

# Assessing the Financial Impact of Physician Self-Referral on Patients and How They Coped with Payment in South-Eastern Nigeria

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## Abstract

**Background:** Dual practice occurs where healthcare professionals, particularly medical doctors, engage in concurrent public and private clinical work for remuneration. This practice can impact financial burden on patients when they are transferred from the public sector to private practice. **Aim:** To investigate the impact of physician self-referral on patient finances and how they coped with paying for private bills when diverted to private practice. Study setting: This study was carried out in Enugu urban, Southeast Nigeria. **Methods:** A cross-sectional design was adopted for this study with multistage sampling procedure used to recruit 407 households who had first visited a public hospital and then gone to a private hospital/clinic in the last 12 months of the study. **Results:** The total mean expenditure for treatment in private hospitals for the patient group who were referred from public hospitals was higher at a cash figure of N32,104 (\$105), whereas the estimated cost of treatment in the public sector was found to be comparatively low at N9960 (\$33). The total median costs were compared using a Wilcoxon signed rank test ( $p < 0.0001$ ). Nearly half of the referred patient group saw themselves as having “serious and very serious” financial impact as a result of the transfer from the public sector to private practice. The major coping mechanism for paying for private bills was out-of-pocket, followed by borrowing and sale of household’s assets. **Conclusions:** Public hospital administrators/managers could strengthen measures against the transfer of public patients to the private sector. Regulatory measures need to be strengthened to curtail the practice of physician self-referral and its associated financial burden resulting from patient diversion to private practice.

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## Keywords

Physician Self-Referral, Private Practice, Dual Practice, Financial Impact

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### 1. Introduction

Dual practice (DP) occurs where healthcare professionals, particularly medical doctors, engage in concurrent public and private clinical work for remuneration [1]-[8]. Proponents of dual practice have argued that it is beneficial in the healthcare system where it operates in areas such as access expansion, motivation to improve healthcare quality, skills development enhancement and also extra income for the doctor [3] [9] [10].

Opponents, however, have argued that dual practice contributes to long waiting lists in the public sector, competition for time between public and private work, increase in healthcare bills, and causes outflow of government resources in the public sector, including public patients [11]-[14]. DP seems like a double-edged sword, but only research can discover which side of the sword is sharper to cause more harm to the healthcare system of the country where this practice operates. The likely contributing factors to patient referral outside of the government hospital may include long wait times, poor medical attention and emergencies needing urgent attention. But these, according to critics, are usually couched by medical professionals as alibi for patient diversion from public to private practice [8]. Patient transfer may be voluntary, a patient has the right to refuse transfer decision, but they could be indirectly persuaded to believe it is a better option by the medical professional. The danger, however, is that once a patient is transferred to a private practice, they cannot continue to receive treatment in the public sector, except they are readmitted.

In Nigeria, private-sector medicine is liberalized, and DP is officially allowed outside the main job. The Medical Council of Nigeria Code of practice [15] permits full-time public sector doctors to use their time outside of their regular shift (8 hours per day, 8 am to 4 pm, Monday to Friday) to engage in private practice for extra income. This regular shift does not include the on-call duty time, which could come up after the normal routine shift. Although the guidelines allow private practice only within off-duty hours, this rule is rarely adhered to, as many public-sector doctors on full-time contracts operate 24-hour private hospital services, resulting in competition for business with their employer—the government [16] [17].

The healthcare system in Nigeria is weak, as indicated by its poor health outcome indicators [18] Furthermore, the health system is characterised by weak governance and accountability challenges [19]. Regular strike actions by medical professionals working in the public sector over remuneration enhancement have become a sequence [20] whilst supplementary income drive among them has increased tremendously [8]. Overall, the economic and political systems in the

country might have paved the way for the health system's corrupt practices [19] including physician self-referral—a practice among some full-time medical professionals who divert patients from government hospitals to the private sector where they may have a financial interest [8]. This might be a coping strategy for survival in a system constantly challenged by poor health system funding, economic downturn and political inertia at all levels of government.

