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National treatment policy for whom? Analysis of household malaria treatment choices in urban Nigeria

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ABSTRACT

Objective: This study investigates whether or not households in Nigeria are aware and guided by the national treatment policy in their health seeking behavior and assesses the impacts of the treatment choices of the households on the prevalence of malaria, especially in the light of spatial variations in malaria prevalence in the study area. **Methods:** Using a structured questionnaire administered on 1,084 household heads randomly selected from 15 residential neighborhoods of contrasting residential environmental quality, defined largely by income and education in Ibadan, data on knowledge of treatment policies, treatment choices, whether or not the policies influenced their treatment choices and frequency of treating episodes of malaria in the households annually were elicited. The data were analyzed using proportion, percentages, one-way analysis of variance, Chi-square, and Spearman Rank Correlation statistical techniques. **Findings:** More than 70% of the respondents in the high and medium density residential neighborhoods were not aware of any treatment policy, nearly 43% of the respondents treated malaria in their households through self-medication while about 27.8% of those who patronized health facilities received prescription notes rather than drugs. Income affected treatment choices ($\chi^2 = 22.892$, $P < 0.001$) just as literacy did ($\chi^2 = 87.530$, $P < 0.001$). The correlation analyses also show that treatment choices affected the frequency of treating malaria and number of days spent treating an episode of malaria. **Conclusion:** The study concluded that poor knowledge of and gaps in the treatment policy contributed to the high prevalence of malaria in Nigeria.

KEY WORDS: Malaria, health seeking behavior, residential density, self-medication

INTRODUCTION

Nigeria bears up to 25% of the entire malaria burden in Africa. Malaria-related deaths in the country account for up to 11% of maternal mortality, 25% of infant mortality, and 30% of under-5 mortality. About 300,000 annual childhood deaths are attributable to malaria in Nigeria. The disease also contributes up to 60% of outpatient visits, 30% of hospital admissions and nearly 110 million cases are diagnosed annually [1]. According to the National Malaria Elimination Programme of the Nigerian Federal Ministry of Health, malaria is endemic in Nigeria with all year transmission, and 97% of the population at risk [2]. Malaria also causes an annual loss of about $1 billion in payments for treatment, prevention, and hours not worked [3]. Malaria is therefore both a disease and an economic burden to Nigeria and her over 160 million population. This fact is recognized as evident in the nation's malaria control policies since 1996. However, are households in Nigeria aware and guided by these treatment policies in their health seeking behavior? The objective of this paper, therefore, is to establish the interrelationship between the treatment policies and the treatment choices of the population and how this impacts the prevalence of malaria in the study area.

The treatment component of the 2009-2013 and 2014-2020 strategic plans for the control of malaria were drawn on the principle of providing appropriate and timely treatment to at least 80% of fever patients attending health facilities. This is to be done after carrying out diagnostics tests to confirm the presence of malaria parasites in the affected patients to prevent wrong diagnoses and treatments with their attendant consequences; drug resistance and deterioration of cases from uncomplicated to severe malaria for instance [2]. The plans also recommended the use of Artemether-lumefantrine and Artesunate-amodiaquine (artemisinin combined therapies [ACTs]) as the drugs for treating uncomplicated malaria having discovered a parasitic resistance to the mostly available and affordable Chloroquine, and Sulfadoxine and Pyrimethamine families [4]. The latter was, however, recommended for use as an intermittent preventive treatment for pregnant women while Quinine can be administered in all the trimesters of a pregnancy [5]. At the end of 2013 however, <15% of fever cases were tested before the administration of antimalaria drugs, only 7.8% of children under the age of 5 received ACTs, and treatment with Chloroquine and Sulfadoxine-Pyrimethamine was still relatively high at 28.5% in the urban centers [2]. An understanding of the treatment behavior in households, as

attempted in this study, will throw more light on the causes of this not-so-impressive performance of the treatment policy and also assist in health-care planning, especially for urban centers where the bulk of the population resides.

The decision on choices and utilization of health care in the prevention and treatment of illness and disease varies from one individual to another. In the choice-making model of health-care services utilization [6], an individual's decision to utilize health care is a function of the individual's perception of the severity of the illness, his/her knowledge of a home remedy based on lay referrals, faith in the treatment mode he/she is used to, and accessibility to treatment. The decision to seek treatment is also seen as a culturally and socially learned response influenced by the perception of the individual and/or those of people around him/her [7]. How the individual perceives the illness, his/her tolerance levels of illness symptoms, how seeking treatment might impact his/her lifestyle, daily needs, and status, as well as treatment availability in terms of location, cost and quality are the critical issues identified in the general theory of help seeking as affecting the individual's health seeking behavior [7]. The health belief model of health-care seeking suggests that an individual's perception about the symptoms of an illness, the severity of the symptoms, benefits of health-care utilization and associated barriers, as well as, the availability of events that may trigger a cause of action around the individual are the main reasons an individual will or will not utilize health-care services [8].

