DRUG LABELS AND ADVERTISEMENTS: EXTENT OF USE AS SOURCES OF DRUG INFORMATION BY HEALTHCARE PROFESSIONALS IN LAGOS, NIGERIA

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ABSTRACT

Drug labels and advertisement are essential tools through which useful information that influence choice and provide instruction on safe and effective use of drug products are conveyed to healthcare professionals and patients. The aim of this study was to evaluate the extent of use of labels and advertisement as sources of drug information by healthcare providers in Lagos, Nigeria. In a cross sectional survey of healthcare providers, a Likert-type questionnaire was used to evaluate the respondent's sources of drug information and their extent of use. Summary scores ≥ 3.0 (mid-point) on the Likert scale for each identified source of drug information shows a greater extent of use compared to lower scores. Inferential analysis was done by calculation of student t-test and one-way ANOVA as appropriate. P-values less than 0.05 were interpreted as significant. The internet (3.91), professional colleagues (3.96) and Emdex (3.89) were found to be the most frequently used sources of drug information. Usage of literature inserts/drug labels (3.28), advertisement medium such as product launch (3.59) and medical journals (3.53) were found to be above the mid-point in terms of usage. Males are more likely to use physician desk reference (P=0.0082) and Professionals with years of experience less than five are most likely to rely on labels and drug advertisement (p=0.0006).However, Doctors and pharmacists appear to significantly use the internet as a source of drug information than Nurses (P=0.0018).Healthcare professionals use Commercial and non-commercial sources of drug information; the extent of use of drug labels and adverts is above average hence adequate government policy and regulation should be implemented to ensure they have appropriate, relevant, and up to date information to assist healthcare professionals take informed and cost effective patient care decisions.

Keywords: Drug Labels, Advertisement, Drug information, healthcare providers, Nigeria

INTRODUCTION

Withthe variety of drug and complexity of drug regimen, healthcare professionals (doctors, nurses and pharmacist) who work with patients, caregivers and members of the public, need access to unbiased, relevant and up to date information to make healthcare decisions. Manufacturers' drug labels and advertisements have been cited as information sources but the extent of their use in resource limited environment like Lagos is not known. Drug labels and advertisements are channels through which useful information that influence choice of drugs and instructions on proper use of medicines are conveyed to the end users. A label means a display of written, printed or graphic matter upon the immediate containers of the drug products and other printed matter such as outer wrapper, carton or leaflet associated with the packaging. "Labeling" is defined as all labels and other written, printed, or graphic matter upon any article or any of its containers or wrappers, or accompanying such article. The term 'accompanying' is interpreted to mean more than physical association with the product which extends to posters, tags, pamphlets, circulars, booklets, brochures, instructions, websites, etc.[1,2] Educational and persuasive activities of pharmaceutical industries to induce prescription, supply, purchase and use of medicines are termed drug promotion. Drug advertising as an aspect of drug promotion is communication through the media paid for by an identified sponsor to encourage, persuade or manipulate an audience, viewers, readers or listeners to continue with or take some new action. For medicinal product advertisement, the media may include electronic (television, radio, online), print (newspaper, bulletins), and out-of-homes media (billboards, taxi cabs, vehicle, branding, posters, handbills). The Pharmaceutical industry provides valuable and important service by making healthcare product available, but it is also a business and profit depends heavily on marketing. Advertisement is a

drug promotion activity is a key factor in driving sales volume and sustaining the pharmaceutical industry. A large number of healthcare professionals get their information from commercial sources and studies have shown that drug promotion as a source of drug information can lead to irrational drug use such as over prescribing and other poor prescribing habits where medicine use and product sales are given priority over public health concerns. This leads to an increased risk of adverse effects and higher healthcare costs. Prescribers often find themselves torn between patient needs and healthcare priorities on the one hand and promotional influences on the other.[3] The accuracy and usefulness of drug promotion has been widely debated, research evidence has also shown that promotional leaflets and brochures supplied by pharmaceutical representatives often contain information that is incomplete, unreliable and effectiveness may often be exaggerated.[4] Expenditure on medicines' advertisement have been reported to be more than what is spent on research and development because evidently drug adverts increase sales and pharmaceutical companies exploit this advantage.[5]

Physicians mostly acquire information about prescription drugs from colleagues, medical journal articles and other professional sources.[6] The intent of labeling and advertisement of over-the counter products (OTC) is to promote safe, effective and responsible self-medication, while labeling and advertisement of prescription-only medicine is targeted towards the healthcare professionals and the primary purpose is to give quality information that is needed to prescribe, dispense and administer drugs appropriately.