DP may increase cost of healthcare in both private and public sectors [13] [21]. It is assumed that the dual practitioner may intentionally over-treat patients to gain reputation and boost their private practice in the public sector. By so doing, over-treatment helps DP doctors to charge a higher fee-for-service (FFS) for unnecessary treatment. For example, when a physician is known for giving effective treatment and curing patients to their satisfaction in the public sector, the reputation gained may increase patient utilisation of their private practice. In a healthcare system where payment for healthcare services is FFS, as it is in most developing countries including Nigeria, there could be under-treatment, which means that doctors might have a *laissez-faire* attitude, whereby patients who are not willing to tolerate poor quality and inadequate care services in the public sector must make their way to the private sector [22]. By creating delays or hurdles in the public hospital, consultants and their staff can make patients seek private care even when they did not anticipate using it. This attitude indirectly persuades patients to visit private practices of DP doctors. The result of diversion may be that a patient who would have low-cost treatment in a public facility now faces a substantial bill for private services whilst high fees charged could affect household non-health spending [23].

Increase in the cost of care when patients are moved from the public to private sector has been researched, but not much attention has been given to cost of care associated with physician self-referral in literature. For example, a study by Blaiwas and Lyon [24] found an overwhelming increase in cost of care on diagnostic imaging where more than \$226 million per year was recorded as additional expenses for abdominal computerised tomography (CT) scan due to physician self-referral. Similarly, there was an estimated cost of £2 million per annum to National Health Service (NHS) Scotland due to self-referral to physiotherapy services even where there was no difference in health conditions presented by the patient group [25]. The fact that the same clinician who ordered the tests was performing the same test raises the suspicion that some tests could have been motivated by financial interest. This might have a substantial financial burden on patients who would have to pay their medical bills by fee-for-service. It has also been shown that self-referral can significantly drive up the total cost for some medical conditions and imaging-type tests [26]. These authors found that the highest cost came from heart-related diseases, which was attributed to self-referral by the physician. It is not clear whether patients have a choice of either visiting the facility referred to or somewhere else. However, it is possible that the self-referring physician might have an ulterior motive for sending patients to a particular facility.

The work of Kilani *et al.* [27] calls to question the motive for physician self-referral in “medical imaging” where an estimated increase in the cost of imaging services associated with self-referral stood at an overwhelming \$3.6 billion in 2006 for Medicare. A similar evidence has been noted in the work of Hughes and colleagues that investigated how physician self-referral for imaging soared healthcare cost for chronic care amongst Medicare beneficiaries in the United States [26] and a current study by Young *et al.*, (2020) showed that approximately 23% of the MRIs ordered for selected conditions were inappropriate and lacking adherence to imaging guidelines.

This evidence suggests that physician self-referral might increase utilization of healthcare services as well as healthcare cost for patients. This practice provides huge market incentives for DP physicians, and unless the government takes the matter seriously, it would continue to pose a challenge to the public healthcare sector in Nigeria.

In other instances, evidence has shown that patients treated by physicians who own a practice were more likely to be referred for at least a round of physical therapy unlike those treated by physicians not engaged in private practice [28]. Similarly, an increase in MRI use among patients with low back pain was attributed to physician referral by orthopaedic surgeons who preferred not to refer patients outside of their practice [29]. When a doctor refers patients from the public system to facilities they own or are owned by colleagues with the intent of getting a commission per case referred, the extra cost is borne by the patient, and not all patients may be prepared to bear the additional costs.

How patients cope with medical bill payments, especially those without insurance coverage, remains a challenge, particularly for the poor, as individual coping strategies for paying for healthcare differ. Some may find it easy whilst for others, borrowing, sale of assets or other forms of assistance may be the only option. Evidence from Nigeria shows that use of out-of-pocket payment (OOP) is a major coping strategy [30] [31]. Other studies that looked at payment coping mechanisms in paying for healthcare bills also support Onwujekwe and colleagues’ findings, asserting OOP as the major payment coping strategy followed by options such as borrowing, and sale of land or household assets [23] [32]. Those who do not have enough savings are put in a difficult situation to either borrow or sell any marketable assets.

In Nigeria where over 90% of the population pay for healthcare by OOP [33] due to a lack of national health insurance coverage, the cost of private hospital bills may be a burden to many patients, particularly those from low socio-economic background. At present, there is a lack of literature focusing on financial burden faced by patients when they are diverted from the public system to a private practice. Most of the evidence on increased medical bills associated with physician self-referral in literature were from radiological services. This present study looks broadly at hospital visit experience and captured a variety of health conditions.

There is a need for evidence of the financial impact of physician self-referral on

service users. The present study has contributed to understanding how patients coped with paying for hospital bills when diverted to private practice. In Nigeria, no study of this kind has assessed the financial burden faced by public patients when their move to the private sector is influenced by physician self-referral and how they were able to cope with payment. This evidence is crucial for any reforms in dual practice and provides useful data for tertiary and district hospital managers, health management boards and ministries of health in Nigeria.