METHODS

The study is based on a survey of households in Ibadan metropolis, South West Nigeria. The choice of Ibadan is predicated on two major reasons. Malaria mortality rate among children under the age of 5 is highest in the South West region of Nigeria [2] and Ibadan is the regional capital. It is also largely representative of other urban center in Nigeria with its distinct residential categorization into high, medium, and low density districts. These districts are differentiated by social class, residential habitat quality, and availability of social services among others; the first two largely being a function of income and literacy. The differentiation allows for a spatial comparison of malaria prevalence and health seeking behavior within an urban center. This is hinged on the fact that residential environmental quality affects health [9-11] just as levels of social well-being impact the health status of the population [12-14]. The study area comprises 11 local government areas (LGAs) with 5 of these being metropolitan. Using a stratified sampling technique, three residential districts typifying each of the residential categories were selected from each of the metropolitan LGAs. The 15 sampled localities were computed to have a total of 43,377 households of which 2.5% (1,084) was randomly sampled in each locality. The residential districts and the number of households sampled in each of them are low density localities - Ikolaba (41), Idi-Isin (26), Agodi (56), Felele (138) and Oluyole Estate (32), medium density localities - Basorun (26), Eleyele (118), Old-Ife Road (74), Challenge (67) and Molete (33), and high density localities - Yemetu (74), Abebi (74), Elekuro (77), Idi-Aro (63), and Foko (196).

Using a structured questionnaire, literacy level, income, frequency of treating episodes of malaria in the households, treatment choices employed, reasons for the choices, knowledge of treatment policies, and numbers of days taken to treat an episode of malaria in the households were among the data collected from household heads. The choice of the whole household rather than children under the age of 5 in the households is essentially because although malaria records in the country focus more on under-5 children, malaria afflicts all ages. Children's health issues are also taken more seriously by parents whereas adults rarely pay the same attention to their own health, hence records on under-5 malaria are more available at the health facilities. Proportions and simple percentages were employed to describe the pattern of household incidence of malaria in the selected localities while the one-way analysis of variance was used to statistically establish the spatial variation in the incidence pattern among the different residential density categories represented by the selected localities. Chi-square statistics was employed to analyze the relationships between income, literacy and treatment choices, and Spearman Rank Correlation statistical technique was used to establish the relationships between treatment choices and the frequency of having malaria, as well as between treatment choices and duration of treatment.

RESULTS

Spatial Incidence of Malaria in Households

Of the 1,084 respondents, 35.3% treated episodes of malaria in their households at least 10 times in a year while 55.4% treated malaria between 5 and 9 times annually. Only 9.2% of the respondents treated malaria in <5 times in a year. Respondents from the 5 high density residential localities accounted for 62.9% of those who treated malaria in their households 10 times and more, whereas only 20.9% and 16.2% were from the medium and low density localities, respectively. About 52% of the respondents who treated household malaria <5 times/annum were from the low density residential areas. The individual responses, shown along locality lines in Table 1, were analyzed for statistical variation and the result ($F = 65.778$, $P < 0.001$) indicated that there is a significant spatial variation in the incidence of malaria in the households based on the residential density category of the households.

Malaria Treatment

Treatments used/received for malaria according to the respondents included hospital drugs and injections (55.1%), prescriptions and drugs from chemists/over the counter drug purchases (31.2%), usage of pain killers (11.9%), and the use of agbo and agunmu - herbal concoctions, and powder (1.6%). About 0.3% of the respondents claimed they used holy water, prayed or simply ignored malaria to run its course. In all, 42.9% of the respondents treated malaria in their households through self-medication while 57.1% patronized health facilities for treatment. However, not all the 619 respondents who visited the hospitals for treatment received hospital treatments.

Table 1: Proportional distribution of household frequency of malaria treatment

Residential density category	Locality	10 times and above	5-9 times	<5 times
High	Abebi	41.89	55.41	2.70
High	Elekuro	49.35	48.05	2.60
High	Foko	57.65	41.84	0.51
High	Idi-Aro	55.56	42.86	1.59
High	Yemetu	32.43	66.22	1.35
Medium	Basorun	26.92	50.00	23.08
Medium	Challenge	14.93	74.63	10.45
Medium	Eleyele	27.97	59.32	12.71
Medium	Molete	24.24	63.64	12.12
Medium	Old-Ife Rd	29.73	58.11	12.16
Low	Agodi	21.43	60.71	17.86
Low	Felele	27.54	59.42	13.04
Low	Idi-Isin	13.33	53.33	33.33
Low	Ikolaba	17.07	60.98	21.95
Low	Oluyole	9.38	59.38	31.25

Source: Author's Field Survey, 2015

Rather, after diagnosis, about 27.8% of them received drugs prescriptions and made their purchases outside the hospitals pharmacies. Hospital treatment was more prevalent in 9 of the 15 localities. All the low density residential areas had more than half of their respondents opting for hospital treatment. In the medium density residential localities, the pattern was the same except in old-Ife road where about 42% of the respondents patronized health facilities for treatment. In all the high density residential localities, more than 50% of the respondents used self-medication in the treatment of malaria.

