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Informal payments for healthcare: Differences in expenditures from consumers and providers perspectives for treatment of malaria in Nigeria

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ABSTRACT

Objectives: To examine differences in malaria treatment expenditures from the perspectives of consumers and providers in southeast Nigeria.

Methods: The study was conducted using household surveys, provider surveys and exit poll interviews. The amount of money that the providers claimed to charge their patients for malaria treatment services was compared with the expenditures that the respondents actually incurred for malaria treatment services from the same providers.

Results: The average expenditure for malaria treatment from the consumers as elicited from both the household survey and exit poll interviews was \$6.30, while it was \$2.20 for the providers from information from the provider survey. The widest gaps between expenditures for consumers and amounts purportedly charged by providers were found in public healthcare facilities. All socio-economic status groups and residents of urban and rural areas were exposed to informal payments.

Conclusion: The differences in malaria treatment expenditures from consumers' and providers' perspectives point to high levels of informal payments, which worsen the economic burden of the disease and may predispose to catastrophic health spending. The informal payments are personal gains to the individual providers but represent a loss to the society, in terms of higher healthcare costs. Such payments should be addressed by policy makers so as to make treatment of malaria less costly to patients.

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1. Introduction

Informal or under the table payments to health service providers are a wide spread phenomenon and have been estimated to constitute from 10% to 45% of total out-of-pocket expenditures for healthcare in many low-income countries [1,2]. These payments can jeopardize govern-

ments' attempts to improve equity and access to care and policies targeted to the poor [3]. Informal payments are conceptualized as strategies to cope with lack of resources and poor performance at both the demand and supply side [4]. In some cases patients pay informally to jump the queue, receive better quality of services or more care [4], hence such payments have the potential of limiting access to healthcare services to patients who have more ability to pay rather than those most in need [5]. This is especially pertinent in the control of endemic diseases such as malaria, where informal payments can limit the financial access of the people to malaria treatment services.

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In view of the need to decrease the cost of treating malaria and maximise the limited income of many consumers, it is important to ensure that healthcare consumers pay the specified fees fixed by the government in public hospitals or fees the owners of private facilities have explicitly set in their establishments. Malaria remains the major public health problem in Nigeria [6] and the disease has impacted negatively on the Nigerian economy with about 132 billion Naira lost to the disease annually [6]. Hence, unnecessary informal or under-the-table payments will unduly worsen the economic burden of the disease.

Nigeria's public healthcare system consists of Federal, State and Local Government providers. At the Federal level there are tertiary teaching hospitals that offer specialized care. The state governments manage various general hospitals, and the local governments provide care through local primary healthcare centres (PHCs). The PHCs are the main source of healthcare for people in the rural communities [7]. However, the system is run concurrently such that all the three levels of government – local, regional/state and national/federal – even though they hold primary responsibility for only one level of the system each, can exceed one level and provide services at any of the other two levels of care [8]. In addition to the government providers, healthcare is provided by various private providers that range from patent medicine dealers (PMDs) to large scale hospitals. The private sector provides over 65% of healthcare delivery in Nigeria [9]. As a general policy, healthcare consumers are expected to pay for curative services, but preventive services are often subsidized. Health financing has been largely out of pocket hence efforts are made to provide public assistance to the socially and economically disadvantaged segments of the population [10]. To reduce financial barriers that prevent people in Nigeria, especially children, from accessing healthcare services, pre-payment schemes such as the National Health Insurance Scheme (NHIS) are being introduced [11].

Under-the-table payments or informal payments, which exist in many treatment facilities in Nigeria, substantially increase the cost of receiving malaria treatment in healthcare facilities, thereby increasing the costs to patients and even deterring them from accessing and consuming appropriate malaria treatment services. Some authors have defined informal payments as “a direct contribution, which is made in addition to any contribution determined by the terms of entitlement, in cash or in-kind, by patients or others acting on their behalf, to healthcare providers for services that the patients are entitled to [3].” *Contribution* refers to any kind of payment made in addition to what is required legally [3].