Dispensing errors such as the wrong drug and wrong dose has been associated with poor labeling. Inadequate labeling can also lead to errors during prescribing, ordering and medicine administration which has been known to contribute to adverse drug events. Annually, medication errors cost between $5.8

billion and $27.3 billion worldwide according to the world alliance for patient safety in 2010. In the United States alone, an estimated 7, 000 people die every year due to inappropriately dispensed drugs. A report published by the institute of Medicine (IOM) in July 2006 revealed that labeling and packaging issues are the cause of 33% of all medication errors and 30% of fatalities from medication errors.[7] Drug labels play an important role as a source of information for physicians when making prescribing decisions.—[8] Some researchers debate the usefulness of labeling to the healthcare professionals especially with respect to off-label use.[9-10], Overall, drug labels significantly affect prescriptions and consequently health outcomes.[11-13]

Medicine regulatory authorities as part of their mandate require that drug labels be balanced, not misleading, providing scientifically accurate and clear instruction to health care practitioners for prescription drugs and to consumers for over-the-counter drugs and supplements. Advertising can affect prescribing.[3] Medicine labeling and advertising should be designed for the end users; that is, the provider in the clinical environment and/or the consumer in mind in line with international best practices. The National Agency For Food and Drug Administration and Control (NAFDAC) provides that all advertisements and labels for any prescription drug shall present a true statement of summary information on identity, safety, use and a brief summary on side effects, contraindications, and effectiveness. The regulation and control of medicine labels and advert is to support and encourage the improvement of patient care through the rational use of medicinal products. Analysis of sources of information can point to opportunities for improvement of drug labeling and advertisement regulations. Therefore, the objective of this study was to investigate the extent of use of drug labels and advertisement as sources of drug information by healthcare providers (Doctors, Nurses and Pharmacists) in Lagos, South West,

Nigeria.

METHODS

Settings:
This study was carried out in Lagos, South west Nigeria. It has twenty (20) local government areas with a population of 24 million and 65% are between the ages of 15-35 years, and is often described as one of the fastest growing cities in the world. Lagos has many hospitals and medical facilities as well as registered pharmacies. The Lagos healthcare system has public and private sectors which provide medical services at the primary, secondary and tertiary levels.

The instrument:

The questionnaire used for this study consisted of two sections. The first part was to collect demographic data such as gender, profession, years of experience and age. The second section consisted of 24 sources of drug information (both scientific and nonscientific). The sources were selected based on literature evidence of their use and professional experience of the researchers. The drug information sources were used to construct a likert scale anchored as follows: not at all=1, rarely=2, undecided=3, often=4 and very often=5. Respondents were to indicate how often they use each of the 24 items as a source of drug information. The instruments were tested on a sample of healthcare professionals (Doctors, Nurses and Pharmacists) who are not part of the study sample.

Sample:

The sample used in the study are healthcare providers (Doctors, Nurses and Pharmacists) who are practicing in Lagos and have given their consent to participate in the study. Sample size was determined with the aid of Raosoft sample size calculator to be 500 at 95% confidence interval with a margin of error of 4.33%[14]

Data collection:

A list of all Pharmacists, Doctors and Nurses with the address of their practice location in Lagos metropolis was obtained from their respective professional bodies. Using a lottery technique, list of those to approach for participation was drawn up. The workplace of the selected participants was then visited to administer the questionnaire. Where consent was not granted, the next on the list was approached for recruitment. Effort was made to ensure completion of the items at the point of administration. Where immediate response was not possible, several attempts were made to collect the questionnaire within the following two months.

