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Drug distribution and utilization: a community-based study

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Abstract
This study aimed at assessing channels of drug distribution and utilization in some communities in Edo State Nigeria. Two research methods were used. The first involved a house-to-house survey, using updated maps, household listing and numbering of the 2006 National Population and census figure. The second method involved in-depth interviews and focused group discussions among stakeholders in the community, using a topic guide. Collected survey data were processed with the aid of a computer and percentage frequencies were calculated. On the other hand, the qualitative data from the field notes were reviewed by the investigators according to the research theme, and where necessary supplemented by playing the recorded tape until clarity was assured. Results showed that patent medicine shops (40%) were the most sought for medication and management of common household illnesses. The reason for using the various drug distribution channels by the respondents included: hospitals, because they felt that they would receive quality care (64.8%); community pharmacies, for good quality drugs (47.8%); patent medicine shops (65.9%) and maternity (57.6%), because of accessibility and convenience. Medicines, such as paracetamol, vitamins, chloroquine were most readily stored at home. In addition, respondents believed that herbal medicines were safe, while pharmaceuticals were said to be unsafe during pregnancy. Patent medicine vendors were identified as the main sources of medication in the community. The observed inappropriate medication use patterns provide challenges for optimum patient care at the study communities, and this pattern may reflect the practice in other parts of the country.

Keywords: Drug Distribution; Drug Utilization; Community study

INTRODUCTION

Medicines play a critical role in efficient health care delivery in any country, and the availability and affordability of good quality drugs coupled with rational use is fundamental to effective health care delivery. Several factors influence medication distribution and use, including socio-cultural, economic, and the health care system (WHO, 2003, and Haaijer-Ruskamp and Hemminki, 1993). However, the National drug policy of Nigeria has as its main objective of making available at all times and in adequate dosage forms, the drug needs within the health care system (NDP, 2005).

There are several reports describing irrational drug utilization, including irresponsible self-medication by members of the public (Goodman *et al.*, 2007, Obaseiki-Ebor *et al.*, 1987, and Odebiyi and Femi-Oyewo 1990). However, irrational drug use leads to reduction in optimum benefits from

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pharmacotherapy, wastage of resources, increased treatment cost, increased risk for adverse drug reactions, and emergence of drug resistance (Ghimire *et al.*, 2009). Furthermore, numerous studies have identified patent medicine shops as the first point of call in the management of common household illnesses, especially among the rural poor (Okeke *et al.*, 2006, Goodman *et al.*, 2007, and Okeke and Okeibunor, 2010). However, what is not very clear is the contribution of the different drug distribution channels in medication supply at the community level and the reasons for using them. Studies of this nature may be important in planning effective intervention programmes, especially by the Pharmaceutical Society of Nigeria, a health professional body that is most concerned with the inappropriate medication use practices in the country (Erhun *et al.*, 2001).

We undertook a series of operational studies in some communities in Edo State, Nigeria, to understand, in broad terms, the disease profiles and drug utilization pattern from the perspective of the public health facilities, private drug outlets and the general public. The present report describes our findings from household survey of the various channels through which the community dwellers obtain their medications, and qualitative study on drug utilization among some stakeholders in the community.

EXPERIMENTAL

The study was carried out in Afuza, Ikao and Erah communities in Owan-East Local Government Area, located in Edo North Senatorial District of the state. This study was facilitated through data acquired from previous malaria awareness campaign, and disease profile and illness management study in the locality. The research theme was addressed using both community-based survey and qualitative study (in-depth interviews and focused group discussion). The study was conducted between November and December 2009, and in May 2010, respectively. The study was approved by the Ethical Review Committee of the University of Benin Teaching Hospital, the local government authority, and the local community heads.

