ORIGINAL ARTICLE

The influence of health insurance scheme on the drug prescribing pattern in a Nigerian tertiary healthcare facility

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ABSTRACT

Introduction: Prescription medicines constitute a significant proportion of total healthcare expenditure in many countries of the world. Nonrational prescribing by healthcare providers contributes significantly to this relatively high proportion. In many developing countries of the world, a significant proportion of the population pays "out of pocket" to access healthcare, sometimes leading to catastrophic healthcare expenditure. Healthcare insurance is a form of healthcare financing that promotes judicious use of the resources and ensuring the cost-effectiveness of interventions through the use of affordable drugs. The main objective of this study was to compare concurrently the prescribing practices in the general outpatients' clinic (noninsured patients) and the National Health Insurance Scheme (NHIS) clinic (patients with insurance coverage). **Materials and Methods:** A cross-sectional study was conducted in the general outpatients' and the "NHIS" clinics of the Ekiti State University Teaching Hospital, Ado-Ekiti, South-western Nigeria. The medical records of patients, who attended these two clinics between the 1st March and 30th June 2014 were retrieved and used for the study. **Results:** The average number of prescribed drugs for patients attending the general outpatients' clinic was 3.9 ± 2.0 while that from the NHIS clinic was 4.1 ± 1.6 (P = 0.24). Prescribing by generic names was done in 48.2 ± 23.8% and 45.8 ± 22.9% of prescriptions from the general outpatients' and NHIS clinic, respectively. Percentage of encounters with antibiotics was 49.4% and 33.6% of patients who attended the NHIS and general outpatients' clinics, respectively. **Conclusion:** There was a trend to having more medicines prescribed and more encounters with antibiotics among patients enrolled under the health insurance scheme.

Key words: Drug prescription, health insurance, outpatients clinic, rational use of medicines

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INTRODUCTION

Prescription medicines constitute a significant proportion of total healthcare expenditure in many countries of the world.[1,2] Report from many European countries shows that prescription medicines account for between 10.4% and 27.6% of the total healthcare expenditure.[3,4] Nonrational prescribing by healthcare providers contributes significantly to this relatively high proportion. In many developing countries of the world, a significant proportion of the population pays "out of pocket" to access healthcare, sometimes leading to catastrophic healthcare expenditure.[5,6] This is at variance with the situation in many developed countries where healthcare insurance covers a large chunk of their population.[7,8] Health insurance is a form of healthcare financing where financial

Access this article online

Quick Response Code:

Website: www.nigeriamedj.com

DOI: 10.4103/0300-1652.170378

How to cite this article: Fadare JO, Adeoti AO, Aina F, Solomon OA, Ijalana JO. The influence of health insurance scheme on the drug prescribing pattern in a Nigerian tertiary healthcare facility. Niger Med J 2015;56:344-8.

resources are pooled together and shared to alleviate the burden of healthcare costs and financial risk of the people. Additional objectives of healthcare insurance are judicious use of the resources and ensuring the cost-effectiveness of interventions through the use of affordable drugs. In Nigeria, the National Health Insurance Scheme (NHIS) was introduced in 2005 to cater for the healthcare needs of the populace.[9,10] Initially, the coverage of the NHIS was limited to workers in the formal sectors but has now been expanded to include people in the informal sector of the economy through community-based schemes.[11] The scheme has a uniform coverage for all subscribers who pay only 10% of the total cost of medications as co-payment.[12] In many hospitals in Nigeria, a dedicated outpatients' clinic has been created to attend only to patients registered under the NHIS. Prescription audits have been conducted in different settings in Nigeria among patients that "paid out of pocket" revealing various forms of nonrational use of medicines.[13,14] A study conducted in the North-eastern part of Nigeria looked at the prescribing practice in an outpatients' clinic attending only to patients registered under the NHIS while another Nigerian study compared the prescribing practices in a military hospital before and postintroduction of the NHIS.[15,16] To the knowledge of the authors, there is no study comparing the prescribing pattern in the general outpatient department of the hospital (where "out of pocket" payment is the norm) with that in the "NHIS" clinic concurrently. This type of comparison will enable us assess the impact of healthcare insurance on prescribing practices in this facility and may serve as a template for future interventions.

The main objective of this study was to compare concurrently the prescribing practices in the general outpatients' clinic (noninsured patients) and the NHIS clinic (patients with insurance coverage).

MATERIALS AND METHODS

This was a cross-sectional study conducted in the general outpatients' and the "NHIS" clinics of the Ekiti State University Teaching Hospital, Ado-Ekiti, South-western Nigeria. The medical records of patients, who attended these two clinics between the 1st of March and 30th June 2014 were retrieved and used for the study.

