BURDEN OF ENDEMIC DISEASE AND HEALTH SEEKING BEHAVIOUR IN EBONYI STATE, NIGERIA: SOCIO-ECONOMIC STATUS AND GEOGRAPHIC DIFFERENCES

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ABSTRACT

The aim of this study was to investigate the socio-economic status (SES) and geographic differences in occurrence and burden of tropical endemic diseases, as well as the health seeking behaviours of individuals residing in Ebonyi State, Nigeria. The study was undertaken in three communities (urban, semi-urban and rural). A pre-tested structured interview schedule was used to collect data from randomly selected households. An asset-based SES index was used to examine the occurrence of socio-economic equity in burden of disease and health seeking behaviours, whilst comparisons between the three communities were used to explore geographic equity in the burden of disease and health seeking behaviours of households.

The majority of the households reported occurrences of illness during the month preceding the survey. Malaria and diarrhoea were the most commonly reported illnesses. There were inequities in the burden of disease and treatment seeking behaviours amongst the study groups. The

poorer households and rural dwellers sought treatment more often from lower level providers than the richer urban dwellers.

Appropriate interventions are required to equitably scale-up the deployment of existing cost-effective tools for the control of tropical endemic diseases if Nigeria is to achieve its millennium development goals (MDGs).

KEYWORDS: burden of disease, equity, health seeking behaviours, millennium development goals, Nigeria, socio-economic status.

INTRODUCTION AND BACKGROUND INFORMATION

Endemic tropical diseases are the highest contributors to the burden of disease in Nigeria (FMOH, 2005). In Nigeria and in most sub-Saharan African (SSA) countries, these diseases perpetuate poverty (Onwujekwe et al., 2004). The widening socio-economic and geographic inequalities due to poverty affect the health seeking behaviours and approaches employed by different people (Filmer, 2005; Manzi et al., 2005). Endemic diseases such as malaria, tuberculosis (TB), HIV/AIDS and diarrhoea have serious direct costs in terms of treatment, treatment seeking and funeral expenses in the event of death. The prevalence of endemic tropical diseases in Nigeria contributes to infant and child mortality, decreasing the life expectancy in Nigeria (FMOH, 2005; FMOH, 2007).

Nigerians seek care from several health care providers ranging from itinerant drug hawkers to general hospitals (Uzochukwu & Onwujekwe, 2004). The proliferation of low level treatment providers such as patent medicine dealers, itinerant drug sellers and traditional medicine dealers in the private sector was occasioned by weaknesses in the public healthcare system, especially the government's inability to provide adequate and equitable essential healthcare services to the expanding population (FMOH, 2007; FMOH 2005). In Nigeria, patent medicine dealers, itinerant drug sellers and traditional medicine dealers diagnose and treat many illnesses (Uzochukwu & Onwujekwe, 2004; Okeke et al., 2006).

In Nigeria, efforts at ensuring the attainment of the health-related MDGs can be enhanced if there are improvements in the level of equity in access to and use of disease control tools (FMOH, 2007). Equity is "the absence of potentially remediable, systematic differences in one or more aspects of health across socially, economically, demographically or geographically defined population groups or sub-groups" (Macinko & Starfield, 2002).

Researchers and practitioners have been interested in what facilitates the use of health services, and what influences people to behave differently in relation to their health (Mackian et al., 2004). People in need of health care might wander between practitioners (Rahman, 2000). The reasons for preference of healthcare provider ranges from affordability, availability of drugs, nearness to homes, prompt attention and attitudes of

healthcare providers. Wealthier population groups have a higher probability of obtaining health care when they need it (Makinen et al., 2000; Gilson, 2006; Gwatkin et al., 2004; Filmer, 2005).

The objective of this study was to investigate the SES and geographic differences in occurrence and burden of tropical endemic diseases as well as in health seeking behaviours of individuals residing in urban and rural areas. Hence, the paper provides information, which might be useful in decreasing the burden of endemic tropical diseases and lead to the development and implementation of strategies for equitable deployment of interventions for reducing the incidence and prevalence of diseases targeted by the MDGs.