## **2. Materials and Methods**

### **2.1. Study Design and Setting**

The study used a cross-sectional design with multistage sampling procedures applied at different stages. Information was obtained from a household survey of service users. The study was conducted in Enugu urban, southeast Nigeria. The choice of Enugu urban is premised on its strategic position as a capital city with a high concentration of private and public hospitals.

### **2.2. Sample and Sample Size**

The sample for this study was determined using the EPI Info 7 software for the population survey. This study was a part of a larger mixed-method study previously published elsewhere [8] [34]. Also, this manuscript has been published as a preprint in Qeios [35]. The calculation of the sample size was based on the population of Enugu South Local Government Area with a projected population of 259,000 by 2015 [36], 80% power and confidence level of 95%. The calculation shows that a sample of 384 was adequate. However, to make allowance for non-responses, 407 questionnaires were administered. The researcher constructed the questionnaire based on the study objectives, which were reviewed by the research team. The questionnaire was pretested with 5% or 20 participants of our target population. According to Perneger and colleagues [37], pretesting with 20 participants is low, 30 would have been better but it is greater than 15 participants stated as being a problem. The availability of resources was considered when determining the number of respondents for the pretest. Face and content validity were carried out, but no reliability test was performed. The face validity helped ensure that the questionnaire appeared right, whilst content validity confirmed that the questionnaire measured what it should measure. Reliability could not be carried out as the team could not go back to ask the same respondents who have been included in the pretest for their responses again (test-retest reliability).

A single researcher administered the questionnaire to reduce misinterpretation and recording of answers that might arise from using multiple researchers. Information collected from respondents included their socio-demographic characteristics and hospital visit experiences. Information on the various costs incurred when referred from public to private practice was also obtained from them including their perceived estimated costs for the same health conditions if they had been treated in the public system. The cost items included consultation fee, cost

of drugs, cost of laboratory test, cost of X-ray, and so on.

### 2.3. Sampling Procedure and Data Gathering

A cross-sectional design was adopted for this study with multistage sampling procedure used to recruit respondents. The multistage sampling included simple random, systematic and consecutive samplings, which were used at different stages in this study [38]. Out of the three local government areas (LGAs) in Enugu urban, one LGA was selected randomly. There are five residential areas in the selected LGA with two areas randomly selected for the questionnaire administration. The streets that met the eligibility criteria in the selected residential areas were listed and four streets were chosen at random. Next, the systematic sampling was used to select houses for the administration of questionnaire using even numbers. After selecting the households, the survey respondents were recruited sequentially. Only the survey respondents, who met the criterion of having visited a public hospital and then moved to a private one in the last 12 months were administered the questionnaire. The aim was to understand whether this movement from the public sector to private practice was due to diversion. This process continued until the household sample was completed, but where there were more than one household in a visited building, the questionnaire was administered to other eligible households living in the building using consecutive sampling before moving to the next building in our sample. Those who are on the National Health Insurance Service (NHIS) were excluded from the study. The data for this study were collected between August 23 and October 28, 2017, as part of a larger mixed method study.

### 2.4. Ethical Approval and Consent to Participate

This study adhered to all protocols on the conduct of research on human subjects. A written informed consent was obtained from all participants before completing the questionnaire. Ethics approvals were obtained from the Committee on Medical and Scientific Research in a university teaching hospital in the study area (Ref: NHREC/05/01/2008B-FWA-00002458-IRB00002323) and a state ministry of health in Southeast Nigeria (Ref: MH/MSD/EC/0181).

### 2.5. Data Analysis

Descriptive statistics in SPSS version 26 was used to obtain the mean and median of all cost items associated with private hospital treatments following the referral from public hospitals. The estimated mean and median cost items that constitute treatment expenditures in the public hospitals for the same health conditions for which patients were referred were also obtained. Frequency tables and percentages were generated to show the socio-demographic characteristics of respondents (Table 1). The various cost items in both private (actual expenditures) and public hospitals (estimated expenditures) by the referred respondents (n=34) were then compared (Table 2 and Table 3). The skewed nature in cost data suggests that all statistical tests undertaken should be non-parametric. The total median costs of

treatment in the private and public sectors were therefore compared using a Wilcoxon signed rank test (Figure 1). Percentages were also obtained on the self-rated financial impact of private treatment for the patient group referred from public hospitals (Table 4) and their coping strategies for paying for private treatment (Table 5). The type of health problems for which information was collected included malaria, childhood diseases, pregnancy/child delivery-related, eye problem, stroke, and respiratory diseases.

