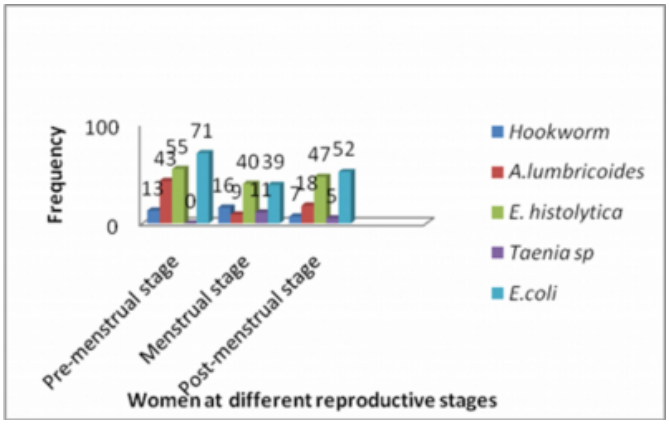
Data were analyzed by SPSS for Windows 15.0 version. Chi-squared test was performed to assess the significant association between the prevalence of intestinal parasites and socio-demographic and socio-economic factors.

RESULT

Five parasites species were found among women in the study area, Figure 1 illustrates the prevalence of individual parasites among women groups. The pre-menstrual group recorded the highest infection rate with Entamoeba coli 71 (28.4%), Entamoeba histolytica 55(22.0%), Ascaris lumbricoides 43 (17.2%), Taenia sp was not found but recorded a prevalence of 11 (3.7%) among the menstrual group. There were no significant differences in the prevalence of intestinal parasites among women at different reproductive stages (X2 = 23.1, P > 0.05).

Figure 1

Figure 1: Prevalence of intestinal parasites among women at different reproductive stage



The prevalence of intestinal parasites in relation to educational status is given in Table 1. Women with no level of education recorded the peak of infection with 75%, followed by those that have primary and secondary level of education recording prevalence rates of 73.13% and 66.66% respectively. The least infection of 23.91% was found among those that attended a tertiary institution. Women at post-menstrual and pre-menstrual stages recorded the highest infection rate with 63.86% and 72.80%) respectively. No significant difference was observed between the prevalence rate and the educational status of women (X2 = 85.93, P > 0.05).

Keys: Exam = Number examined, Inf = Number infected

Figure 2

Table 1: Prevalence of intestinal parasites in women in relation to educational status

Educational	Pre-menstrual		Menstrual		Post-menstrual		Total	
status	Exam	Inf(%)	Exam	Inf(%)	Exam	Inf(%)	Exam	Inf(%)
Nil	0	0(0.00)	0	0(0.00)	12	9(75.00)	12	9(75.00)
Primary	250	182 (72.80)	24	19(79.16)	87	63(72.41)	361	264(73.13)
Secondary	0	0(0.00)	108	67(62.03)	39	31(79.48)	147	98(66.66)
Tertiary	0	0(0.00)	166	29(17.46)	64	26(40.62)	230	55(23.91)
Total	250	182(72.80)	298	115(38.59)	202	129(63.86)	750	426(56.80)

(X^2 = 85.93, P > 0.05)

Table 2 illustrates the prevalence of intestinal parasites in relation to occupation of women. Students recorded a higher rate of infection with 68.60%) followed by trader 65.50%, housewives 64.50%, farmers 60.00%. The least infection

rate was found among civil servants 20.50%. There was not significant difference in the prevalence of infection and occupation of women (X2 = 130.63, P > 0.05).