Data analysis:

The usable copies of the retrieved instruments were coded, entered into Microsoft excel and cross-checked for accuracy before sorting and calculation of frequencies, means and standard deviations. The data was then loaded into SPSS 21.0 (SPSS Inc., Chicago, IL) for descriptive statistics, calculation of Cronbach alpha and factor loading. Items like United States and British Pharmacopoeia (USP and BPC) were deleted from the analysis because their factor loading was less than 0.4 and thus failed to contribute adequately to the summary score of the instrument. A likert summation of scores was employed in the second section of the questionnaire. The mean score of each of the 24 items were calculated on a scale of 1 to 5 with a mid-point of 3 such that a score greater than 3 indicates a high probability of use of the item as a source of drug information.

Inferential analysis was done to explore the relationship between demographic factors and extracted components with the aid of Graphpad Instat 3.0 by calculation of student t-test and one-way ANOVA as appropriate. P-values less than 0.05 were interpreted as significant.

RESULTS

Six hundred (600) questionnaires (in order to take care of non-responders) were distributed out of which 521 usable responses were returned giving a response rate of 86.83%. Of the 521 participants, 280 (53.7%) were males and the rest were females. Majority of the subjects were doctors (250, 48%) while pharmacists were 200 (38.4%); the rest were nurses. About 48% of the participants were aged 35-54 years and about 25% (132) and 24% (123) of respondents had 5-9years and greater than 20years experience respectively. <See table 1>.

The reliability of the questionnaire as determined by Cronbach alpha is 0.75 for the 24 items with a factor loading range of 0.4 to 0.87.

Table 2 presents the questionnaire items (sources of drug information) from which health care providers obtain drug information with mean scores that gives a measure of their extent of use. The items are listed according to the five (5) extracted components. Three of the components have a mean subtotal score greater than the midpoint of 3.0. The internet (3.91), professional colleagues (3.96) and Emdex (3.89) are the most frequently used sources of drug information, while, literature inserts/drug labels (3.28) and medicines advertisement media such as product launch (3.59) and medical journals (3.53) clearly have a score above 3.0 thus showing an above average extent of usage. Apart from scientific sources of advertisement, billboards, radio, television and newspaper had a score below the midpoint. Most of the commercial media of advertisement are extracted in component 2 with a sub mean total score of 3.44. A significant difference exists between the different components (P<0.0001) extracted; this indicates a difference in the extent of usage of the different sources of drug information.

Table 1: Demographic factors of respondents (N=521)

Variable	Number responding	Percentage
Profession		
Doctor	250	48.0
Pharmacist	200	38.4
Nurse	71	113.6
Age(years)		
<25	57	10.9
25-34	168	32.2
35-44	143	27.4
45-54	105	20.2
≥55	48	9.2
Years of experience (years)		
<5	108	20.7
5-9	132	25.3
10-14	92	17.7
15-19	66	12.7
≥20	123	23.6
Sex		
Male	280	53.7
Female	241	46.3

Table 2: Factor loading and mean usage score of drug information sources for Healthcare Professionals (N=521)

Item	Factor loading	Mean ± SD
Component 1:		
SMS	0.597	1.90 ± 1.08
Neighbours	0.767	1.73 ± 1.08
Daily Newspaper	0.659	2.02 ± 1.15
Television	0.779	2.34 ± 1.35
Radio	0.722	2.15 ± 1.24
Family Members	0.712	1.74 ± 0.99
Drug labels/Literature Insert	0.507	3.28 ± 1.30
Drug Hawkers	0.667	1.52 ± 0.95
Bill Board	0.724	2.05 ± 1.17
Sub-mean total		2.08 ± 1.14
Component 2:		
Handbills	0.400	2.81 ± 1.13
Medical Journal	0.574	3.53 ± 1.17
Professional Colleagues	0.509	3.96 ± 0.92
Product Launch	0.711	3.59 ± 1.28
Recommendation from Consultant	0.87	2.87 ± 1.28
Sales Rep	0.464	3.67 ± 1.17
Information from Scientific Conference	0.723	3.67 ± 1.17
Sub-mean total		3.44 ± 1.16
Component 3:		
Pharmacist	0.664	3.22 ± 1.36
Physician Desk Reference	0.634	2.19 ± 1.30
Martindale Drug Reference	0.758	2.16 ± 1.33
Pharmaceutical Journal	0.609	2.99 ± 1.47
Sub-mean total		2.64 ± 1.36
Component 4:		
Emdex	0.750	3.89 ± 1.13
BNF	0.752	3.66 ± 1.23
Textbooks	0.533	3.54 ± 1.14
Sub-mean total		3.70 ± 1.17
Component 5:		
Internet	0.729	3.91 ± 1.04
Sub-mean total		3.91 ± 1.04