With minimal funding levels and limited accountability, publicly financed and delivered care falls prey to illegal payments, which result in payments that can exceed 100% of a country's median income [12]. Inability to make these payments may cause patients to seek low-level private providers, where the quality of treatment is often poor [13] and the providers barely trained for the services they provide [14,15]. The cost of treatment can also be unduly increased even in the private sector if non-owners

of private facilities deliver treatment and request informal payments which exceed the amount pre-fixed by the owner of such a facility.

Most informal payments are monetary and could prove to be a barrier to healthcare access, especially to the poor [1]. In 2003, researchers found that in some cases, patients offer to pay informal side-payments to a doctor if they believe it would result in them benefiting from high intensity treatment which they would otherwise not receive [16]. This is especially the case in countries where there are lower allocations for health, resulting in sub-standard level of care [17]. However, informal payments are not always monetary payments of gratitude or extortion to a provider and studies have shown that patients contribute towards their healthcare through providing their own drugs, food, and other supplies both through monetary and in-kind contributions [17].

Interest in informal payments for healthcare in low- and middle-income countries has increased [3], but few studies have examined the extent of informal payments in the health sector for the treatment of malaria. Like most informal activities, informal payments go largely unreported with interviewees reluctant to report paying informal payments [18,19] with a few exceptions [20]. Additionally, because unofficial payments are endemic in all areas of society in a number of countries, often little attention is given to the problem when witnessed in the health sector [17]. However, there have been some studies examining informal payments in the health sector across the world [3], particularly in transition countries of Central and Eastern Europe and the former Soviet Union [3,16,17]. In examining informal payments different methodologies have been employed in different settings due to its complex and sensitive nature. These approaches involve using focus group discussions with providers [4,21] in-depth interviews with providers [22] or a combination of approaches mainly involving triangulation of information from various sources [12,23].

Evidence suggests that the widespread level of informal payments in a country/health sector can sometimes be attributed to corruption prevalent in that country and the country's health sector [17,18]. Informal payments contribute significantly to increasing the cost of healthcare for consumers, and in some cases, overestimate the cost of healthcare to be higher than it really is [17]. In Tajikistan, it is estimated that out-of-pocket payments, with a large proportion through informal payments, constitute two-thirds of all healthcare spending [24]. The range of informal payments can be wide: from 3% in Peru to 96% in Pakistan with southeast Asia found to most rely heavily on informal payments [12]. In Africa, informal payments have been recorded to be common in Uganda, Mozambique and Ethiopia [12,24–26]. Informal payments exist around the world for various reasons such as scarcity of financial resources in the public sector, lack of trust in government and in some cases, a culture of tipping or showing gratitude [17,20,27]. This last example has sometimes made it difficult to differentiate between gifts as expressions of gratitude or under-the-table payments [18].

There is limited knowledge about the disparity between the official fees that should be paid compared with the fees

that consumers actually pay for the treatment of malaria in public and private facilities in Nigeria. Knowing this information is important for improving malaria treatment especially if the informal payment is instead a fee-for-service as some authors suggest [3], and especially in light of the change of the malaria first line drug in Nigeria to the expensive artemisinin-based combination therapy (ACT). Illegal collection of fees from consumers in public facilities with better trained healthcare providers may deter people from consuming appropriate malaria treatment services from these facilities. In turn, patients could consume less than is medically required in their bid to reduce treatment costs, which will lead to non-abatement of the disease burden and potentially lead to more treatment failures.

An analysis of the stated and actual malaria treatment expenditure profiles of private and public providers provides a useful tool for understanding the extent of informal payments, and understanding the potential cost savings to the consumers and the health system if such informal, and often times illegal payments, are eliminated, or as some researchers have suggested, legitimized to enable the revenue to be utilized by the public system [17]. Studies have found that the costs of treating illnesses such as malaria are usually higher in private facilities when compared to the public facilities [28,29]. However, there is no concrete evidence about the level of disparity in expenditures about what patients should pay and what they actually pay for malaria treatment in a majority of public and private healthcare facilities.

