



## POOR AFFORDABILITY OF SOCIO-ECONOMIC INDICATOR AS A MAJOR CONTRIBUTOR TO HIGH RATE OF PARASITIC INFECTION IN OKADA TOWN AND ENVIRONS

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### ABSTRACT

*The study area comprises Okada Town and its environs located in the South Western part of Edo State in Nigeria. Okada is primarily, an agricultural (with large peasant population) and commercial area (with large number of traders); with prospects of becoming a big town. At the moment, it is saddled with attendant problems of low socio-economic indicators such as: big size of household (10); low income (50 % of population); high level of poverty and low affordability for basic essential services, low access to clean water, which is accompanied by characteristic poor sanitary conditions; especially indiscriminate refuse dump; haphazard solid waste disposal, and other environmentally related problems; etc. These factors serve as a major contributor to the endemicity and high incidence of parasitic infection in Okada town and environs. The incidence rates of parasitic infections in the study areas in the years 2019 and 2020 were 45.5% and 55.5% respectively. Both protozoan and helminth infections are prevalent in the community and are sustained due to the poor socioeconomic conditions of the people. The frequency of hospital visitation occurred more in malaria cases than in helminthiasis and amoebiasis. Higher rates of occurrence of parasitic infection in Okada community and the environs by months were observed between September and October. This study gives a little insight into the socioeconomic situation of the study area and provides a basis for prompt assistance.*

**Key words:** Socio-economic indicators; Income; household; Affordability; Poor sanitation; parasitic infection; incidence, helminthiasis.

## INTRODUCTION

The primary study area, Okada town (and its environs) with a population of 35,000 in the base year (NPC, 2000). The present projected population estimate in year 2021 is put at 55,000. Okada is also the capital of Ovia North East LGA and occupies the south western part of Edo State. The project study area is located between latitudes  $4.5^{\circ}\text{N}$  and  $5^{\circ}\text{N}$ ; longitudes  $5.5^{\circ}\text{E}$  and  $6^{\circ}\text{E}$  (Mabogunje, 1980). The project area is bound in the South by Okhai and Iguobazuwa; West by Usen; North by Iguomo and East by Ofunwegbe and Ekhiadolor. It lies in the rainfall belt of Southern Nigeria – with ample annual rainfall of about 2300mm (Mabogunje, 1980) and abundant sunshine. The area has very fertile soil and is therefore primarily, an agricultural area.

Socio-economically and commercially the area is very important. Among other things, the Premier Private University, Igbinedion University is located in Okada. This has greatly boosted the status of the town which has grown from a village to a semi-urban area and with even prospects of becoming a big town (Eze et al. 2013). However, there are attendant problems of poor socio-economic indicators such as: low income; high poverty level; poor sanitary conditions; lack of affordability of drinkable water, and other associated environmentally related problems; which have contributed to incidences of parasitic infection in the project study area. Previous studies on the prevalence of parasitic infections in the area across different age categories are high, thereby depicting the high endemic level of the infection (Okafor-Elenwo *et al*, 2020; Akinbo, *et al.*, 2011).

The present study highlights the impact of socio-economic backwardness on the studied population as evidence by the level of incidence of parasitic infections in the study area and provides baseline data for prevention and control.