Study setting

The hospital is one of the two tertiary healthcare facilities in Ekiti State that provide medical care for its populace and that of the neighboring states. The hospital is well staffed with consultants in various fields of family medicine, internal medicine, surgery, obstetrics and gynecology, psychiatry, community medicine, and pediatrics. The general outpatients' department (also known as family medicine) is well staffed with its components of nursing staff, house officers, medical officers, registrars, and consultants. The general outpatients' clinic is usually the first point of contact for patients brought directly from home or referred from other healthcare facilities. This department is also responsible for running the "NHIS" clinic that attends to patients with insurance coverage. Patients aged 18 years and above are usually attended to at the general outpatients' clinic while the NHIS clinic offer services to both adult and children because of its peculiar nature.

Selection of cases

The attendance registers of both clinics were retrieved, and the medical records of 50 patients were selected monthly for the period of the study using a regular interval ratio. The information retrieved from the case notes included bio-demographic data, working diagnoses, a list of prescribed drugs, and their routes of administration. The following drug use indicators were assessed using the WHO guidelines on investigation of drug use in health care facilities:[17] Average number of drugs per prescription, percentage of encounters with antibiotics, percentage of drugs prescribed by generic name, percentage of encounters with injections, and percentage of drugs prescribed from essential drug list. The National Essential Drug List of Nigeria (5th edition) was used to assess prescription of nationally relevant essential medicines.

Statistical analysis

Data collected were analyzed using Statistical Package for Social Sciences version 17 software (IBM Corporation, Armonk, NY, USA). Results are expressed as means, frequencies, and percentages. Comparison of means and frequencies was done using Student's *t*-test while Chi-square was used to determine the level of significance of groups of categorical variables with $P < 0.05$ considered as significant.

Ethical consideration

Ethical approval was obtained from the Hospital Research Ethics Committee before the starting the study.

RESULTS

Medical records (including copies of prescriptions) of 217 and 237 patients were selected from the general outpatients' and NHIS clinics, respectively. The distribution of patients according to sex is shown in Figure 1. Malaria was the most frequently diagnosed disease in the two clinics followed by diseases affecting the respiratory, cardiovascular, and gastrointestinal systems [Figure 2]. The mean age of patients attending the general outpatients' clinic was 45.0 ± 17.1 years while that of the NHIS clinic was 32.9 ± 16.1 years, a statistically significant difference ($P < 0.0001$). The average number of diagnoses was 1.57 ± 0.6 and 1.59 ± 0.75 in patients attending the NHIS and general outpatients' clinics, respectively ($P = 0.75$). The average number of prescribed drugs for patients attending the

general outpatients' clinic was 3.9 ± 2.0 while that from the NHIS clinic was 4.1 ± 1.6 (P = 0.24).

About a third of patients from both clinics had more than four medications prescribed. Figure 3 shows the grading of a number of prescribed drugs according to the number of prescribed drugs. The classes of drugs prescribed for patients from the two clinics are shown in Figure 4. Prescribing by generic names was done in 48.2 ± 23.8% and 45.8 ± 22.9% of prescriptions from the general outpatients' and NHIS clinic, respectively. A comparison of the difference between the two means did not show any statistically significant difference (P = 0.27). Percentage of encounters with antibiotics was 49.4% and 33.6% of patients who attended the NHIS and general outpatients' clinics, respectively. Percentage of encounters with injections was 9.3% and 7.4% of patients from the NHIS and general outpatients' clinics, respectively.

Prescribing from the Nigerian national essential drug list was done in 70.4% and 71.4% of all cases from the general outpatients' and NHIS clinics, respectively. Table 1 summarizes the comparison between the two groups of patients.