### 3. Results

A total of 407 households were approached for the questionnaire administration. All the respondents (100%) completed the questionnaire. A hundred percent completion was achieved because the questionnaire administration was researcher-administered. More females than males completed the questionnaire; apparently, females were more available at the time the researcher visited. Table 1 shows the socio-demographic characteristics of the respondents. Table 2 presents the mean and median costs of treatment in the private hospital as a result of referral indicating a total mean cost of N32104 or 105 USD whilst Table 3 shows the estimated mean and median costs of treatment in the public sector with a comparatively smaller cost of N9960 or 33 USD. Table 4 and Table 5 focus on self-rated financial impact of private treatment and the coping strategies used by patients respectively.

**Table 1.** Socio-demographic characteristics of respondents (N = 407).

	Variable	N (%)	Summary statistics (where applicable)
<b>Referral</b>	Referred	34 (8.4)	
	Not referred	373 (91.6)	
<b>Sex</b>	Male	129 (31.7)	
	Female	278 (68.3)	
<b>Age group</b>	18 - 38	243 (59.7)	Mean = 38.72
	39 - 59	131 (32.2)	SD = 12.49
	60 - 80	31 (7.6)	Range = 19 - 86
	Over 80	2 (0.5)	Standard error = 2.35
<b>Highest Edu. level</b>	Primary school	41 (10.2)	
	Junior secondary	7 (1.7)	
	Senior secondary	171 (42.6)	
	Ordinary Nat. Dip	34 (8.5)	
	Higher Nat. Dip	51 (12.7)	
	Bachelor of Science	71 (17.7)	
	Master of Science	10 (2.5)	
	Other	16 (4.0)	

## Continued

<b>Marital status</b>	Currently married	316 (77.6)
	Single	68 (16.7)
	Separated	2 (0.5)
	Widowed	21 (5.2)
<b>Occupation</b>	Govt worker	30 (7.4)
	Employed in priv. sector	48 (11.8)
	Self-employed	191 (46.9)
	Artisan	73 (17.9)
	Student	12 (2.9)
	Unemployed	36 (8.8)
	Other	17 (4.2)

In **Table 1**, 129 males (31.7%) and 278 females (68.3%) responded to the questionnaire. In terms of the age group of respondents, 59.7% were from the 18–38 age group, whilst 32.2% came from the 39–59 group, and 7.6% fell into the 60–80 age group. There were only two respondents over 80. Regarding the educational level of respondents, 10.2% had primary education, whilst the highest number of respondents (42.6%) studied up to senior secondary education level. Those who completed a higher education diploma or bachelor's degree were 38.9% and 2.5% had progressed to a master's degree qualification. A majority of the respondents (77.6%) were currently married. The largest group (46.9%) were self-employed persons, followed by artisans (17.9%) and others working in the private sector (11.8%). The pattern in **Table 1** suggests that more of the females, age group 18–38, married and self-employed, would have fallen into the sub-sample of the referral group whereas that pattern is not linear for education. However, there is need to be cautious in interpreting any pattern here due to a small sub-sample of the referral group.

**Table 2.** Respondents' expenditures for treatment in private hospitals as a result of referral from public hospitals (n = 34).

Category of cost	Cost in (N*) Min - max	Mean (SD)	Median	IQR
Transport to private hospital	0 - 2500	536 (622)	250	900
Transport from private hospital	0 - 2500	492 (566)	250	900
Cost of hosp. card	0 - 5000	1851 (1454)	1500	1713
Consultation fee	0 - 20000	3079 (4020)	2000	3500
Cost of drugs	0 - 200000	17540 (34407)	8250	11300
Cost of lab test	0 - 26000	3303 (4983)	2000	4500
Cost of X-ray	0 - 15000	1882 (3843)	0	2250
Other costs	0 - 75000	2456 (12860)	0	0
Total mean cost	1250 - 215500	<b>32104 (39738)</b>	22100	23400

Respondents answered all questions, \*1 Naira = USD306 (Source: Central Bank of Nigeria, 2017).