This paper reports the level of potential informal payments in public healthcare facilities through the examination of what is charged in health facilities for the treatment of malaria in southeast Nigeria. It also examines the possible incidence of informal payments amongst different socio-economic status (SES) groups as well as urban and rural dwellers. Hence, it provides evidence needed for policy making to intervene with regulation and training strategies that could be used to eliminate informal payments and make malaria treatment less costly for healthcare consumers in Nigeria. This information is also necessary for developing policy/regulatory and programmatic strategies that will be used to decrease undue cost escalation in the treatment of malaria.

2. Methods

2.1. Study area

The study area was six towns in Anambra State, Southeast Nigeria. Anambra State has a high malaria transmission rate all year. The six sites were the three largest urban centres (Awka (state capital), Nnewi and Onitsha) from each of the three senatorial zones and one rural local government area (LGA) randomly selected from each senatorial zone (Njikoka, Aguata and Ogbaru). One community from each of the three rural LGAs: Enugwu-Ukwu (Njikoka LGA), Ekwulobia (Aguata LGA) and Okpoko (Ogbaru LGA) was further selected using two-stage sampling. Each site area has a full complement of providers from hospitals to itinerant drug providers and herbalists.

2.2. Conceptual framework

Informal payments in the form of only cash payments were examined in this study. The central concept for investigating informal payments in this study was to compute the differences between the actual amount of money that was paid by consumers and the official stated charges by providers. The difference in payments made and a stated charge was assumed to represent informal payments. Information on the official charges for treating malaria that were pre-set in healthcare facilities by the heads (private facilities) and the government (public facilities) was obtained from the providers in those facilities using structured questionnaires. It is recognized that in many private facilities, many of the actual providers may not be the owners or the heads and so may have a motive to charge patients more than they should be charged. Through exit polls, interviews were conducted with consumers that just received treatment and paid for treatment of malaria from those facilities so as to obtain information about how much they actually spent for treatment.

2.3. Data collection methods

Data was collected from both providers and consumers of malaria treatment services using questionnaires and exit polls. As reported in an earlier study [12], information on the level of informal payments is usually obtained using different methods, including household surveys. General household surveys are most commonly used to measure informal payments [30]. There is however limited literature on measurement of informal payments in the health sector, but World Bank literature on measuring household informal payments measures the gap between reported household income and reported household expenditure using household surveys. The gap between salary and actual take-home pay for workers in the health sector has also been used to calculate informal payments in Georgia [31]. The World Bank researchers found that using this method, the widest gap ranking were largely dominated by government employees – education, health and administration – or those related to the finance—suggesting large out-of-pocket informal payments and corruption [31]. As informal payments are most often illegal, they are not reported and a gap in expected charge versus actual charge serves as a method of measuring informal payment.

2.3.1. Data collection from providers

A structured questionnaire was administered by trained field-workers to the heads or owners of selected public and private providers/outlets, or the employee running the facility in the absence of the owner/head. The healthcare facilities were further categorized as low-level and medium/high-level healthcare providers. Low-level providers included PMDs, one room nursing/maternity homes, mini laboratories, and itinerant drug dealers. The majority of low-level providers included in the study were PMDs. The medium/high-level providers were general, specialist, teaching and private hospitals, comprehensive health centres, pharmacies, and large medical laboratories. Medium/high-level providers offer clinical examination,

more complete diagnostic tests as well as drug provision in their facilities while low-level providers deal mostly with the sale of drugs.

The sample size was determined by considerations of the range of providers in the study area, their utilization rates [24] and feasibility. A total of 50 providers (public and private) in each urban and 25 in each rural area were selected. Data was collected on amount of money that the providers are supposed to charge or that they charged their clients for malaria treatment services, which included expenditures on patient registration, consultation, tests, drugs and others. These were aggregated to give the total costs of treatment as stated by providers of malaria treatment.