Figure 3

Table 2: Prevalence of intestinal parasites in women in relation to occupation

	Pre-menstrual		Menstrual		Post-menstrual		Total	
Occupation	Exam	Inf(%)	Exam	Inf(%)	Exam	Inf(%)	Exam	Inf(%)
Student	250	182(72.80)	62	32(51.60)	0	0(0.00)	312	214(68.60)
Civil servant	0	0(0.00)	34	8(23.50)	5	0(0.00)	39	8(20.50)
Teacher	0	0(0.000	57	6(10.50)	47	18(38.30)	104	24(23.10)
Trader	0	0(0.00)	51	27(52.90)	68	51(75.00)	119	78(65.50)
Tailor	0	0(0.00)	29	11(37.90)	6	3(50.00)	35	14(40.00)
Farmer	0	0(0.00)	42	19(45.20)	23	20(87.00)	65	39(60.00)
House wife	0	0(0.00)	23	12(52.20)	53	37(69.80)	76	49(64.50)
Total	250	182(72.80)	298	115(38.60)	202	129(63.90)	750	426(56.80)

(X^2 = 32.30, P > 0.05)

The prevalence of intestinal parasites among women in relation to location is shown in Table 3. Girls and women who reside at North-Bank had the highest infection rate with 69.50%, followed by women residing at Wadata 57.60%) and Modern Market 56.00%. The least infection rate was encountered among women residing at Wurukum 52.70%. No significant difference was observed in the prevalence of intestinal parasites in women in relation to location (X2 = 32.3, P > 0.05).

Figure 4

Table 3: Prevalence of intestinal parasites in women in relation to location

	Pre-menstrual		Menstrual		Post-menstrual		Total	
Location	Exam	Inf(%)	Exam	Inf(%)	Exam	Inf(%)	Exam	Inf(%)
North Bank	22	16(72.70)	38	27(71.10)	35	23(65.70)	95	66(69.50)
Wurukum	32	24(75.00)	54	21(38.90)	26	14(53.80)	112	59(52.70)
High Level	93	68(73.10)	103	34(33.00)	65	38(58.50)	261	140(53.60)
Wadata	69	46(66.70)	82	25(30.50)	47	43(91.50)	198	114(57.60)
Modern Market	34	28(82.40)	21	8(38.10)	29	11(37.90)	84	47(56.00)
Total	250	182(72.80)	298	115(38.60)	202	129(63.90)	750	426(56.80)

(X^2= 32.30, P > 0.05)

DISCUSSION

The present study reveals a relatively high infection rate of intestinal parasitosis among women in Makurdi, Benue State-Nigeria. However, these findings are closely related to 51.60 %, 52.62% and 57.70% of urban areas found in Benin Republic, Senegal and Chad respectively 6, 7, 8 The protozoans Entamoeba histolytica and Entamoeba coli were observed having high rates of infection among pre-menstruals and post-menstruals with 18.90% and 21.60% respectively. These parasites are often associated with waterborne transmission; the very deplorable state of potable drinking water in the town should be to a great extent responsible to the highest number of infection encountered. While engaged in domestic chores, these women are more predisposed to contaminated water bought from water vendors who sometimes fetch water from broken pipes, running surface or directly from the River Benue. Infection could also come from contaminated well water in the household on which most of the families depend. The consumption of unwashed fruits or contact with vegetables in the market could also lead to infection. Sometimes these fruits are brought from remotest areas of the state where hygienic precautions are not taken during the plucking, packaging and transportation of the fruits. However, vegetables consumed are mostly farmed along the river banks during the dry season and are directly watered from the river without any form of water treatment thus could definitely lead to the contamination of the crops by these parasites. This study is similar to the infection rate of Entamoeba histolytica (29.47%) observed in N'Djamena

capital of Chad Republic among the female gender 9.

With regards to the level of education, the post-menstrual women with no level of education (Nil) had the highest number of infection (75%). This could be due the low level of hygiene consciousness due to illiteracy. The low rate of infection observed among women that have attended a tertiary institution might be due to the fact they are more often enlightened and economically stable.

The relationship between occupation and prevalence of infection showed that students were more infected. This high rate of infection in this category might be attributable to the constant contact of these students with contaminated soil, water or food. However, this study corroborates the affirmation that school children are found to be spending more of their leisure time out doors, playing or foraging in garbage dumps and eating discarded foods remains on the street, and are more often in contact with soil and eat indiscriminately with unwashed hands10.