**Table 2** shows that mean cost of drugs for all patients referred from a public hospital was N17540 (57USD) with a median of N8250 (27USD). The Consultation fee was N3079 (10USD) with medians at N1500 (4.9USD) and N2000 (6.5USD), respectively, cost of laboratory test was N3303(10.79USD), with a median cost of N2000 (6.5USD), cost of X-ray N1882 (6USD) and a median of 0 naira. The total mean cost of treatment in private hospital as a result of referral from the public sector was N32104 (USD105) with a total median cost of N22100 (72USD). Cost of drugs followed by laboratory test remain the highest cost items for the referral group.

**Table 3.** Estimated mean cost of treatment in public hospitals for the same health conditions for which patients were referred to the private sector (n = 34).

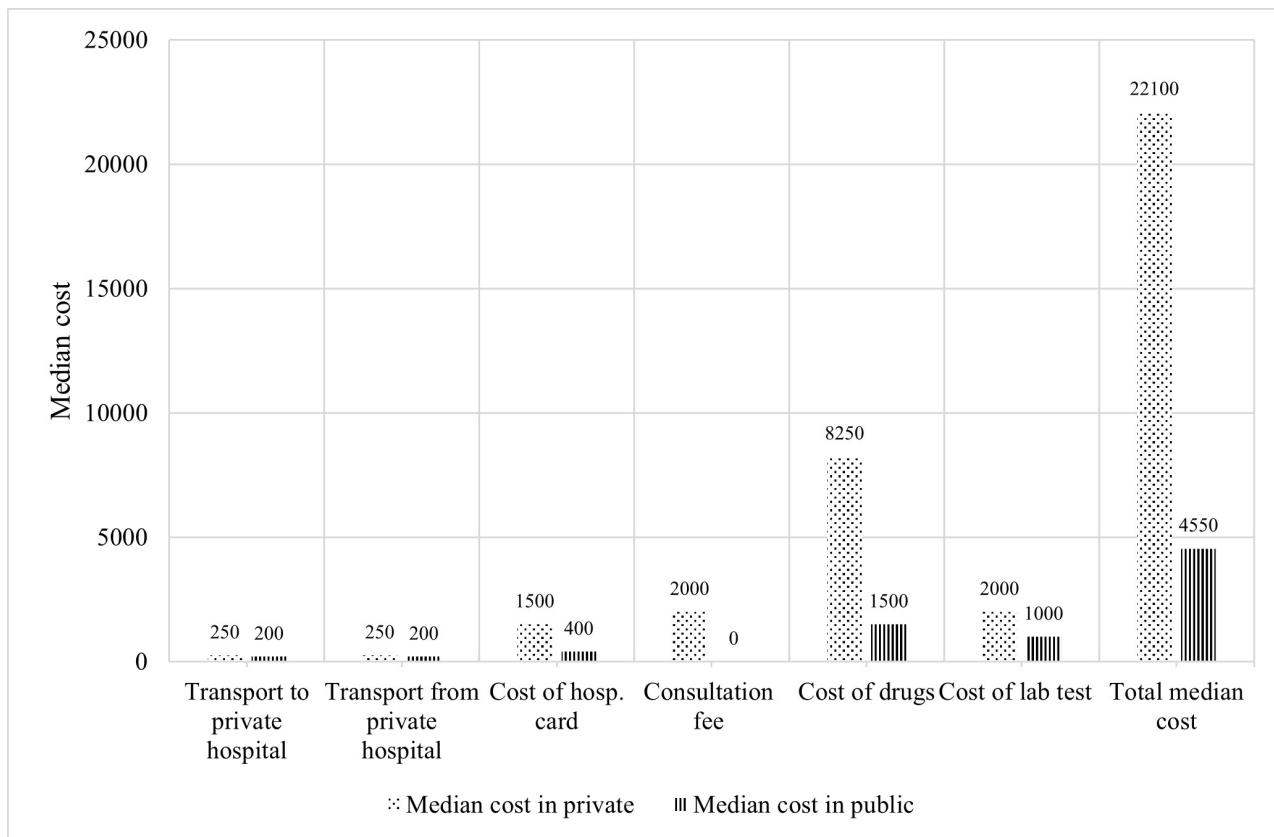
Category of costs	Cost in (*N) Min - max	Mean (SD)	Median	IQR
Transport to public hospital	0 - 1000	314 (330)	200	300
Transport from public hospital	0 - 1000	298 (308)	200	300
Cost of hospital card/ registration	0 - 800	345 (198)	400	350
Consultation fee	0 - 1000	76 (233)	0	0
Cost of drugs	0 - 100000	6074 (17530)	1500	4750
Cost of lab test	0 - 30000	2236 (5438)	1000	1850
Cost of X-ray	0 - 5000	580 (1286)	0	75
<b>Total mean cost</b>	160 - 115900	<b>9960 (21504)</b>	4550	8980

Respondents answered all questions 1 Naira = USD306 (Source: Central Bank of Nigeria, 2017).