The inquiry into informal payments in the private sector is an area of possible controversy of conceptualization of what informal fees mean in the private sector, unlike in the public sector, where there is a clearer set of entitlements and regulations around charging for services which can be held as a standard against which practice is compared. However, within the study area and the study context, informal payments also possibly occur in the private sector. This is because in many cases, employees and not the owners that have fixed charges provide services and may be motivated to charge consumers illegal payments so as to make extra money for themselves.

2.3.2. Data collection from consumers

Household survey: An interviewer-administered structured questionnaire was one of the data collection tools. The calculated minimum sample size was 400 per urban site (total of 1200) and 350 per rural site (total of 1050) and the overall sample size was 2250. The parameters that were used for sample size calculation were a power of 80%, confidence level of 95% and considering 2% as the proportion of people with malaria that used services from the least commonly visited providers (community health workers) [32] for first treatment of malaria and a 6% average monthly malaria incidence rate. The calculations assumed that all the socio-economic groups used the services equally. The last parameter was the study population, which was the number of people with malaria in the study sites. The respondent was a female primary caregiver, or in her absence, male head of household and in his absence an adult representative of the household. Information was collected on household responses to fevers and malaria. Data was collected on expenditures that the respondents incurred on malaria treatment services, which included expenditures on patient registration, consultation, tests, drugs and others.

Exit polls: Trained interviewers debriefed patients that had just received treatment for fever (presumed malaria) from each of the selected providers using a pre-tested semi-structured questionnaire. Data was collected on the treatment received (diagnostic processes, drugs prescribed and dispensed, management recommendations given), household socio-economic status (assessed through ownership of assets and household expenditure). Data was also collected on actual expenditures that the respondents incurred on malaria treatment ser-

vices they received during their visit, which included expenditures for patient registration, consultation, tests, drugs and others. These were aggregated to give the total expenditure on treatment. At least ten clients from each of the providers were interviewed just after receiving treatment, giving a total sample size of 2250 exit poll interviews.

2.4. Data analysis

Malaria treatment expenditures from consumers were directly compared with stated treatment charges from a broad range of public and private providers. Hence, official prices were what providers stated that they were supposed to charge the consumers. The expenditures constructed by adding the reported fees for registration, consultation, laboratory tests, drugs and others represent the consumers' expenditures. The difference between charges that were stated by the providers, and actual expenditure by the consumers, was categorized as an informal payment. The treatment expenditures were disaggregated along socio-economic status (SES) and rural and urban dwelling of the consumers. A SES index was used to examine the potential incidence of informal payments across SES quartiles. The households were classified into SES quartiles (least poor, poor, very poor and most poor). The measure of inequity (equity ratio) was concentration index and the ratio of the mean of the most poor SES group (1st quartile) over that of the least poor SES group (4th quartile) [33]. The equity ratio shows the level of gap that has to be bridged in order to ensure equity and improve the condition of the poorest households with a score of 1 signifying perfect equity [34]. The urban–rural difference in level of informal payments was also compared. Kruskal–Wallis non-parametric test was used to examine for differences in the continuous variables. The test is appropriate because expenditures were not normally distributed.

3. Results

3.1. Socio-demographic characteristics of the respondents from the exit poll and household survey

In exit poll, majority of respondents were females, married and mostly in their mid-thirties. Most of the respondents had some formal education and spent an average of 11.5 years in school. The numbers of people interviewed in exit poll from different providers were: public hospitals, $n = 195$; pharmacy shops, $n = 222$; laboratories, $n = 38$; PHC centres, $n = 273$; private hospitals, $n = 716$; patent medicine dealers, $n = 860$; and other providers, $n = 30$. In household survey, most of the respondents were wives, females, married and middle-aged. The number of household residents ranged from 4.2 in Enugwu-Ukwu to 6.3 in Nnewi, but was 5.3 from the combined data from the six communities. Most of the respondents had some formal education and the average number of years that they spent in school was 10 years. The predominant occupation of the household heads was petty trading.

Table 1
Average expenditure for treatment of malaria by different providers from consumers and providers perspectives {price in Naira [US\$]}.