RESEARCH METHODS

This cross-sectional survey involved the collection of information from three different communities. The study was undertaken in Ebonyi state in south-east Nigeria. The state capital (Abakiliki), one semi-urban local government headquarters (Ezilo) and one rural community (Nkalagu) constituted the study sites. Abakiliki has about 500 000 residents; Ezilo has a population of about 40 000 people, while Nkalagu has a population of about 10 000 people.

The population comprises mainly Igbo's, the third largest ethnic group in Nigeria with a population of more than 20 million people (NPC, 2007). Christianity is the major religion in these communities. While trading and civil service work are the major sources of income in Abakiliki, subsistence farming and petty trading are the major sources of livelihood in the other two communities. There are two major seasons in the study areas: namely the rainy season from May to October, which is the period of increased mosquito and malaria incidence; and the dry season from November to April. There is a public hospital as well as a teaching hospital in Abakiliki. Ezilo has a public hospital while Nkalagu has no public hospital. There are also a number of private hospitals/clinics, patent medicine dealers and other healthcare providers (including traditional medicine practitioners) in each study community.

Data collection: household surveys in the communities

Data were collected from the primary woman household care-giver or in her absence from her spouse, using structured interviews, conducted by trained interviewers. The collection of household data lasted 1-2 months in each community.

The sample size was determined using the formula for sample size for a definite population in the Epi Info software package, considering 0.25 as the proportion of the population positive for the illnesses, power of 80%, confidence interval of 95% and 0.05 as

the absolute sampling error that can be tolerated. Hence, 300 households represented an adequate sample size per study area. However, in order to take care of potential refusals, 380 households from each urban site and 380 from each rural site were selected using simple random sampling from a list of households based on the primary health care (PHC) numbering system used for delivery of public health interventions such as immunizations.

Consent and support were obtained from community leaders at the commencement of the study. Oral informed consent was obtained from every interviewee. Written informed consent was not used because the people were averse to appending their signatures on documents.

The data collection instrument was pre-tested on 50 residents of a peri-urban community near Abakaliki and the results were used to improve the study tools and procedures. The structured interview schedule explored households' as well as respondents' socio-economic and demographic characteristics, and healthcare seeking practices using a one-month recall period. Expenditure on transportation and treatment incurred during the use of PHC services were also determined.

Data analysis

Data were entered into the computer and was processed using EPI INFO software. Data were initially analysed based on objectives and appropriate tests of significance were carried out.

The principal components analysis (PCA) in STATA software package was used to create a SES index (Filmer & Pritchett, 2001) using information of the households' assets together with their average weekly cost of food. The first principal component of the PCA was used to derive weights for the SES index (Onwujekwe et al., 2004). The assets used to construct the indices included ownership of a motorcar, motorcycle, radio, refrigerator, television set and bicycle. The decision to use some specific household assets and cost of food to determine SES was based on discussions with key informants from the communities. Kruskal-Wallis non-parametric statistics were used to compute chi-squares in order to determine whether or not the means of some disaggregated variables were significantly different across quartiles.

The measure of inequity was the ratio of the mean of the poorest SES group (1st quartile) over that of the least poor SES group (4th quartile) (top/bottom quartile ratio) and the concentration index (Onwujekwe, 2005). The top/bottom (Q1/Q4) quartile ratio shows the level of gap that has to be bridged in order to ensure equity and improve the condition of the poorest households and a score of 1 signifies perfect equity (Onwujekwe et al., 2004). However, if the ratio is more than one, the variable of interest occurs

more often amongst the most poor than among the least poor group. The concentration index varies from -1 to +1 and a negative sign shows that the variable of interest is higher among the poorest and if positive, it means that it is higher among the richest (or least poor).

RESEARCH RESULTS

Characteristics of the respondents and their households

Table 1 presents household socio-economic and demographic characteristics. The response rate for Abakaliki, Ezilo and Nkalagu were 98%, 96% and 99% as some of the respondents either refused to be interviewed or to answer specific questions. The respondents were mostly heads of households in Ezilo (93.2%; n=341) while in Abakiliki and Nkalagu, most (56.1% and 72.3% respectively) were representatives of the household heads. Most respondents (91.3%; n=334) were males in Ezilo while the converse was true in Abakaliki (56.1%; n=208) and Nkalagu (75.8%; n=285).