## MATERIALS AND METHODS

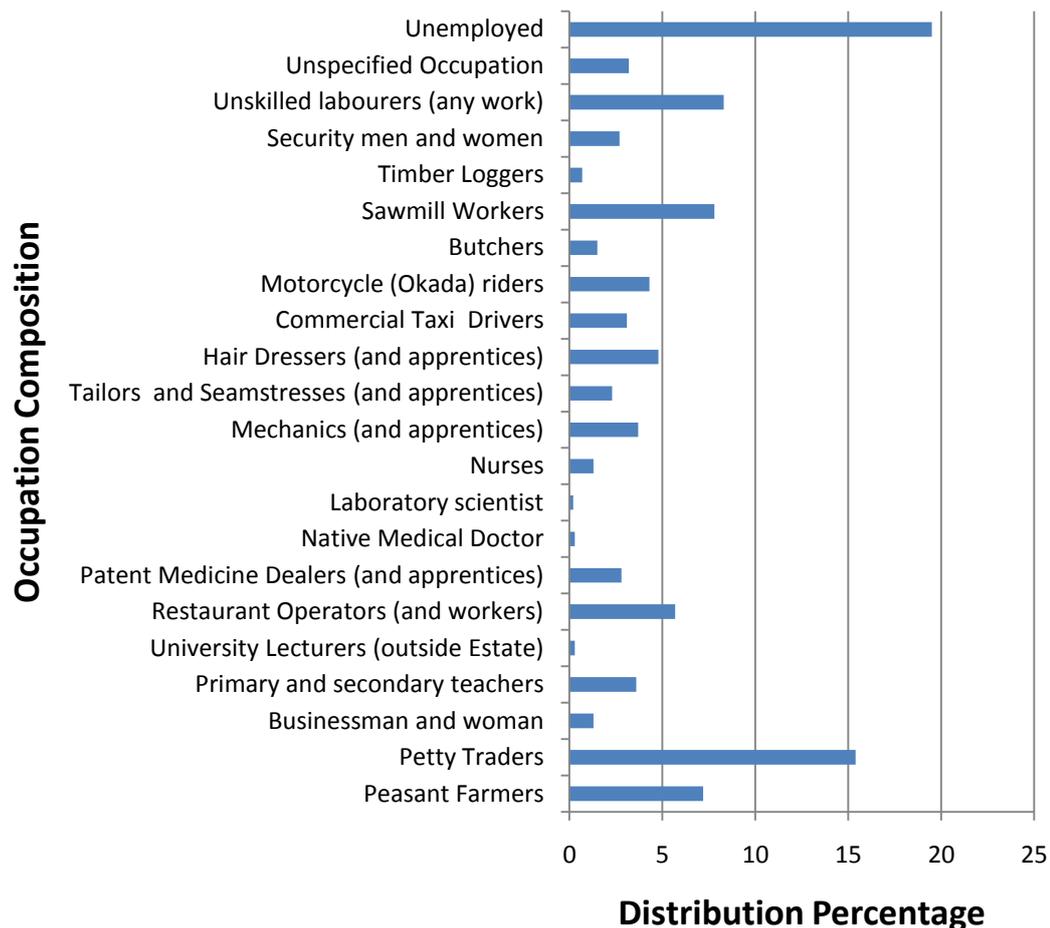
The research methods used to carry out this study includes: (a) Carrying out field survey such as measurement of distances with tape, that is location of (i) refuse dump site in proximity to residences; (ii) open pit toilet (latrine) in proximity to residences. (b) use of questionnaires for collection of primary base data from the host community respondents (c) enumeration of present population and socio-economic indicators of the host community and its composition; density and distribution patterns (d) Visits to the Health Centre twice every week for collection of data from outpatients especially, individuals resident in Okada and its environs. (e) Collation and analysis of data.

The main socio-economic indicators of host community assessed include; mean size of households; occupation distribution (mostly peasant farmers and traders); income; family expenditure (on basic needs and essential services such as: food; water tariff, school fees for children and dependents; electricity bills; housing rent; medical expenses or health care; etc.); access to potable water; sanitary status; with other associated environmentally related problems and incidences of parasitic infection.

## RESULTS

### Occupation Composition as Distributed in the Study Area

The **occupation composition** of sample population surveyed is distributed as summarized in Fig. 1 below. The surveyed sample population shows that the first four occupation groups with largest number of people are: petty traders (15.4%); unskilled labourers or *any work* (8.3%); sawmill workers (7.8%); peasant farmers (7.2%) and restaurant operators (5.7%). Although unemployment is as high as 19.5%, it should be borne in mind that majority of them are under aged dependents and very young people who are school children.