	Register mean (SD)	Consult mean (SD)	Lab tests mean (SD)	Drugs mean (SD)	Others mean (SD)	Total Naira mean (SD)	Total (US\$) mean
Exit polls							
Public hospital	99.0 (47.6)	16.8 (36.8)	288.2 (410.6)	1028.3 (792.3)	30.6 (134.0)	1451.9 (974.4)	11.62
Pharmacy	1.4 (15.4)	2.4 (34.6)	7.4 (80.3)	392.8 (357.0)	0.57 (7.1)	398.3 (374.0)	3.19
Laboratory	0.0 (0.0)	0.0 (0.0)	659.7 (722.7)	60.3 (124.0)	0.0 (0.0)	722.8 (693.3)	5.78
PHC centre	25.1 (26.3)	0.37 (6.1)	21.1 (113.7)	484.2 (315.3)	1.1 (11.3)	530.9 (362.6)	4.25
Private hospital	117.5 (106.1)	25.8 (141.0)	219.7 (393.4)	1033.7 (907.6)	19.9 (234.4)	1412.5 (1146.7)	11.3
Patent medicine dealer	1.8 (12.1)	0.71 (8.0)	7.7 (72.6)	270.8 (268.4)	6.9 (51.4)	289.7 (304.7)	2.32
Other providers	0.0 (0.0)	0.0 (0)	214.3 (452.8)	332.9 (349.4)	0.0 (0.0)	821.7 (875.4)	6.57
Kruskal–Wallis (<i>p</i> -value)	1696.7 (<.001)	213.1 (<.001)	612.2 (<.001)	917.4 (<.001)	153.4 (<.001)	1163.9 (<.001)	
Household survey							
Public hospital	85.7 (75.7)	60.1 (160.3)	253.0 (356.1)	803.0 (585.9)	2.92 (26.9)	1140.0 (786.4)	9.1
Pharmacy	4.3 (42.3)	0.0 (0.0)	22.2 (111.5)	398.15 (457.5)	.0007 (.01)	551.7 (1705.2)	4.4
Laboratory	47.2 (64.5)	1.6 (8.8)	586.9 (333.8)	982.0 (94.1)	51.56 (282.7)	1599.2 (1066.6)	12.8
PHC centre	13.6 (27.88)	0.0 (0.0)	33.4 (125.9)	391.9 (276.3)	0.0 (0.0)	391.7 (387.7)	3.1
Private hospital	94.5 (77.5)	39.4 (135.9)	312.9 (389.8)	1320.2 (1261.0)	21.55 (299.6)	1655.0 (1395.4)	13.2
Patent medicine dealer	.78 (7.9)	7.6 (104.0)	7.0 (60.5)	243.2 (422.9)	1.17 (16.9)	235.7 (404.0)	1.9
Other providers	4.2 (14.4)	0.0 (0.0)	0.0 (0.0)	395.0 (836.8)	0.0 (0.0)	378.3 (846.3)	3.0
Kruskal–Wallis (<i>p</i> -value)	48.9 (<.01)	10 (<.01)	111.3 (<.01)	607 (<.01)	11.5 (<.01)	789.6 (<.01)	
Provider survey							
Public hospital <i>n</i> = 11	71.1 (43.7)	0.0 (0.0)	138.9 (89.4)	315.6 (295.0)	55.7 (166.7)	581.1 (304.4)	4.64
Pharmacy <i>n</i> = 11	1.8 (6.0)	9.1 (30.2)	0.0 (0.0)	169.1 (66.4)	2.79 (9.1)	182.7 (69.7)	1.46
Laboratory <i>n</i> = 8	28.6 (75.6)	0.0 (0.0)	200.0 (152.8)	85.7 (157.4)	0.0 (0.0)	314.3 (333.8)	2.51
PHC centre <i>n</i> = 22	16.2 (9.7)	0.0 (0.0)	4.8 (21.8)	226.7 (112.8)	19.1 (82.8)	266.7 (94.3)	2.13
Private hospital <i>n</i> = 20	75.0 (39.3)	22.2 (64.7)	164.9 (121.0)	560.6 (277.4)	55.6 (235.7)	883.3 (414.7)	7.06
Patent medicine dealer <i>n</i> = 137	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	156.2 (141.5)	.17 (1.85)	155 (141.6)	1.25
Other providers <i>n</i> = 16	15.0 (5.8)	0.0 (0.0)	0.0 (0.0)	300.0 (70.7)	0.0 (0.0)	315.0 (73.3)	2.52
Kruskal–Wallis (<i>p</i> -value)	138.0 (<.001)	27.5 (<.001)	141.3 (<.001)	59.3 (<.001)	9.1 (<.34)	85.1 (<.001)	