Channels of drug distribution: Data collection was done with the aid of a questionnaire containing series of open-ended and close-ended questions. Information collected included various sources of medication by the community dwellers and the reasons for using them. Supervisory and enumeration areas (SA and EAs) from the 2006 national housing and population census figures were used for the study. Prior to initiation of the data collection process, an updating of the local map, household listing and numbering exercise was undertaken. Through this exercise, we were able to list household heads and identified other competent household adults who could respond to our research questions. 497 respondents were interviewed in the course of this study, and the sample size determination was done using methods described by Cochran (1977), including 5% precision, 5% alpha, and allowing for 5% data error. Details of sampling methods and the sample size calculation have been reported elsewhere (Enato *et al.*, 2011). The investigators and four other survey assistants conducted the house-to-house interview. All information related to the research questions were entered into the Excel Spreadsheet. Thereafter, the data were sorted, and the percentage frequencies calculated.

Qualitative study: Both in-depth interviews of key informants (3), and focused group discussion (FGD) involving 15 persons were conducted. Prior to the study, a topic guide was developed by the investigators and field tested. Four major themes were covered, which included channels of medication supply at the community, home medicine storage

practices, knowledge of drug safety in pregnancy, and knowledge, perception and management of childhood malaria and diarrhoea. Both interviews and FGD were coordinated by one of the investigators (AAS), with the assistance of two other facilitators, which were drawn from the study communities. The session on FGD was organized in a neutral place in order to facilitate free discussion among the study participants. Pidgin or "Broken" English was used in the discussion in order to ensure full participation of every member of the group. To further enhance full participation of all, translations to the local language and back to Pidgin English was done by the discussants, whenever it was necessary. Thereafter, we categorized the women by assigning numbers to them, resulting in categories W1 to W15. The entire discussion was videotaped and field notes were also taken during the exercise. At the end of the exercise, the field notes were reviewed by the investigators according to the research theme. Where important information was not available or clear from the field notes, the investigators played the recorded tape until clarity was assured.

RESULTS

Channels of drug distribution in the community: We have reported details of the respondents' demography, illness profile and care seeking behaviour elsewhere. Illness was common among the respondents (Enato *et al.,* 2011). The main sources of medications by the respondents were patent medicine vendors (40%, 232/580), followed by maternity homes (24.8%, 144/580) (Table 1). The main reason for using the various drug distribution channels by the respondents are shown in Fig 1. Availability of quality medical care was the main reason for sourcing medication from the hospital (64.8%), while the main reason for using community pharmacy was because the respondents believed that they would get good quality drugs (47.6%). On the other hand, the main reason for sourcing medication from the patent medicine vendors (65.9%) and the maternity home (57.6%) was because of accessibility and convenience.

Qualitative study on drug utilization at the community: Three persons, comprising a retired nurse, community women leader, and a policy maker at the Local Government Area LGA (a supervisory counsellor for health in the LGA) participated in the in-depth interview sessions. On the other hand, 15 persons participated in the focused group discussion (FGD). The demographic profile of the study participants at the FGD were: age 29.8 ±0.12 (mean ±sd), range 23-38years, and level of education, secondary (7), primary (4) and no formal education (4). In all, four themes were covered during this session, including sources of medications in the community, home storage practices of medicines, management of childhood malaria and diarrhoea/knowledge of medication use, and perception of drug safety during pregnancy.

Sources of medications: A majority of the women said that they source their medications from patent medicine vendors, which they referred to as 'chemist', and this source also represented their first place of call whenever there was a need to treat an ailment.

"I will go to the "chemist" to buy drugs and if the sickness persists, I go to the hospital".

Only one of the discussants said she would visit the hospital first.

"*I will visit the nearest clinic first and would only go to "chemist" if I am referred from the hospital to purchase my medications that are not available at the hospital's pharmacy"*. (W7)

Yet, another respondent said that she would use herbal medicines first, and that she would only seek the assistance of a nurse if there was no relief or that the illness became severe. When queried as to why they sought

hospitals as the second or last option, they explained that it was due to the long waiting time at the hospital, coupled with the fact that they were sure of getting all their medications from the retail medicine shops. The respondents also said that despite the fact that medications they source from the "chemist" may even be more expensive, they would rather pay more than being delayed.