The respondents from the urban area (Abakaliki) were better educated than those from the rural areas of Ezilo and Nkalagu. The average weekly cost of food ranged from 1 732 Naira (US$14.4) in Abakaliki to 2 875 Naira (US$24.0) in Nkalagu. The households in the urban area had more valuable assets than their rural counterparts and were more likely to own television sets, refrigerators and cars.

Burden of various diseases

Malaria was the major health condition that households had experienced one month prior to the survey. As many as 66% of households from Abakaliki (urban area), 80% from Nkalagu (rural area) and 54.4% from Ezilo (semi urban area) respectively had suffered from malaria. Table 2 also shows that diarrhoeal diseases were the second most common ailment reported by households. Other specific health conditions included respiratory diseases, appendicitis and hypertension.

Table 1: Respondents' and households' Socio-economic and demographic characteristics

	Abakaliki (N=371)		Ezilo (N=366)		Nkalagu (N=376)	
Status of respondent in household • Household heads: n % • Representatives: n %	163 208	(43.9) (56.1)	341 25	(93.2) (6.8)	104 272	(27.7) (72.3)
No of household residents: Mean (SD)	4.8	(2.5)	6.4	(3.4)	6.8	(4.2)
Age of respondent: Mean (SD)	36.6	(11.2)	42.6	(11.7)	42.1	(13.6)
Sex of respondent • Males: n % • Female: n %	163 208	(43.9) (56.1)	334 32	(91.3) (8.7)	91 285	(24.2) (75.8)
Years of education: Mean (SD)	8.6	(4.7)	6.0	(5.1)	3.3	(5.0)
Whether married: n %	356	(96.0)	351	(95.9)	366	(97.3)
Weekly food cost: Mean (SD)	1732	(1167)	1894	(1980)	2875	(3090)
Household ownership of assets • Radio: n % • Fridge: n % • TV: n % • Bicycle: n % • Motorcycle: n % • Motorcar: n %	347 176 296 84 169 50	(93.5) (47.4) (79.8) (22.6) (45.6) (13.5)	323 26 96 206 58 5	(88.3) (7.1) (26.2) (56.3) (15.8) (1.4)	346 30 60 260 47 23	(92.0) (8.0) (16.0) (69.1) (12.5) (6.1)
SES quartiles • Q1 (most poor): n % • Q2 (very poor): n % • Q3 (poor): n % • Q4 (least poor): n %	93 94 92 92	(25.1) (25.3) (24.8) (24.8)	92 91 92 91	(25.1) (24.9) (25.1) (24.9)	94 94 94 94	(25.0) (25.0) (25.0) (25.0)

Table 2: Health conditions/illnesses encountered one month prior to interviews

	Abakaliki		Ezilo		Nkalagu	
	n	(%)	n	(%)	n	(%)
Malaria	245	(66.0)	199	(54.4)	299	(79.5)
Tuberculosis	0	(0)	3	(0.8)	7	(1.9)
Respiratory diseases	14	(3.8)	27	(7.4)	29	(7.7)
HIV/AIDS	0	(0)	3	(0.8)	0	(0)
Antenatal care	5	(1.3)	19	(5.2)	13	(3.5)
Childbirth	22	(5.9)	9	(2.5)	6	(1.6)
Diarrhoea	54	(14.6)	42	(11.5)	41	(10.9)
Others	162	(43.7)	94	(25.7)	304	(80.9)

Differences in occurrence and burden of various diseases by SES and geographic area

Table 3 shows health conditions that respondents of different SES groups had within one month preceding the survey. In Abakaliki (urban area) there was a statistically significant difference (p<0.01) in the self reported occurrence of malaria. Of the respondents in Quartile 4, 31.4% (n=77) suffered from malaria followed by Quartile 2 (26.1%; n=64). There were no significant differences (p>0.05) in the occurrence of the other diseases in Abakaliki. The concentration index shows that malaria, respiratory problems and surgery were more common among the better placed socio-economic groups at values of 0.08, 0.09 and 0.14 respectively. Diarrhoea and child birth were more common among the poor quartile at values of -0.02 and -0.04 respectively.