Note: 125 Naira = US\$1.0.

3.2. Description of the providers and their facilities

The numbers of facilities included in the survey were 11 public hospitals, 11 pharmacy shops, 8 laboratories, 22 primary healthcare centres, 20 private hospitals, 137 patent medicine dealers and 16 other providers. The highest proportion of trained staff were found in the public hospitals (100%), followed by private hospitals (77.8%), while the least proportion of trained staff were found in pharmacy shops (54.6%).

3.3. Cost of malaria treatment by various providers

Expenditures on drugs followed by those on laboratory tests were the highest contributors to total treatment expenditure, even in laboratories (Table 1). In the household survey, the median expenditure reported to treat a case of adult malaria was 400 Naira (\$3.33), while it was

450 Naira (\$3.75) to treat a case of childhood malaria. The average expenditure for malaria treatment from different providers was lowest at patent medicine shops (\$1.90) and was highest in private hospitals (\$13.20). From both the providers' and the consumers' perspectives, the PMDs followed by pharmacies, were the least expensive providers for treating malaria. The public and private hospitals were the most expensive avenues for treating malaria from both perspectives.

3.4. Comparing expenditure for malaria treatment from providers' and consumers' data

Most expenditure items differed significantly from providers' and consumers' perspectives (Table 2). The costs from the providers' perspectives were generally much lower than what consumers reported to have paid, especially in the public hospitals. The findings show that the

Table 2
Statistical significant differences in average expenditure/price of treatment in exit poll versus provider survey.

	Registration Kruskal–Wallis (<i>p</i> -value)	Consultation Kruskal–Wallis (<i>p</i> -value)	Laboratory tests Kruskal–Wallis (<i>p</i> -value)	Drugs Kruskal–Wallis (<i>p</i> -value)	Others Kruskal–Wallis (<i>p</i> -value)	Total Kruskal–Wallis (<i>p</i> -value)
Patent medicine dealer	3.0 (.085)	0.97 (.32)	1.7 (.20)	37.0 (.0001)	3.3 (.069)	43.2 (.0001)
PHC centre	2.3 (.13)	0.1 (.78)	0.02 (.91)	19.5 (.0001)	6.3 (.012)	17.7 (.0001)
General (public) hospital	2.8 (.092)	2.8 (.094)	0.02 (.90)	37.1 (.001)	3.3 (.61)	43.2 (.0001)
Pharmacy	5.0 (.025)	8.5 (.004)	0.1 (.75)	5.3 (.022)	5.12 (.024)	3.9 (.049)
Private hospital	2.0 (.15)	0.1 (.77)	2.1 (.15)	7.7 (.005)	2.1 (.153)	4.9 (.027)
Laboratory	5.1 (.023)	0.0 (1.0)	4.0 (.045)	0.16 (.69)	0.0 (1.0)	5.8 (.016)
Other providers	23.8 (.0001)	0.0 (1.0)	1.1 (.29)	0.88 (.35)	0.0 (1.0)	0.01 (.93)

Table 3
Comparing average expenditure from exit poll, household and provider surveys.