The choices of treatment of the respondents were dictated by factors such as belief (26.3%), cost affordability (9.9%), and accessibility (13.1%). Others (50.7%) used what they believed worked better. Over 94% of the respondents, however, agreed that if there were no cost, physical, social or any other constraint, hospital diagnosis, and full treatment is the best way to treat malaria. The varied reasons behind the health seeking behavior of the population of the study area are in consonance with the postulations in the theories of health seeking [6-8]. About 66.97% of the respondents were not aware of any policy or recommended drugs for malaria treatment while 11.07% expected that there should be. More than 70% of the respondents in the high and medium density localities were not aware. A cross tabulation was carried out to see the influence of income on the treatment mode of the respondents. The result showed that respondents earning <N1 m (about $3,000) per annum constituted 51% of those who indulged in self-medication. The result of the analysis of income of respondents and the treatment modes they employed ($\chi^2 = 22.892$, $P < 0.001$) showed also that income has a significant influence on the treatment choices. Literacy was also found to influence the treatment choices ($\chi^2 = 87.530$, $P < 0.001$) as 67.4% of respondents who patronized health facilities for treatment were educated beyond high school.

Malaria treatment lasted for between 3 and 4 days in most households (61.3%) while it lasted for more than 4 days in 17.3% of the households, of which 79.1% were self-treated. Nearly 24% of the respondents rarely completed their treatment cycle when they appeared "well" after a few days of treatment. With this background, the relationship between the respondents' choices of treatment mode and the frequency of treating malaria in the respondents' households was examined using the Spearman Rank Correlation technique. The result ($r = 0.112$, $P < 0.001$) showed that there is a small but significant relationship between the choices and frequency of treating malaria in the households. The relationship between the treatment mode employed and the number of days spent treating an episode of malaria was also investigated. The result ($r = 0.281$, $P < 0.001$) implied that though the relationship is small, treatment choices have a significant correlation with the number of days taken to treat episodes of malaria in the households.

DISCUSSION

From the study, there is a spatial variation in the incidence of malaria in the sampled households based on residential density categorization. Higher annual episodes of malaria were recorded in households in the high density residential neighborhoods when compared with households in both the low and medium density localities. This implies that health outcomes are not uniform in space within the urban environment. The high density areas are typically associated with overcrowding, waste management problems, water and sanitation issues, and general poor living conditions that exacerbate exposure to disease pathogens. From the survey, the population here also earned less and generally less educated in comparison with the population in other residential classes. These factors influenced the prevailing treatment choices (self-medication) made in the households. The use of pain killers, herbal concoctions and prayers to combat malaria, and the act of simply ignoring the illness to run its course, all point to a low level of education on the causes, and treatment of malaria. This is reflected in the lack of knowledge in nearly 70% of the respondents about the malaria treatment policy and more specifically, the recommended drugs for the treatment of malaria.

That almost one-third of the respondents who patronized health facilities for treatment left with drugs prescriptions after being diagnosed with malaria, points to a gap in the treatment policy. For this category of respondents, their decision to leave with the prescription notes was based on the unavailability of the recommended drugs as at the time of their hospital visits or due to the relatively prohibitive cost of the drugs. These sets of respondents, especially the latter group, ended up purchasing "similar but cheaper" alternatives from drug stores. The most common alternative drugs bought were of the Chloroquine and Sulfadoxine-Pyrimethamine families that have failed the national drug therapeutic efficacy tests. Malaria parasites have also been found to be largely resistant to both drugs [4]. This shows that hospitals, where <15% of fever patients were tested before the administration of malaria drugs as against the minimum of 80% coverage specified in the treatment policy [2], have further inadvertently encouraged self-medication practices. The effects of this, as shown in the study, are an increase in the number of times households treat episodes of malaria and the number of days taken for such

treatments. The increase in the number of days may be due to the wrong choice of drugs or/and outright drug resistance which the treatment policy intended tackling.

CONCLUSION

From the foregoing, the treatment policy has not achieved much because it is based on the assumption that the population is aware and will seek health by patronizing health facilities. Income and education have, however, been shown to impact on the population's health seeking behavior. Both factors are reflected in the residential environmental conditions of the population and presented a spatial dimension to the household incidence of malaria in the study area. For the purpose of health planning, this dimension will assist in the identification of health risk habitats and areas for social services provision because of their importance to health. It will also aid in identifying vulnerable population within the urban space for priority behavioral change and communication advocacy, and improved health education. Health personnel is equally not driving the implementation of the treatment policy well across the health facilities by not complying fully with policy dictates on diagnosis and treatment. The policy states that at least 80% of malaria patients shall receive appropriate and timely treatment according to the national treatment guidelines, but the policy was silent on whether the treatment should be administered at the facilities or prescribed. This gap has negatively impacted malaria prevalence by encouraging self-medication practices. To bridge this gap, recommended malaria drugs should be available in all health facilities at all times and be made free or cheaper than similar alternatives. Further, the control of drug sales outside hospital pharmacies, especially without or outside specific doctors' prescriptions should be legislated.

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