In Ezilo (semi-urban area), there were significantly fewer (p<0.01) reported malaria cases than in the other areas. Of the respondents, 29.1% (n=58) in Q3 suffered from malaria followed closely by Q2 (28.6%; n=57). There was also a significant difference (p<0.05) in the reported occurrence of diarrhoea and surgery in the other communities. The concentration index values of 0.03 and 0.17 respectively indicate that the poor suffered more from malaria and diarrhoea, while respiratory problems were more common among the less poor groups (0.05).

In Nkalagu (rural area), there was a statistically significant difference (p<0.01) in reported malaria cases among the quartiles: Q4 (26.4%; n=79) closely followed by Q2 (26.1%; n=78) suffering from malaria within the period under survey.

A total of 229 (61.9%), 244 (66.7%) and 333 (88.6%) out of the respondents in the urban, semi-urban and rural areas respectively had health conditions one month prior

to the survey and 95.2% (n=218), 98.0% (n=239) and 98.5% (n=328) of those sought healthcare for their conditions. The average numbers of days that illnesses lasted were 4.4 days (SD 7.9), 11.3 days (SD 52.0) and 31.1 days (SD 125.9) in the urban, semi-urban and rural areas respectively.

Table 3: SES differences in diseases/health conditions experienced one month prior to survey

	Malaria n (%)	Diarrhoea n (%)	HIV/AIDS n (%)	Respiratory problems n (%)	Ante-natal n (%)	Childbirth n (%)	Surgery n (%)
Abakiliki							
Q1: Most poor	46 (18.8)	16 (29.6)	0	2 (14.3)	0	4 (18.2)	3 (20)
Q2: Very poor	64 (26.1)	11 (20.4)	0	4 (28.6)	2 (40)	9 (40.9)	3 (20)
Q3: Poor	58 (23.7)	13 (24.1)	0	5 (35.7)	2 (40)	5 (22.7)	4 (26.7)
Q4: Least poor	77 (31.4)	14 (25.9)	0	3 (21.4)	1 (20)	4 (18.2)	5 (33.3)
Chi-square	24.7 ***	1.2	0	1.5	2.2	3.1	0.8
Q1/Q4 (Equity ratio)	0.60	1.14	-	0.7	-	1.0	0.60
Concentration index	0.08	-0.02	-	0.09	-	-0.04	0.14
Ezilo							
Q1: Most poor	47 (23.6)	3 (7.1)	1 (33.3)	7 (25.9)	3 (15.8)	1 (11.1)	0
Q2: Very poor	57 (28.6)	13 (31.0)	1 (33.3)	5 (18.5)	4 (21.1)	3 (33.3)	6 (28.6)
Q3: Poor	58 (29.1)	16 (38.1)	1 (33.3)	7 (25.9)	4 (21.1)	2 (22.2)	7 (33.3)
Q4: Least poor	37 (18.6)	10 (23.8)	0	8 (29.6)	8 (42.1)	3 (33.3)	8 (38.1)
Chi-square	12.59 ***	10.01 **	1.00	0.75	3.34	1.29	7.89 **
Q1/Q4 (Equity ratio)	1.27	0.30	-	0.88	0.38	0.33	-
Concentration index	-0.03	-0.17	-	0.05	0.21	0.07	-
Nkalagu							
Q1: Most poor	61 (20.4)	13 (13.8)	0	8 (8.5)	0	1 (1.1)	2 (2.1)
Q2: Very poor	78 (26.1)	8 (8.5)	0	8 (8.5)	3 (3.2)	1 (1.1)	1 (1.1)
Q3: Poor	81 (27.1)	14 (14.9)	0	9 (9.6)	7 (7.5)	2 (2.1)	0 (0)
Q4: Least poor	79 (26.4)	6 (6.4)	0	4 (4.3)	3 (3.2)	2 (2.1)	2 (2.1)
Chi-square	16.77 ***	4.90	0	2.21	7.89 **	0.68	2.23
Q1/Q4 (Equity ratio)	0.77	2.17	-	2.0	-	0.5	1.0
Concentration index	0.04	-0.08	-	-0.04	-	0.13	-