	Registration mean (SD)	Consultation mean (SD)	Lab tests mean (SD)	Drugs mean (SD)	Others mean (SD)	Total mean in Naira (SD)	Total mean (US\$)
Exit polls	48.9 (81.88)	10.0 (81.2)	111.3 (305.5)	607.0 (697.3)	11.5 (140.5)	789.6 (916.7)	6.3
Household survey	37.8 (68.4)	20.0 (108.5)	133.9 (290.3)	630.0 (877.0)	7.6 (154.0)	796.5 (1183.3)	6.4
Provider survey	14.2 (32.6)	2.8 (21.7)	29.4 (79.9)	217.7 (202.6)	10.1 (84.5)	273.6 (292.4)	2.2

Note: General differences between exit polls and provider surveys [Regis ($p < .0001$); Consult ($p = .046$); Lab ($p = .042$); drug ($p < .0001$); others ($p = .54$); and total ($p < .0001$)].

Table 4
Level of possible informal payments across different providers by different surveys.

	Household survey \$	Exit poll \$	Provider survey \$	Differences between provider charges and consumer expenditures (household survey) \$	Differences between provider charges and consumer expenditures (exit poll) \$
Public sector					
Public hospital	9.1	11.6	4.6	4.5	7.0
PHC centre	3.1	4.3	2.1	1.0	2.2
Private sector					
Pharmacy	4.4	3.2	1.5	2.9	1.7
Laboratory	12.8	5.8	2.5	10.3	3.3
Private hospital	13.2	11.3	7.1	6.1	4.2
Patent medicine dealer	1.9	2.3	1.3	0.6	1.0
Other providers	3.0	6.6	2.5	0.5	4.1
Total	6.4	6.3	2.2	4.2	4.1

average expenditure to treat malaria from the consumers' perspectives was very similar at \$6.30 and \$6.40 from exit poll and household survey respectively, which were very different samples (Table 3). However, they differed significantly from the prices from the providers' perspectives, which was only \$2.20 per treatment for malaria. The magnitude of possible informal payment ranged from \$4.10 to \$4.20 per episode of malaria and was highest in public hospitals (Table 4). It was interesting to note that the disparities in the expenditures in the private sector included pharmacies and PMDs.

Table 5 shows SES and rural–urban differences in expenditure for treating malaria from the exit polls compared to provider interviews. From exit polls, the average expenditures for treating malaria by SES were \$5.02, \$5.90, \$7.40 and \$8.80 for Q1, Q2, Q3 and Q4 respectively ($p < .05$). The concentration index was 0.12 and the equity ratio was 0.64. The average providers' charges for all SES were uniform at \$2.20. Also, from the exit polls, the average treatment expenditure of rural dwellers was \$6.70, while it was \$7.20

for urban dwellers ($p > .05$). The table shows that all SES groups as well as people living in all geographic locations were exposed to informal payments.

4. Discussion

Our study found that the expenditures for the treatment of malaria, was apparently unduly inflated because of the occurrence of informal payments given the charges stated by the providers and the actual expenditures incurred by the consumers. We can infer that the informal payments in healthcare, especially with regards to treatment of malaria, contribute to the very high costs reported by consumers in public hospitals. Such unauthorized payments require closer inquisition and solution. Most potential informal payments in this study were paid to access healthcare, and provided as a fee-for-service. The payment improperly enriches providers (private gain) but disadvantages the consumers, their communities, as well the overall health system (public loss). Also, for a nation like Nigeria with

Table 5
SES and rural–urban differences in expenditure for treating malaria from exit poll compared to providers' fixed charges.

	Total mean (SD)	Total mean (US\$)	Provider charge mean (US\$)
SES differences			
Q1 most poor	595 (731)	5.02	2.2
Q2 very poor	671 (867)	5.9	2.2
Q3 poor	806 (878)	7.4	2.2
Q4 least poor	937 (1051)	8.8	2.2
Kruskal–Wallis (p -value)	68.0 ($< .001$)		
Concentration index	0.12		
Q1:Q4 ratio	0.64		
Rural–urban differences			
Rural: mean (SD)	944 (4440)	6.7	2.2
Urban: mean (SD)	1227 (1360)	7.2	2.2
Kruskal–Wallis (p -value)	.88 (.35)		
Rural:urban ratio	0.77		

a majority of the population living below a dollar a day, such huge informal payments that are mostly paid using out-of-pocket spending can lead to households incurring catastrophic malaria treatment expenditures.