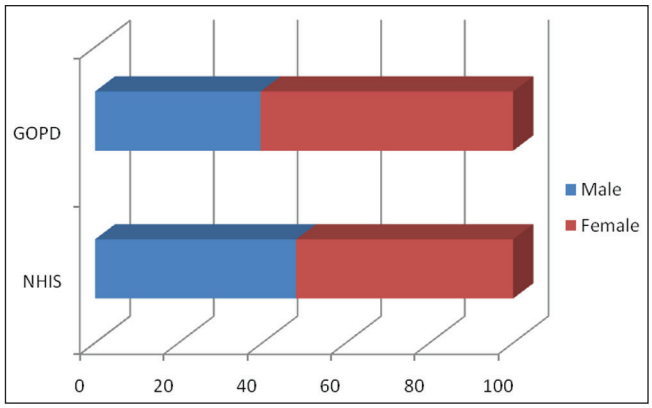

Figure 1: Distribution according to sex

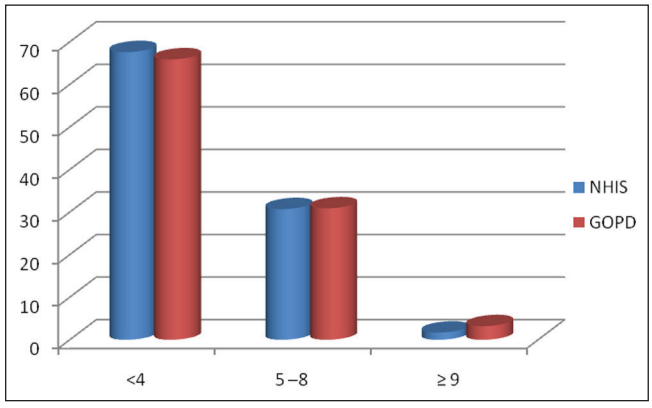

Figure 3: Classification according to number of prescribed drugs

DISCUSSION

The prescribing pattern in the two clinics was not significantly different in this study. The lower mean age of patients from the NHIS clinic is due to the fact that both adult and pediatric patients are attended to in the NHIS clinic whereas only adult patients are seen in the general outpatients' clinic. The mean number of prescribed drugs found in the general outpatients' and NHIS clinic 3.9 and 4.1, respectively. A comparison of drug prescribing practices during a pre- and post-insurance era in a Nigerian hospital found the mean prescribed drugs to be 3.0 and 2.6, respectively.[16] Okoro and Shekari in a study conducted in the NHIS clinic of a tertiary healthcare facility in the North-east Nigeria recorded a mean number of prescribed drugs to be 3.4.[15] Results from similar general prescription audits conducted in Nigeria showed average number of prescribed drugs between 3.0 and 4.0.[13,18,19] The difference between the observed values may be due to the status of healthcare

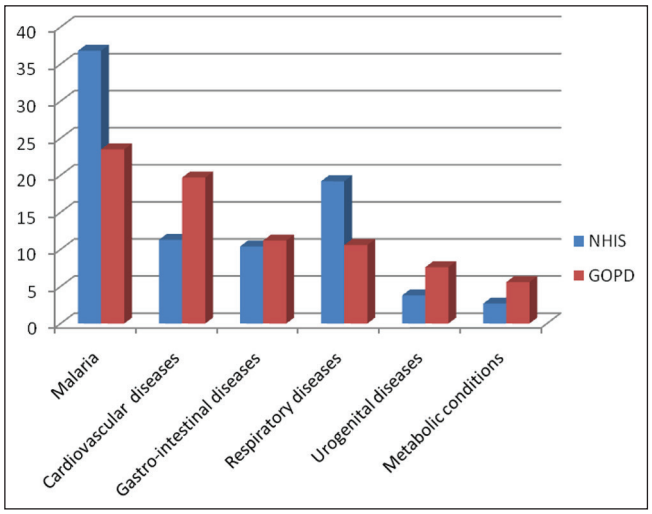

Figure 2: Comparison of diagnosed conditions

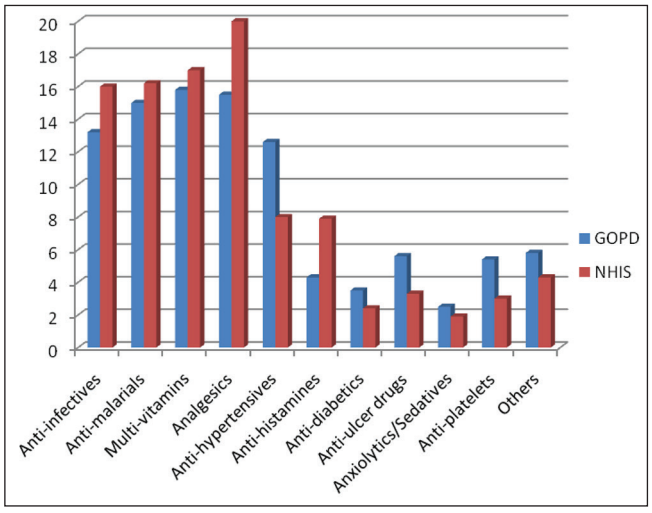

Figure 4: Classes of prescribed drugs

Table 1: Comparison of the WHO core prescribing indicators between the two groups of patients