### Mean household Size

Mean household size for Okada host community and its environs is carried out by questionnaires and field sampling. And mean household size is put at 10 (which was obtained by considering a nuclear household of mean size of 6 children and 2 dependents; including greater family size and of 2).

### Mean Income of Household

Field survey studies (including use of questionnaires) were carried out for various population income ranges such as between N1000 – N5000; N5000 – N10000; etc and percentage of income groups were estimated and summarily given in Table 1 below.

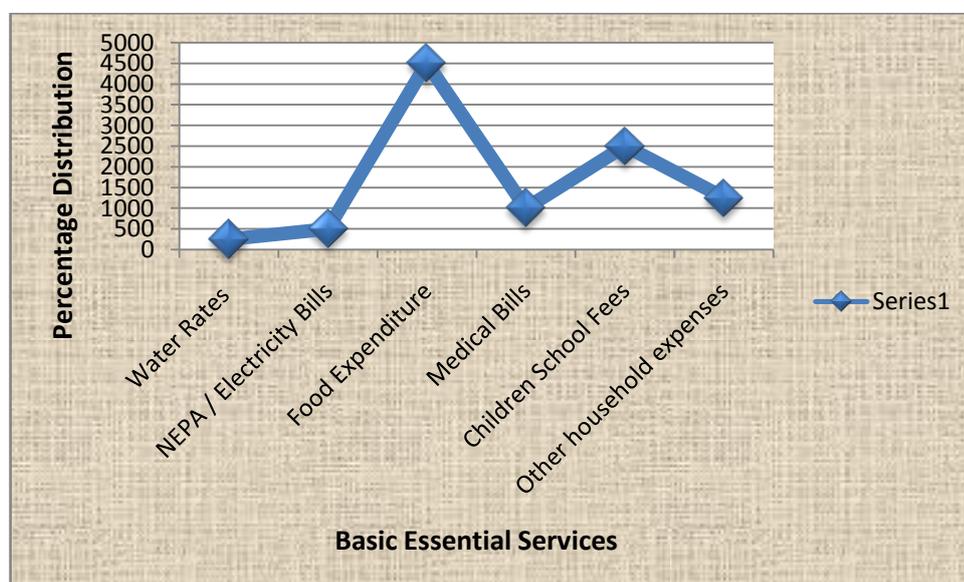
The monthly population income of individual in the category of 1000 – 5000 Naira outweighs that of the other categories. On the other hand, individuals that earn higher income in the range of N60000 to N81000 plus have the lowest percentage of 1.5 to 2.6 % (Table 1).

**Table 1: Income Category Distribution of Population**

Item No.	Monthly Income Category (Naira)	Distribution	
		Number	% Distribution
1.	1,000 – 5000	501	50.1
2.	5,100 – 10,000	300	30.0
3.	11,000 – 20,000	65	6.5
4.	21,000 – 40,000	50	5.0
5.	41,000 – 60,000	43	4.3
6.	61,000 – 80,000	26	2.6
7.	81,000 and above	15	1.5
	<b>Total</b>	<b>1,000</b>	<b>100</b>

### Major Household Basic Expenses

Survey of amount of money needed to meet typical household expenses on such basic essential services as food, water, electricity, medical bills, school fees, was carried out by field survey and questionnaires. This is summarized in Fig. 2. From the result, the estimated minimum basic expenses of household is put at N10,000.