In **Table 3**, the estimated total mean cost of treatment in a public hospital for the referral group was N9960 (USD33), with median value of N4550 (15USD). Other cost items include a consultation fee of N76 (0.24USD) and a median of 0-naira, cost of drugs stood at N6074 (20 USD) whilst the median cost was N1500 (4.9USD). The cost of laboratory test recorded N2236 (7USD) with a median cost of N1000 (3.3 USD). The highest estimated cost item in public hospital was drug followed by laboratory test.

**Figure 1** compares the total median cost of treatment in private hospital N22100 (72.2USD) with that of the public sector N4550 (15USD). The same applies to median cost of drugs, whilst the private care cost N8250 (27USD), the public care was N1500 (4.9USD). For the laboratory test, the private cost was N2000 (6.5USD) whilst the estimated public cost was half the private cost, N1000 or 3.3USD. The median cost of X-Ray and “other” median costs were zero in both categories and have therefore been excluded from the graph. Comparing **Table 2** and **Table 3** shows that the total mean cost of treatment in private hospital was N32104 or 105 USD whilst the estimated cost in the public sector was low at N9,960 or 33 USD. In both Tables, cost of drugs (N17540 or 57USD) for private expenditure and (N6074 or 20 USD) in the public sector were highest among the cost items followed by laboratory test (N3303 or 11 USD) for private expenditure and N2236

or 7USD for the public sector estimated cost. The Wilcoxon signed rank test shows that this difference in median total costs is significant ( $p < 0.0001$ ).



**Figure 1.** Compares median cost of treatment for the same health conditions of patients referred from the public system to private sector (n = 34).

**Table 4.** Self-rated financial impact of private treatment for patient group referred from public hospitals (n = 34).

Variables	f(%)
No impact	6 (18)
Moderate impact	12 (35)
Serious impact	9 (27)
Very serious impact	7 (21)
Total	34 (100)

Percentages rounded as small numbers.

As **Table 4** indicates, the degree of self-rated financial impact of private treatment is spread across the spectrum with no clear pattern. Just over half of those referred experienced no impact or only moderate impact, whilst a good number of them suffered impacts that they considered to be serious or very serious. Given the small size of the referred group in this study, that pattern must be regarded as only a tentative finding, and this is an area deserving of future research.

**Table 5.** Coping strategies for paying for private treatment by the referral group (n = 34).

Variables	F	% of all responders (out of 34)
Own money	31	91.2%
Borrowed money	9	26.5%
Sold household asset	2	5.9%
Sold family land	1	2.9%
Someone else paid	1	2.9%
Bill was reduced by doctor	2	5.9%
Total	46	

Some respondents identified more than one relevant coping strategy.

This study attempted to shed more light on the impact of referral by asking referred service users what coping strategies they used to pay for private treatments (Table 5). A majority—31 of 34 service users—said they had used their own money. However, this appears to have been supplemented in some cases by money from other sources as 9 of the 34 reported having had to borrow money. A few individuals had sold property, got assistance from another person or negotiated a reduction in the bill with the doctor.

#### 4. Discussion

This study sought to determine what private treatment cost patients when they are transferred from the public system due to physician self-referral practice. The study examined the burden of patient financial cost due to physician self-referral. Private treatment expenditures for the referral group diverted from the public sector was examined, and the estimated mean and median costs of treatment in the public system were calculated. A self-assessed financial impact of physician self-referral for the referred patient group was obtained, and the coping strategies used to pay for private treatment were also examined.

The total mean expenditure for treatment in private hospitals for all patients who were referred from the public system was higher than if they had remained in public care at a cash figure of N32,104 (Nigerian naira) (Table 2). There was a patterned increase across all individual cost items used in the analysis, so that private care always cost more than remaining in the public system. This gives rise to a suspicion that patient welfare considerations come second to profit, and that DPs are seeking to augment their public salary by charging a higher fee-for-service than would otherwise have been payable. The conclusions were identical regarding the median values with the median cost for patients who were referred from the public hospitals to private care being N22100, which is significantly higher than the median cost in public care if they had remained there ( $p < 0.0001$ ). Earlier studies support the notion that DP can drive up healthcare costs [14] [21] [25] [26].