In relation to location, females living at North-Bank and Wadata are more infected. These are high densities areas populated by mainly fishermen, farmers, traders, crafty men and women who live with unsanitary conditions such as lack of sanitation facilities especially latrines and lack of potable drinking water; the presence of stagnant water in gutters and dump hills that are common sights could be the sources of contamination in these areas. This, however, agrees with a study carried in Makurdi 11.

CONCLUSION AND RECOMMENDATIONS

Considering this devastating effects of these parasites on humans, it is stated that transmission of these parasites are facilitated by eating raw or undercooked food, unwashed fruits or vegetables12. The situation is made worst by the increasing world population and the environmental pollution, the inability to keep pace with provision of adequate drinking water and sanitation of the immediate environment. In order to find a way out of this public health nuisance, there is a need to educate the general populace on the urgency to stop these unhealthy behaviours. The government needs to enforce many of the docile environmental laws in order to make people live in healthy environments and observe hygiene rules which are necessary for good health and longevity.

ACKNOWLEDGEMENTS

The authors sincerely acknowledge all women that participated in this study. Thanks are also due to the heads, teachers and children of the female gender in the respective schools where samplings were undertaken.

References

1. WHO. Disease trends, 2002. Available from: www.who.int/ctd/intpara/disease.php
2. Steketee RW. Pregnancy, nutrition and parasitic diseases. American Society for Nutrition Sciences, 2003: 1661-1667.
3. Halland A. Removing barriers to women's health in TDR News. Reports UNDP/World Bank/WHO/TDR, 1994. Geneva.
4. Effiom OE, Enyi-Idoh KH, Akpan PA, Abeshi S . Parasitic helminthes infection in ante-natal women at UCTH, Calabar. Conference paper presented at the 24th annual conference of the Nigerian Society of Parasitology, 2000. 27th-30th September, Calabar, Cross River State - Nigeria.
5. Cheesbrough M . Medical Laboratory Manual for Countries Part 2, 2nd edition, University Press Cambridge. 2000. 454pp.
6. Alonzo E, Alonzo V, Forrino D, Ioli A . Recherche parasitologique conduite entre 1982 et 1991 chez un echantillon de sujets residant à Zinvie (Bénin). Médecine Tropicale, 1993. 53(3): 331-336.
7. N'Dir I, Gaye A, Sy M, Gaye O, N'Dir O. Prévalences des parasitoses intestinales au Centre Roi Baudouin de Guediawaye (Sénégal). Revue en Sciences de l' Environment, 2002. 15(1):4-6.
8. Koistoingue B, Tidjani MT, Francine M, Alio HM . Prévalences des parasitoses intestinales chez les enfants de 0-5 ans dans la ville de N'Djamena (Tchad). La Révue en Sciences de l' Environment, 2002. 1:10-13.
9. Hamit MA, Tidjani MT, Bilong Bilong CF 2008. Recent data on the prevalence of intestinal parasites in N'Djamena, Chad Republic. African Journal of Environmental Science and Technology, 2(12): 407-411.
10. Houmsou RS . Relationship of socio-economic factors and prevalence of intestinal parasites among school children in Makurdi Metropolis, Benue State-Nigeria. M.Sc Thesis, Federal University of Agriculture Makurdi, Benue State-Nigeria, 2006. 112pp.
11. Houmsou RS, Amuta EU . Effects of environmental and socio-economic factors on the prevalence of intestinal parasites in school children in Makurdi, Benue State-Nigeria. African Journal of Environmental Pollution and Health, 2009b. 7(1): 19-23.
12. Amuta EU, Houmsou RS. Human behaviour and the epidemiology of parasitic infections. African Journal of Environmental Pollution and Health, 2009c. 7(1):31-35.

Author Information

EU Amuta, PhD
Professor, Department of Biological Sciences, University of Agriculture,Makurdi, Benue State, Nigeria.

RS Houmsou, MSc
Department of Biological Sciences, University of Mkar, Mkar. Benue State, Nigeria.

SD Mker, BSc
Department of Biological Sciences, Benue State University, Nigeria