Note: * = p<0.10; ** = p<0.05; and ***p<0.01

Healthcare seeking practices

Table 4 shows the existence of socio-economic differences in the general actions that

people took when they were ill. All the SES groups sought health care (p>0.05) when they needed to do so. However, the concentration index analysis shows that the better placed SES groups sought health care in Ezilo and Nkalagu with values of 0.03 and 0.02 respectively while the converse happened in Abakaliki with a value of -0.24.

Table 4: SES differences in respondents' actions when ill, and outcomes

	Abakaliki n = 229		Ezilo n = 244		Nkalagu n = 333	
	f	(%)	f	(%)	f	(%)
Sought healthcare						
Q1	49	(22.5)	57	(23.8)	76	(23.2)
Q2	61	(28.0)	52	(21.8)	83	(25.3)
Q3	49	(22.5)	67	(28.0)	84	(25.6)
Q4	59	(27.0)	63	(26.4)	85	(25.9)
Chi-square	5.12		6.05		4.78	
Q1/Q4 (Equity ratio)	0.83		0.90		0.89	
Concentration index	-0.24		0.03		0.02	
Medical tests						
Q1	17	(19.8)	6	(9.8)	3	(23.1)
Q2	21	(24.4)	13	(21.3)	1	(7.7)
Q3	25	(29.1)	19	(31.2)	3	(23.1)
Q4	23	(26.7)	23	(37.7)	6	(46.1)
Chi-square	2.28		13.10	***	4.06	
Q1/Q4 (Equity ratio)	0.74		0.26		0.5	
Concentration index	0.07		0.24		NA	

Note: * = p<0.10; ** = p<0.05; and ***p<0.01

In Ezilo the poorer households used medical tests sparingly for diagnosis. Of the respondents in Q3, only 29.1% (n=25) in Abakaliki took medical tests while of respondents in Q4, 37.7% (n=23) in Ezilo and 46.1% (n=6) in Nkalagu did so. However, the concentration index in Abakaliki and Ezilo showed that the better off SES group took medical tests when ill with the values of 0.07 and 0.24 respectively. Respondents in Abakaliki showed that the rate of recovery, when actions had been taken, was statistically significantly lower (p<0.01), while the converse was the case in Ezilo and Nkalagu. The concentration index value of 0.07 and 0.01 in Abakaliki and Ezilo indicates a better recovery rate for the better off SES groups when actions were taken.

Table 5 shows the distribution of healthcare providers that were visited by the consumers. In the urban area, hospitals were the major source of treatment. However, in the semi-urban and rural areas, it was patent medicine dealers. The health centres were rarely used in the urban area, but were used more often in the semi-urban and rural areas. The highest level of use of herbalists was in the rural area.

Table 5: Providers where initial treatments were sought

	Abakaliki (n=229)		Ezilo (n=244)		Nkalagu (n=333)	
	n	%	n	%	n	%
Traditional healer/ Herbalist	17	7.4	30	12.3	56	16.8
Patent medicine dealer	75	32.8	120	49.2	181	54.5
Health centre	1	0.4	54	22.1	67	20.1
Hospital/clinics	129	56.3	7	2.9	3	0.9
Others	7	3.0	33	13.5	26	7.8

SES inequities were reported regarding the use of different types of healthcare providers (see table 6). In the urban area, there were significant differences ($p>0.01$) and ($p<0.05$) in the use of traditional healers and public hospitals respectively as health care options among the SES groups. It was found that 58.8% (n=10) of the respondents who had visited traditional healers were from Q1, while 32.6% (n=42) who had first visited hospitals were from Q2. The concentration index result (0.35%) indicates that worse off SES groups visited the traditional healers while the converse was the case among those who visited patent medicine dealers and hospitals. Table 6 also shows that in the semi-urban area, apart from the patent medicine dealers, there were some significant differences in the provider options. There was a statistically significant difference ($p<0.01$) in the use of traditional healers. For the use of clinics and hospitals the significant difference was ($p<0.10$). The concentration index analysis (-0.40) shows that traditional healers were mainly visited by the low SES group while patent medicine dealers and health centres were visited more by the better-off SES groups at index values of 0.01 and 0.20 respectively. It was found that 60.0% (n=18) of the respondents who first visited traditional healers were from Q1. Health centres (35.2%; n=19) and hospitals (57.1%; n=4) were visited more by the Q4 persons.