Table 3: Relationship between demographic factors and sources of drug information used by Healthcare providers

Variable	Frequency	1	2	3	4	5
Sex						
Male	280	2.06 ± 0.77	3.41 ± 0.65	2.75 ± 1.02	3.64 ± 0.86	3.89 ± 1.07
Female	241	2.11 ± 0.88	3.48 ± 0.73	2.51 ± 1.04	3.77 ± 0.84	3.93 ± 0.99
P-value		0.4895	0.2475	0.0082	0.0826	0.6599
Age(yrs)						
<25	57	2.44 ± 0.89	3.62 ± 0.89	2.63 ± 0.96	3.53 ± 0.89	4.00 ±0.94
25-34	168	2.10 ± 0.91	3.46 ± 0.66	2.44 ± 0.97	3.67 ± 0.78	3.99 ± 0.99
35-44	143	1.89 ± 0.72	3.38 ± 0.69	2.58 ± 1.11	3.67 ± 0.93	3.78 ± 1.12
45-54	105	1.99 ± 0.66	3.56 ± 0.63	3.02 ± 0.97	3.87 ± 0.85	4.02 ± 0.99
-	48	1.95 ± 0.77	3.52 ± 0.65	2.69 ± 1.06	3.69 ± 0.76	3.71 ± 1.07
P-value		0.0003	0.1347	0.0003	0.0293	0.1525
Profession						
Doctor	250	1.68 ± 0.80	3.67 ± 0.56	2.08 ± 1.03	3.77 ± 0.84	4.01 ± 0.91
Pharmacist	200	2.34 ± 0.65	3.16 ± 0.70	3.22 ± 0.75	3.78 ±0.83	3.94 ± 1.10
Nurse	71	2.75 ± 0.60	3.45 ± 0.78	2.98 ± 0.61	3.19 ± 0.81	3.52 ± 1.18
P-value		0.0001	0.0001	0.0001	0.0001	0.0018
Years of experience (yrs)						
<5	108	2.33 ± 0.80	3.78 ± 0.82	2.79 ± 0.85	3.44 ± 0.76	3.92 ± 1.01
5-9	132	2.14 ± 0.89	3.46 ± 0.65	2.54 ± 1.03	3.65 ± 0.94	3.92 ± 1.11
10-14	92	1.77 ± 0.77	3.49 ± 0.68	2.34 ± 1.12	3.81 ± 0.84	3.73 ± 1.06
15-19	66	1.91 ± 0.79	3.52 ± 0.68	2.55 ± 1.06	3.78 ± 0.78	4.06 ± 1.01
	123	2.12 ± 0.75	3.40 ± 0.63	2.89 ± 1.04	3.85 ± 0.85	3.95 ± 0.98
P-Value		0.0001	0.0006	0.0007	0.0025	0.3624

Table 3 shows the relationship between demographic factors and sources of drug information used by health care providers. Males are more likely to use pharmaceutical medium of drug information (component 3) such as physician desk reference (P=0.0082) while no significant differences exist with other components. Components 1 and components 2 contain items that are related to drug advertisement and labels.

Those aged 34 years and below are most likely to use nonscientific advertisement medium as a source of drug information (component 1; P=0.0003). Those aged 45-54 years are more likely to use pharmaceutical medium and known most utilized medium (component 3; p=0.0293) of drug information like asking a pharmacist, Emdex, textbooks, Martindale and BNF more than others.