***Home medicine storage practice**:* All focused group discussants said they do store medicines in their homes, and they subsequently mentioned paracetamol, vitamin C, vitamin B complex, haematinics, Convulsan® (paracetamol plus chloroquine preparation), Nivaquine®(chloroquine product) as some of the medicines they store in their homes. In addition, one discussant (W6) went further to mention the device commonly used for medication storage at home by women in the community, which she called *''oporom''* in the local language, which she described as "a bowl with a cover, used by nursing mothers in the community."

Knowledge of drug use: When we sought to know their knowledge on commonly used medications, we got the following responses. The respondents mentioned that Convulsan® is used for treating malaria and convulsion; paracetamol for fever, while chloroquine for treating malaria. They went further to mention the doses of these medications in children to include "one small spoonful three times daily." However, when artemisinin was mentioned by the facilitator as an example of anti-malarial drug, the name appeared strange to them, as no one was sure of having heard of the drug name. One of the respondents went further to explain that the reason for lack of knowledge of the mentioned drug (artemisinin) was due to the fact that whenever medicines were dispensed to them, they were normally removed from the original pack into dispensing envelopes.

***Management of childhood illness**:* When asked how they recognize malaria in their children, the respondents mentioned persistent fever, "yellow vomit", whiteness of the face, and restlessness. Furthermore, when we sought their sources of treatment for childhood malaria, most respondents mentioned medicine shops, and that they would only go to the hospital when illness persists. On the other hand, respondent W15 said that she would give herbal medicine alone or mixed with "bath water" or lipton tea® as first line measure, and that she would only go to the hospital when this approach fails. Almost all respondents said they do manage childhood diarrhoea in the drug shop, while one respondent (W10) mentioned that she would first use "scent leaf" (*Ocimum grattissimum*), and that she would only go the drug shop when the diarrhoea persists. Respondent W7 mentioned that she would use metronidazole and tetracycline for childhood diarrhoea.

Table 1.0: Community drug distribution channels, Edo State, Nigeria

	n	%
Hospital	82	14.1%
Pharmacy shop	104	17.9%
Patent medicine store "chemist"	232	40.0%
Maternity home	144	24.8%
Other (12-hawkers, 1-nurse, 1-friend, 2 anywhere, 2 don't know)	18	3.1%
Total	580	100%