Informal payments occurred in both the private and public healthcare facilities, but were highest in public hospitals, although the expenditure on treatment was highest in the private hospitals followed by public hospitals. The least informal payments occurred in the PMDs followed by pharmacies, this could be because PMD shops are mostly operated by the owners, who actually charged the prices that they had set for their services. As has been noted elsewhere, publicly financed and delivered care falls prey to informal payments [12]. Informal payments in the private sector could be explained because in many cases, the patients obtained treatment and paid to providers that were not the owners of the facilities, but were employees. Hence, informal payments could have occurred to those 'employee providers', and at different points of provision within the facility, which the heads/owners may not know about.

The equity dimensions to informal payments where even the poorest SES and rural dwellers are exposed to high levels of such payments calls for concern, although the concentration index result shows that it occurs more amongst better-off SES groups. However, given that the poor already struggle to make ends meet and malaria is a common illness that requires several hospital visits in a year, being forced, sometimes indirectly, by some unscrupulous healthcare providers to pay more than is required in order to have treatment for malaria could largely influence access to malaria treatment for the poor. Informal payments especially in the public hospitals will unduly increase the costs of obtaining treatment from the hospitals and thereby deter poor patients from accessing the services and could push them into patronising the informal low-level providers such as PMDs and obtaining inappropriate treatment with dire consequences.

Although few strategies exist to control informal payments [12], and it could be difficult to control, efforts should be made to address the problem when possible. Government and professional associations should continuously check the differences between the official prices of treatment with what the patients actually pay and informing healthcare staff of possible sanctions in the event of illegal charges for services. In some cases, informal payments are largely demanded to help supplement the income of the health providers [3]. Thus, steps should be taken to effectively address this problem by providing adequate incentives for health workers and making sure that they are well paid as well as on time to discourage the desire to supplement income by extorting informal payments from the consumers. Patients should also be made aware of the possibility of such payments so that they can report to the appropriate authority when they suspect overcharging.

A limitation of the study is that using only quantitative methods for the inquiry may not be a very robust way of investigating incidence and levels of informal payments. Also, the largest gaps were seen for drugs and laboratory investigations, it would therefore seem that it is possible that one source of the gap is excess tests and,

possibly, prescription of medicines in addition to anti-malarials for fever treatment. However, the methods used did not adequately distinguish legitimate prescribing and investigations, supplier-induced demand that arises from the predominant user-fee payment system, and informal fees. It is possible that within the context of individual payments, some providers legitimately recommended more tests and prescribed more drugs than are usually required. Therefore, not all excess payments possibly arise from informal payments. However, our results still provide valid and useful policy-relevant information despite the fact that we only showed the gap between the aggregate expenditures and aggregate expected charges and did not disaggregate to show the gaps between individual expenditure items and official charges for those items. Additional qualitative inquiry could have helped to further expose the extent of the problem, distinguished legitimate prescribing and investigations in excess of usual practices, provided further information on micro informal payments and helped to pinpoint where the problems really are, factors responsible for them and its consequences on both consumers and providers.

Appropriate deterrent sanctions should be imposed on providers that request for under-the-table payments, especially in the public sector where the government tries to subsidize healthcare to ensure it is accessible to all, especially the poor. The mode of payment in the public sector should be reformed so that patients will not have to directly pay for treatment services to any health provider. This is because, where providers insist on direct prepayment or receive direct payments for specific services or payments are not made to an official cash window as obtained in this study, informal payment is likely to occur [12]. And as long as forced informal payments occur, consumers will not have complete access to healthcare which is being provided by their governments and the health sector in general. In the case of malaria treatment in Nigeria, the change to ACT as the first line drug will not have the intended impact because consumers who cannot afford the high cost of the drug in addition to the unduly high fees in the treatment facilities due to informal payments, will have no choice but to continue to patronize low-level private providers who are willing to treat them for a lower cost with improper drugs and dosages.

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