This study did not specifically investigate why healthcare costs more in the

private sector. It might be that the dual practitioner has high recurrent capital costs to fund, such as rent, supplies, and equipment. In the private sector, prices are rarely standardised; most practitioners set their prices at their own discretion. The government could consider using measures similar to the Stark Law [39] in the United States to discourage physicians self-referring of patients from the public system because private treatments cost more and may constitute a financial burden to many patients. However, in a situation where the public sector lacks adequate facility and equipment, if it becomes indispensable to refer a patient to the private sector, such referral can be coordinated by the hospital administrators to ensure patient safety and with the consent of the service user or their carer.

The cost of treatment in the public sector was found to be comparatively low. The total estimated mean cost for all cost categories or items was N9,960 (Table 3) and the median cost was N4550. In any improved future study, it would be necessary to validate the cost variables using clinic-rated cases. The same pattern of low cost was noticed in the cost variables for both mean and median values. This result shows how much it would have cost to receive public treatment had the patients not been referred to the private sector [25] [26]. The referred patients went to the private sector for the same health conditions they presented in the public sector, which makes it easier for a comparative treatment cost analysis of the two sectors. Previous evidence shows that DP can raise healthcare costs even in the public sector, as a doctor may over-treat to gain a reputation that assists their private practice [13] [21]. In a typical “publicly funded, free at the point of service system”, the system would bear the cost of overtreatment. Such incentives do not apply in Nigeria as patients rather than the system would bear the cost of overtreatment because the main payment mechanism is FFS, even in public hospitals. Nigerian public hospitals use a standard schedule of treatment prices that makes the cost of services affordable, especially for the poor.

The cost of physician self-referral for the patient group may indicate that there is a serious or very serious financial impact for this group. Such self-referral was found to have a greater financial impact for certain individuals, which presumably are mainly the poor in the patient group. The hint that there might be a greater impact on poor patients may well have arisen from the fact that not all patients have the ability to pay for private bills, after all, given the option, they would have preferred obtaining treatment in a public hospital, where cost of treatment is much lower. Nevertheless, the general perception of quicker and timely attention in the private sector could override the issue of cost consideration among many service users who may succumb to the doctor’s referral decision outside the public sector. Nearly half of the self-referred patient group had serious and very serious financial impact due to the private bills, which shows that certain number of the patient group would always bear greater financial burden due to physician self-referral. The existing literature has scant evidence on the self-rated financial impact of physician self-referral. However, other past studies have suggested that cost was inevitably higher where there is physician self-referral [25] [26]. This is

apparently more challenging in Nigeria where an average monthly salary of a federal public servant is N99,616 per month or 326 USD [40]. This average may have masked the actual monthly net income of those in lower salary scale, who actually patronise public hospitals in Nigeria. For example, those on grade level 02 who earn N363,328 per annum or 99 USD per month [41] might bear a greater financial burden of physician self-referral.

The individuals in the patient group coped differently with paying for private treatment after they were diverted from the public system. There were six coping strategies that were used in this study: own money, borrowed money, sold household movable assets, sold family land, someone else paid and bill was reduced by the doctor. The use of own money remains the main payment strategy used in Nigeria for paying for health care [23] due to the absence of health insurance coverage. It is not surprising that people borrow to cope with paying for healthcare especially in a health system like Nigeria where healthcare financing is mostly out-of-pocket payment. It might be that some members of this group were cash-strapped at the time the physician self-referred them. This confirms studies that investigated coping mechanisms for paying for healthcare [23] [32], which found borrowing a common mechanism for coping with healthcare bills. One may speculate that borrowing is necessary as costs rise and become out of reach for some patients. There is need for the system to protect patients from physician self-referral. Therefore, the enforcement of patient referral guidelines in public hospitals would need priority attention.