In the rural area, there were only statistically significant differences ($p=0.01$) and ($p=0.002$) in the number of respondents who visited patent medicine dealers and health centres respectively. However, 28.6% (n=16) of the people who visited traditional healers were from Q4 while (30.7%; n=55) and (43.3%; n=29) of the people who visited the patent medicine dealers and health centres were from Q3 and Q4 respectively. The concentration index shows that those who were in a better placed SES group visited traditional healers while patent medicine dealers were mainly visited by those in the low SES group.

Table 6: SES differences in healthcare providers used by the respondents

	Abakaliki		Ezilo		Nkalagu	
	n	%	n	%	n	%
Traditional healer/Herbalist						
Q1	10	(58.8)	18	(60.0)	14	(25.0)
Q2	1	(5.9)	5	(16.7)	13	(23.2)
Q3	5	(29.4)	5	(16.7)	13	(23.2)
Q4	1	(5.9)	2	(6.6)	16	(28.6)
Chi-square	13.48	***	21.97	***	0.50	
Q1/Q4 (Equity ratio)	10.0		9.0		0.86	
Concentration index	-0.35		-0.40		0.03	
Private Clinic						
Q1	0		0		1	(33.3)
Q2	0		0		0	
Q3	0		3	(42.9)	0	
Q4	0		4	(57.1)	2	(66.7)
Chi-square	0		7.45*		3.70	
Q1/Q4 (Equity ratio)	-		-		0.5	
Concentration index	-		-			
Patent medicine dealer						
Q1	17	(22.7)	27	(23.9)	44	(24.6)
Q2	17	(22.7)	31	(27.4)	47	(26.3)
Q3	18	(24.0)	27	(23.9)	55	(30.7)
Q4	23	(30.6)	28	(24.8)	33	(18.4)
Chi-square	1.81		0.64		10.61	**
Q1/Q4 (Equity ratio)	0.74		0.96		1.33	
Concentration index	0.06		0.01		-0.04	
Health centre						
Q1	0		8	(14.8)	14	(20.9)
Q2	0		9	(16.7)	11	(16.4)
Q3	0		18	(33.3)	13	(19.4)
Q4	1	(100)	19	(35.2)	29	(43.3)
Chi-square	3.04		8.80	**	14.87	***
Q1/Q4 (Equity ratio)	0		0.42		0.48	
Concentration index	-		0.20		-	
Public Hospital						
Q1	23	(17.8)	0		1	(50.0)
Q2	42	(32.6)	0		0	
Q3	28	(21.7)	3	(42.9)	1	(50.0)
Q4	36	(27.9)	4	(57.1)	0	
Chi-square	9.74**		7.45*		2.01	
Q1/Q4 (Equity ratio)	0.64		-		-	
Concentration index	0.05		-		-	

Note: * = p<0.10; ** = p<0.05; and ***p<0.01

Reasons for seeking healthcare from different providers

The major reasons that people gave for seeking healthcare from different providers varied in the three communities (table 7). The four major reasons were good quality ser-

vices in all communities, affordability and availability of drugs in urban and semi-urban areas and being near the homes in all communities. Good quality services ranked highest in urban (90.4%; n=207) and rural (91.8%; n=224) areas, while being near the homes ranked highest in the rural area (61.6%; n=205). The residents of the urban and semi-urban areas had remarkable similarities in their choices of first actions for health care.