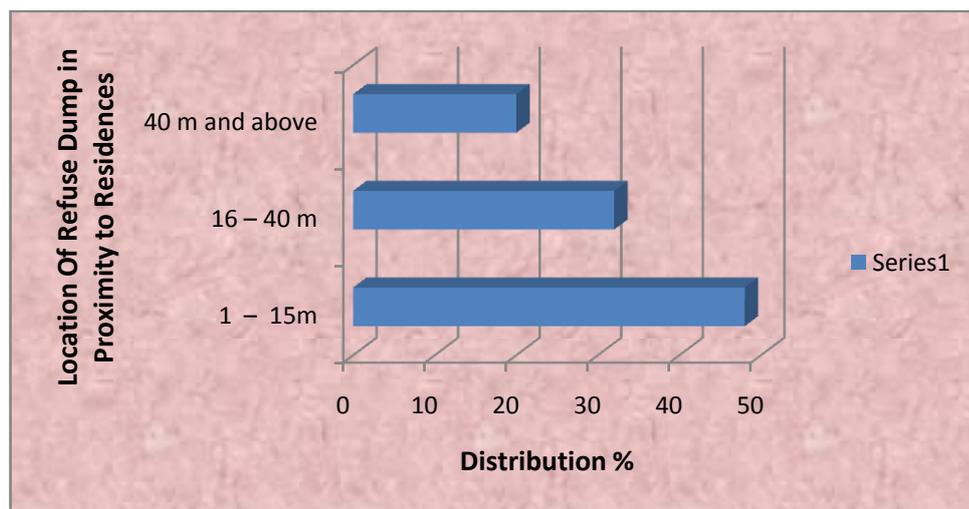


**Fig. 2: Basic Household Expenses on Essential Services**

### Location of Refuse Dump in Proximity to Residences (by Household)

Location of refuse dump in proximity to residences (by household) in the study area is measured with tapes. Also field surveys were carried out and measured at distances of: 1 - 15m; 16 – 40 m (Fig. 3).

As high as 48% of the residences of the inhabitants is located within 1 – 15m of refuse dump; 32% of the residences of the dwellers is located within 16 – 40m of refuse dump and 20% of the residences of the dwellers is located within 40 m and above of refuse dump. This implies that sanitary condition in the Okada town is very poor.



**Fig. 3: Location of Refuse Dump in Proximity to Residences (by Household)**

### Types of Toilets used by Households and Location

Types of toilet facilities used by residents (and percentage of users): such as: pit latrine; Waterless Composting Toilet (WACT); water system and pour flush and open defecation are summarized in Table 2 (a).

Out of 125 toilets located in the study area, only 32 of them (25.6 %) are better and efficient methods of disposal of generated sewage. A greater percentage (74.4 %) of the toilets are either bush surrounding the residences or open pit toilets and these are located within very close proximity to residential buildings (Table 2 (b)).

**Table 2 (a): Types of Toilets used by Households in the Study Area**

Item No.	Types of Toilets Used by Households	Distribution	
		Number	% Distribution
1.	Waterless Composting Toilet System (WACTS)	5	4.0
2.	Water System & Pour Flush System	27	21.6
3.	Pit Latrine	61	48.8
4.	Bury Faeces in the Land	22	17.6
5.	Dispose Faces in the Bush	10	8.0
	<b>Total</b>	<b>125</b>	<b>100</b>

**Table2 (b): Location of Toilets in Proximity to Residences of Water Consumers**

Item No.	Location of Toilets in Proximity to Residences	Distribution	
		Number	% Distribution
1.	1 – 20m	104	83.2
2.	21 m and above	21	16.8
	<b>Total</b>	<b>125</b>	<b>100</b>

### Occurrence of Parasitic Infection

The incidences of parasitic infection in the community of study over two years were reported below. In 2019 the occurrence rate was 45.5% compared to the figure obtained in 2020 (55.5%) (Fig. 4). Malaria, Intestinal helminthiasis and amoebiasis were prevalent in the community and occur frequently.

The monthly total percentage occurrence of malaria and the other parasitic infections in 2019 and 2020 were shown in Fig. 5 and Fig, 6, respectively. The frequency of hospital visitation for malaria and amoebiasis were more in 2019 than in 2020, while intestinal helminth infection was less in 2019 than in 2020. Overall, there were more people with malaria than with the other parasitic infections (Fig. 7).