A small number of the referred group sold household movable assets to pay for healthcare bills. In southeast Nigeria, where this study was conducted, it is normal for people to sell household movable assets to fund medical bills [23]. This mostly affected those who were poor, had more serious health conditions and not covered by the national health insurance. The affected patients might not have any capital that can be converted to cash and whatever marketable assets were available could be sold for cash. In other instances, as the data show, doctor can reduce the bill either on the ground that the patient is not able to pay the bills or indirectly paving the way for a future patronage. In the context of DP, the literature is scant on self-reported coping mechanisms to pay for private treatment when patients face physician self-referral, so, it is not easy to compare this finding with data from previous studies. However, some studies [32] have found that poor households had to sell household assets to meet the cost of healthcare. Therefore, protection of patients from physician self-referral practice should be an integral part of the stewardship role of the hospital management with sanctions placed on culprits unequivocally.

Additionally, a review of referral practices in public hospitals could help introduce measures to check patient referral outside of government hospitals with hospital management involvement and patient or carer consent. Also, an intramural approach is recommended where consultants and other senior medical officers could be given some private bed spaces to treat private patients in government

hospitals. This practice could help them raise extra private funds within the public system to curb the financial attractiveness of physician self-referral, but caution needs to be exercised to avoid another kind of conflict of interest. Similarly, giving patients “voice” in the public health system could go a long way in arming them with the power to raise their “voice” against any attempt to divert them without their consent or that of their family carers. Information asymmetry between patients and medical professionals has disadvantaged patients in the health market in Nigeria but the establishment of “patient voice” can be reassuring.

## 5. Conclusions

Diversion of patients from the public sector to private practice where dual practice doctors have interest could result in unnecessary financial burden on patients. The motive for this practice is not proven to be altruistic or fulfils financial interest of the self-referring physician in this study. However, public patients deserve to be rescued from this professional predatory behaviour by some dual practice doctors. There is a need to establish measures against patient diversion from government hospitals except on a strong ground of proven necessity, endorsed by the hospital administrators and agreed by the patient or their carer. The implication of this practice is the financial consequences for patients who pay exorbitant fees and are further impoverished when they are diverted to the private sector, which could have been avoided, if they were treated in the public sector. Policy measures against patient transfers are needed to curtail this unethical professional conducts and reduce undue financial burden on patients. Regulators of medical practice in Nigeria would need to consider dual practice of medical professionals a critical health policy issue deserving attention.

## 6. Limitations

In the present study, the inputs into these costs items in the public sector were estimated (self-assessed) and may not represent true costings of those items. In any improved future study, it would be necessary to validate the cost variables using clinic-rated cases. Similarly, since this study dealt with only direct costs, future research could consider including indirect costs to have a better picture of the cost burden of physician self-referral on patient. The small number of the patient group who were diverted from the public system may have affected the emergence of a clear pattern of the impact of private bill in this study. It is acknowledged that the absence of test-retest reliability or internal consistency test in the study could have introduced a measure of bias in the scores obtained. Our study found a referral rate of 8.4%, this number could have gone higher if there is an adjustment to factor in the number of females in the sample. It is one of the limitations in this study that the household sample had more females than males and reflects who was likely available at home when the researcher called to administer the questionnaire. Therefore, the skewing of the sample between male and female, to a greater extent, explains this small number of referral and with an equal sample

of both sexes, this figure could be above 10%. One of the possible solutions could be to sample an equal number of male and female subjects to see the extent of physician self-referral in each. So, there would be need for a larger sample in any future research investigating the impact of physician self-referral on patient finances. As a descriptive study, the primary aim was to make a start in mapping out the nature and dimension of the phenomenon of physician self-referral whilst opening opportunities for further studies in this area of research. We acknowledge that this could be a limitation and that exploratory design could generate further insights into the problem. Further research could also explore providers' perspective to understand reasons for this practice, whether it is altruistic or economic.

### **Author Contributions**

BSE conceptualised, designed and wrote the manuscript. MJ contributed to the statistical analysis. CO, LA, IK contributed to the writing and revision of the manuscript. All the authors have read and approved the final version of the manuscript.

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### **Institutional Review Board Statement**

Ethics approvals were obtained from the Committee on Medical and Scientific Research in a university teaching hospital in the study area (Ref: NHREC/05/01/2008B-FWA-00002458-IRB00002323) and Enugu State Ministry of Health in Southeast Nigeria (Ref: MH/MSD/EC/0181).

### **Informed Consent Statement**

Informed consent was obtained from all study participants involved in the study

### **Data Availability Statement**

The Research data used to support the findings of this study are available from the corresponding author upon request.

### **Conflict of Interest**

The authors declare that there is no conflict of interest regarding the publication of this paper.

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