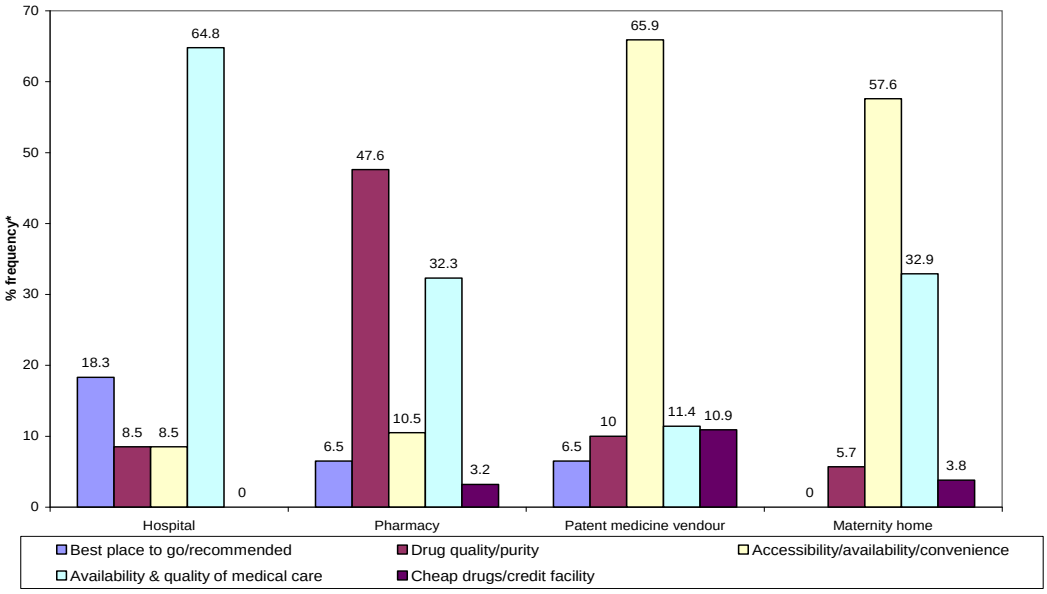

Fig 1.0: Reasons for using the various drug distribution channels, a community survey in Edo State, Nigeria * May be slightly more than 100% due to approximation to the nearest figure

Perception of drug safety during pregnancy: All the respondents were of the opinion that every medication was not safe during pregnancy and went further to mention some to include codeine, menstrogen® (estradiol plus progesterone), chloroquine, Ibuprofen. However, they believed that herbal medicines were safe during pregnancy.

Similarly, the results from in-depth interviews conducted with some stakeholders from the community were not different from those of the focused group discussion in all the four themes – sources of medication, storage practices, knowledge of drug use, and perception of drug safety during pregnancy.

DISCUSSION

Findings from this study have implication for health care, and in particular, pharmacy practice. Under the existing laws in the country, community pharmacy remains the approved channel of drug distribution, in addition to providing pharmaceutical care to their clients. On the other hand, patent medicine shops are only allowed to stock and supply over- the-counter medications, which are considered to be relatively safe. However, this study shows that patent medicine shops were the main sources of medication by the rural community dwellers. The reasons given by the respondents for using patent medicine vendors were accessibility and convenience, despite their belief of getting good quality medications from the community pharmacy.

Furthermore, the focused group discussion confirmed the results of the house-to-house survey that patent medicine shops were their main sources of medications, and this finding has also been reported in other parts of the country (Okeke *et al.*, 2006). We observed that the respondents store medicines they felt were useful to them, including medications in the management of malaria and its related symptoms, which is a major health problem in the locality (Enato *et al.*, 2011). However, the quality of medication use by the respondents was found to be poor, especially with regard to management of childhood illnesses such as malaria and diarrhoea. Similar findings have been

reported in many parts of sub-Saharan African countries (Goodman *et al.*, 2009, Enato *et al.*, 2003), where malaria and childhood diarrhoea remain public health problems. Furthermore, the respondents were unaware of artemisinins, a life saving anti-malarial drug, which in combination with other partner medications is the first line drug in the management of acute uncomplicated malaria in the country. The implication of this finding is the need for public enlightenment campaign in the community on the role of artemisinins in prevention and control of malaria. This has become imperative in the light of the ongoing Global Funds initiative-Affordable Medicine Facility-malaria (AMFm), which seeks to make artemisinin-based combination therapies readily accessible through price reduction mechanisms in the country (Parafox *et al.*, 2009).

In addition, though the respondents correctly mentioned codeine and menstrogen® as unsafe during pregnancy, the fact that they also believed that every medication was not safe and that herbal medicines could be used safely during pregnancy raises some concerns. We previously found a similar belief among antenatal clinic attendees in Edo State, Nigeria (Enato *et al.*, 2007). The implication of this is that efforts are needed to incorporate medication safety issues into antenatal health education programme in the country in order to ensure that pregnant women get factual information on medication safety during pregnancy.

Conclusion

The house-to-house survey identified patent medicine vendor as the main source of medication in the community. This finding has also been confirmed by focused group discussion. In addition, there were irrational medication use, inadequate management of childhood malaria and diarrhoea, and poor knowledge of medication safety during pregnancy. These findings provide challenges for optimum medication use and, indeed, effective health delivery at the study communities, and the pattern may reflect the practice in other parts of the country.

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