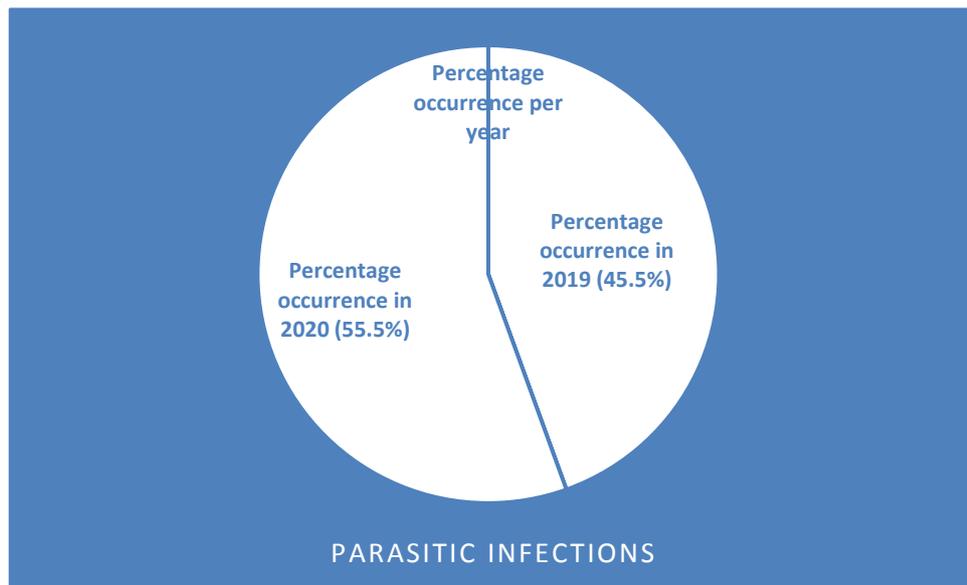


Fig. 4: Percentage occurrence of parasitic infection between 2019 and 2020.