Indicator	NHIS	General outpatients' clinic	Significance (T test) P value
Total number of prescribed drugs(Mean)	4.1±1.6	3.9±2.0	0.24
Percentage of encounters with antibiotics	49.4%	33.6%	0.0002*
Percentage of prescription by generic name	45.8±22.9	48.2±23.8	0.27
Percentage of encounters with injection	9.3%	7.4%	0.35
Percentage of prescription from Essential Drug List	71.4%	70.4%	0.82

*With statistical significance

facilities where these studies were carried out; some of the studies were conducted in secondary level healthcare facilities. In a Chinese study comparing drug prescribing practices among two groups of patients (with and without community health insurance), the mean number of prescribed drugs observed was 4.6 and 3.1, respectively.[20]

Polypharmacy has several definitions, but that which defines it as the prescription of more than four medications is the most commonly used.[21,22] Polypharmacy has serious implications on the health and financial state of patients as it may lead to the occurrence of adverse drug reactions and increased healthcare costs.[23,24] The proportion of patients who had more than four drugs prescribed in this study was 32.4% and 34.1% in the NHIS and GOPD clinics, respectively. This is more than 16.7% and 15.6% observed during the pre- and post-insurance era in a Nigerian military hospital.[16] Our hospital evolved from a secondary health care center to tertiary care center less than a decade ago as most doctors are yet to adapt to the new modalities of patients' care. More so, the same group of doctors from the general outpatients' department also attends to patients in both clinics.

Nonrational prescription and use of antibiotics have been associated with increased antimicrobial resistance and healthcare expenditure.[25,26] The likelihood of having an antibiotic prescribed was higher among patients who were seen at the NHIS clinic (49.4% vs. 33.6%). Okoro and Shekari in a study conducted at a health insurance clinic in the North-eastern part of Nigeria found that 56.2% of all encounters had antibiotics prescribed. The percentage of encounters with antibiotics was comparable to other studies conducted in regular outpatients' clinics in other parts of Nigeria; 34.4% and 35% in studies conducted in the Kano, North-west Nigeria and Lagos, South-west, respectively.[16,19] Sun *et al.* also found a higher number of encounters with prescribed antibiotics (72.4%) in patients who had community health insurance when compared to those without (59.3%).[20] This relatively high rate of antibiotic prescription in patients from the NHIS clinic may be due to patients' demand for the drugs and the fact that only 10% of the medication fees are paid as co-payment.

The low rate of injections among the two groups of patients is in keeping with recent trends; the percentage of encounters with injection use in an earlier cited Nigerian study fell from 23.9% (2009) to 8.9% (2012).[16] The relatively high prevalence level of diseases such as hepatitis B and HIV infection among the populace has re-enforced the need for safe injection practices among healthcare practitioners in Nigeria.

Prescribing by generic name has been identified as a way of reducing health care costs and makes it more cost-effective.[27,28] Prescribing by generic name was done in 48.2% and 45.8% of prescriptions from the general outpatients' and NHIS clinic respectively; slightly higher than 42.7% and 43.8% found in earlier Nigerian studies.[18,19] However, our values are lower than the 51.5% found in an NHIS clinic in Northern Nigeria and 96.1% recorded in a study conducted in China.[15,29] The concept of essential medicines was introduced to help streamline the number of drugs deployed within the healthcare system in order to improve rational prescribing and reducing healthcare costs. In this study, 70.4% and 71.4% of all prescribed medications in the general outpatients' clinic and NHIS clinic were from the Nigerian National Essential Drug List. This is close to 67.1% reported in a health insurance clinic of a teaching hospital in the North-east Nigeria.[15]

CONCLUSION

The prescribing practice of physicians is affected to some extent by the health insurance status of their patients as has been shown in this study. There was a trend to having more medicines prescribed and more encounters with antibiotics among patients enrolled with the health insurance scheme. There is a need for additional training on the rational use of medicines for all prescribers and especially those attending to this category of patients.

Implications for clinical practice and policy

The result of this study has clearly shown a trend toward more polypharmacy in patients registered under the NHIS in Nigeria. This serves as an early warning indicator of nonrational prescribing which could negate the expected economic benefits of the scheme and expose patients to the adverse effects of polypharmacy. Early interventions by the health authorities to correct this trend through training and retraining of prescribers, also, prescribing by generic name for patients under the health insurance scheme should be encouraged as this will help in achieving the economic objectives of the NHIS.

Study limitations

This study may have issues with the accuracy of data since we used the past medical records of patients.

Acknowledgment

We are grateful to the staff of medical records of the hospital for their assistance in retrieving the patients' records.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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