Table 7: Reasons for seeking initial healthcare from the different providers

	Abakaliki (n=229)		Ezilo (n=244)		Nkalagu (n=333)	
	n	(%)	n	(%)	n	(%)
Good quality of services	207	(90.4)	224	(91.8)	202	(60.7)
Affordability	194	(84.7)	150	(61.5)	77	(23.1)
Availability of drugs	188	(82.1)	168	(68.9)	117	(35.1)
Near the homes	147	(64.2)	150	(61.5)	205	(61.6)
Prompt attention	141	(61.6)	153	(62.7)	36	(10.8)
Polite health workers	106	(46.3)	71	(29.1)	1	(0.3)
Others	3	(1.3)	7	(2.9)	8	(2.4)

X^2 = 202.9; df. 12; ***p<0.0001

Most of the people recovered or achieved their healthcare goals after consuming the services of the providers where they first sought healthcare. However, few respondents who did not recover utilised further healthcare services. Many respondents (40.0%; n=30) used the services of hospitals when the first healthcare source failed to produce cures. Patent medicine dealers (15.0%; n=20) and herbalists (30.0%; n=23) were also consulted when the first treatment did not work. In the semi-urban area many people (50.0%; n=11) used the services of herbalists as their second source of healthcare.

DISCUSSION OF THE RESEARCH RESULTS

The level of burden of endemic diseases was high amongst all the SES groups. The observed high burden is an indication that the negative impact of endemic diseases affects all population groups and would need interventions that are directed at the entire population. As SES increases, households are more likely to report illnesses or ailments, especially in the urban and semi-urban areas. The reasons might be related to the greater financial access since those with less access to cash might only seek health care when the situation is very serious. In the rural area, however, the reason for the lower rate of reported illness amongst the richest group is unclear. The reasons for the mixed picture

of burden of malaria in the three areas could not be determined. Whilst the financially better-off persons reported more malaria in the urban and rural areas, it was the opposite in the semi-urban area.

The high level of burden of endemic diseases has dire economic consequences for the households because of the possible attendant loss of productivity and expenditures on treatment. The working days lost due to ill health in the study areas indicate that an affected household would lose part of its productivity due to disease. Hence, diseases apart from constituting major health and financial burdens on households, might also lead to loss of household production (Onwujekwe et al., 2004).

The patterns of healthcare seeking from providers were related to SES and the geographic location of respondents. Generally though, sub-optimal health seeking behaviours were reported by the respondents to treat the diseases, which can predispose them to more harm than good, increase the burden of disease and aggravate poverty levels. Medical tests were rarely used for the diagnosis of health problems with the potential adverse health and economic effects of utilising inappropriate treatments due to wrong diagnoses.

Compounding the problem of the low level of use of medical tests for diagnosis was the use of services of informal providers such as patent medicine dealers by many people needing healthcare, especially in semi-urban and rural areas. It has been argued that the quality of treatment, especially with regards to diagnosis and provision of drugs by the patent medicine dealers, is low (Hanson et al., 2004; Okeke et al., 2006). The increased use of patent medicine dealers in the semi-urban and rural areas could be because of the unavailability of hospitals and pharmacies.

There were high levels of occurrences of tropical endemic diseases as 75.0% of all households reported at least one illness. All SES groups and people living in different geographic areas were almost equally exposed to illnesses. However, there were inequities in treatment seeking among the study groups. The poorer households and rural dwellers sought treatments more often from informal healthcare providers. Existing cost-effective tools for the control of tropical endemic diseases, especially malaria, should be improved in Nigeria is to achieve the MDGs.

RECOMMENDATIONS

The patent medicine dealers will continue to be major healthcare providers in the foreseeable future until publicly owned facilities and other formal healthcare providers are easily accessible, the government should institute measures to improve the quality of the treatment provided by these persons.

The reasons that the respondents gave for their choices of facilities should be used to improve health seeking behaviours and hence reduce the burden of endemic diseases, by enhancing the availability of good quality health services. There is a need to improve the quality of both formal and informal healthcare providers. Hence, government and donors should design and implement interventions to ensure improved affordability and availability of good quality services including drugs, diagnostic tests and ensuring that healthcare services are within reach of people's homes.

LIMITATIONS

The research findings can not be generalised to other communities unless similar studies have been conducted in such communities.

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