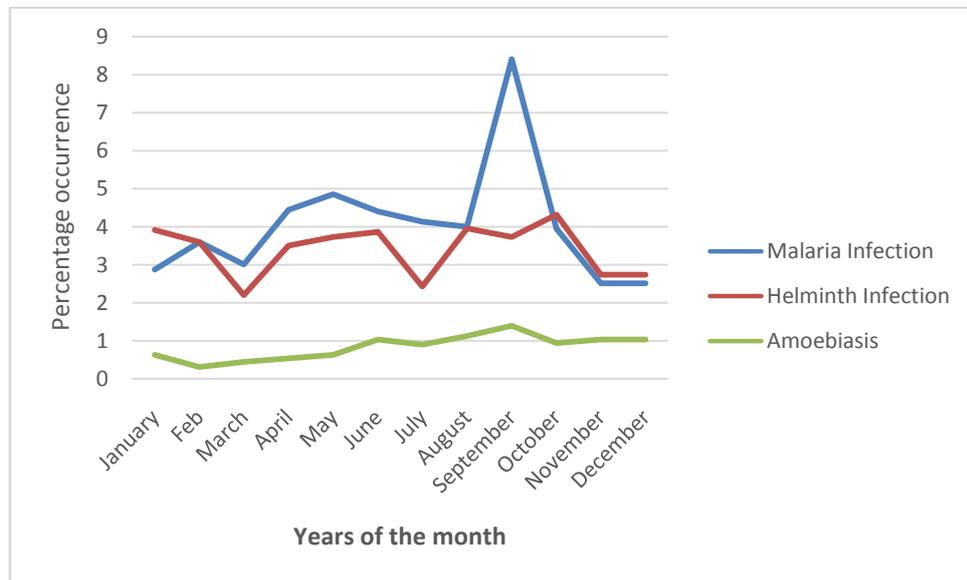


Fig. 5: Incidence of Parasitic infections compared by months in 2019

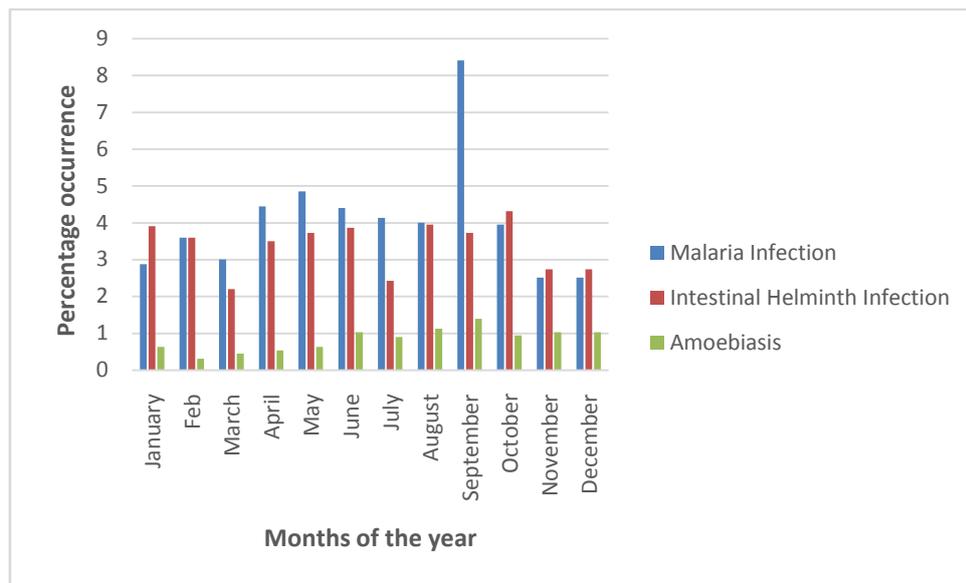


Fig. 6: Incidence of Parasitic infection compared by months in 2020.

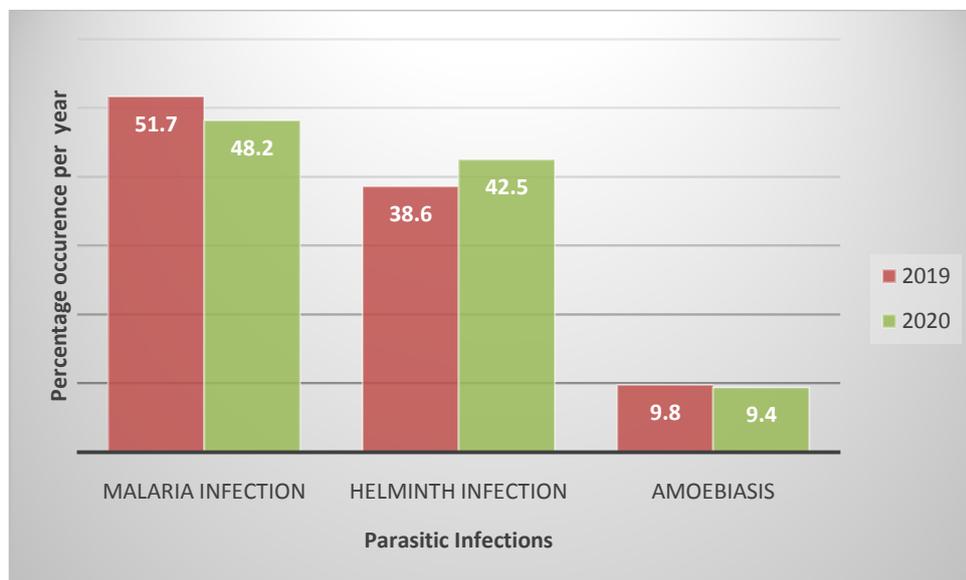


Fig. 7: Occurrence of the Parasitic infections compared.