Nurses use nonscientific medium, drug labels and drug advertisement more than doctors and pharmacists (component 1; p=0.0001). Doctors use scientific medium and the internet (p=0.0001) more than others while pharmacist use pharmaceutical and already known commonly used drug information sources more (components 3 and 4; p=0.0001).

Those with less than 5years of experience are most likely to rely on the media of labels and drug advertisement (p=0.0006). Those with 20 years' experience (or greater) use pharmaceutical medium and known most commonly utilized sources of drug information more than others (P=0.003). However, Doctors and pharmacists appear to significantly use the internet as source of drug information than Nurses (P=0.0018).

DISCUSSION

Healthcare providers seek drug information in response to needs or gaps in their knowledge. From this study, drug labels and advertisement/promotional activities are sources of drug information used by healthcare providers, though they

also utilize other sources such as journals, literature inserts, textbooks, daily newspapers, handbills, Television, Radio, internet, and professional colleagues, pharmaceutical sales representatives amongst others; which have also been cited as sources of drug information in previous studies. These are commercial media and they seek to promote medicine use and sales. These findings are similar to that from a previous study which reported that a large number of healthcare professionals get information from commercial sources.[3] This study has indicated that the extent of use of drug labels as sources of drug information by healthcare providers is above average which implies that labels play a significant role in healthcare decision making. A number of healthcare professionals get medicine information from commercial sources and doctors rely on commercial sources of drug advertisements such as medical journals and sales representatives for prescribing information.[6,19-21]

This study has indicated the extent of use of drug labels as sources of drug information by healthcare professionals'. Decisions may be made during prescribing, dispensing and counseling which appears to agree with findings from previous studies where a reliance on drug labels by physicians and other members of the healthcare profession has been established.[22,23]

Similarly, this study indicates that the nurses use drug labels, advertisement and nonscientific sources of drug information more than other health professionals.[17,24] This places the nurses at a risk of being exposed to biased information; because of the critical role they play in the healthcare system and their long interface time with the patient, it is imperative that their information sources be of good scientific quality with a high level of accuracy.

The pharmacists as part of their professional responsibilities play a critical role in the provision of information on drugs to other healthcare professionals. The pharmacist is easily accessible and has been recognized asa trusted source for drug information. Findings from this study indicates that they seem to rely more on well-known and established sources of drug information than any other profession, this is not unexpected as they have been trained to be the custodian of medicines. From this study, Essential medicine index (Emdex), British National Formulary and Textbooks are utilized sources of drug information by Pharmacists in consonance with a previous study.

Years of practice experience is a significant factor that influences the choice of source of medicine information, respondents with less than 5years experience tend to rely on commercial and non-commercial sources of drug information. This may constitute a major challenge as conflicting sources of information may lead to poor decision making by younger professionals. It is therefore important that training on drug information sources should be reinforced as part of their professional exposure.

Pharmacists and doctors seem to significantly use the internet as a source of drug information than nurses. This can be attributed to the availability and ease of access to the internet and the variety of information available. However, Nurses' use of the internet as a source of drug information appears to have increased over the years professionals, this may be due to the general increase in internet use, popularity and accessibility.[17,24]

The identification of labels and advertisements as frequently used sources of drug information by healthcare professionals exposes the need to have a stringent and proactive regulation and control by NAFDAC, the agency mandated to regulate and control drug labels and advertisement in Nigeria. A critical appraisal of the effect of labeling and advertisements play a significant role in the rational use of drugs as a means of protecting and promoting public health. Regulations should therefore seek to enforce accurate and unbiased presentation of medicines information. The findings from this study underscores the need for the regulatory authority, NAFDAC, to expand the scope of labelling and advertisement regulations to include more elements in the regulation to meet up with international best practices to ensure patient safety and better health outcomes.

CONCLUSION:

Healthcare providers use many different sources to get drug information, including drug labels and advertisements, though not the most utilized sources; extent of their use has been established to be above average. Those aged 34years and below, nurses, and those with less than 5 years of work experience are most likely to use drug adverts and labels as sources of drug information. Doctors use more scientific medium of drug advertisement as sources of drug information than other healthcare providers. These results point to the need to update regulations or policy that can improve the quality of drug advertisement and labeling information to safeguard the health of the public.

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