## DISCUSSION

From the present study, it is very evident that the occupation groups (peasant farmers and petty traders) were dominated by low class groups. This is further exemplified by high rate of unemployment (19.5%) compared to the rate of other labours characterized by the majority of under-aged dependents, the elderly and school children.

The large mean size of household (10) observed in the study community is comparatively greater than the Edo State average (8) as given by the Federal Office of Statistics (2000).

This implies that the poverty level of the indigenous inhabitants will continue to be on the increase, except the population is checked.

A greater percentage of people (50 %) earn very low income, compared to their higher income earner counterpart. The low monthly income earners in the study community were observed to fall below the Edo State average income of ₦5,567.10 as reported by the Federal Office of Statistics (2000).

Owing to the standard /poverty status of the present population, it becomes difficult to afford the basic needs, since the minimum amount needed for such basic necessities per month is much more than the average income of most of the inhabitants.

The poverty level in Edo State according to Federal Office of Statistics (2000), showed that extreme poverty level is 9.1%; moderately poor is 30.3% and non-poor = 60.6% for both rural and urban areas.

### **Location of Refuse Dump in Proximity to Residences (by House hold)**

The residences of the inhabitants located within close proximity of the refuse dump site are greater in number compared to ones located far away. Only few households were located at a distance of 40 m and above from the refuse dump site, which may be considered a safer distance. Generally, a greater percentage of the inhabitants were either very close or at a fairly safe distance from the refuse dump site.

The foregoing is an indication that the sanitary condition in the study area is poor.

The poor rural situation in the study area as highlighted by the type of toilets dominant in the area calls for concern. The effect of open pit toilet and indiscriminate defecation in the surrounding bush impact negatively on the health condition of the dwellers. Studies in the various rural communities have shown high incidences, prevalence and intensities of diseases especially parasitic diseases toilet and defecation in the bush.

Much of those studies indicated that high prevalence and incidences of parasitic infections resulting mainly from poor sanitary conditions (Ostan, *et al.*, 2007; Kpurkpur, *et al* 2016; Okafor-Elenwo and Izevbuwa, 2020).

The problem of parasitic infection in the area of study has been noted in several earlier studies (Okafor-Elenwo and Izevbuwa, 2020; Okafor-Elenwo *et al*, 2020). From prevalence studies, there had been reported cases of high infection rates of parasitic infections including malaria, helminthiasis and other protozoan infections across all age groups (Okafor-Elenwo *et al*, 2021). It is however, evident that a major factor causing the continuous rise in the rates of these infections could be linked to the economic and social status of the community and its inhabitants.

The foregoing appears to be the case in many endemic areas where the inhabitants are poor and neglected (Ekpo *et al*, 2008; Kwitshana *et al* 2008; Damen *et al*, 2013; Okafor-Elenwo, and Elenwo, 2014). Similar conclusions have also been drawn and relating high prevalence of parasitic infections to poverty, poor environmental hygiene and inadequacies in medical services (Okoyay, *et al.*, 2004; Ostan, *et al.*, 2007; Akinbo, *et al.*, 2011; Nxasana *et al.*, 2013; Kpurkpur, *et al* (2016)).

## CONCLUSION

From income level analysis, more than 50% of the dwellers in the study site earn very low amount of money and could barely sustain themselves in terms of feeding and other basic needs. The problems accruing from poverty, in addition to other identified poor socio-economic indicators have negative impact on the health and welfare of the people. Dirty surroundings and bad smells attract pests and disease - causing agents. Consequently, the rate of diseases especially parasitic diseases continues to increase until proper control/ intervention strategy is embarked on.

The study area has been identified with poor socio-economic indicators such as low income; high poverty level; low affordability of basic essential services; low access to clean water; poor sanitary condition. All these socio-economic factors contributed immensely to high occurrences of parasitic infection.

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