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# Alexandria Journal of Medicine

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## Original Article

# Assessing prescriber's awareness of essential medicine list, hospital drug formulary and utilization of standard treatment guidelines in a tertiary healthcare facility in North-Central Nigeria



Abdullahi Hassan<sup>a,\*</sup>, Gobir Abdulrazaq Abdullahi<sup>b</sup>, Abubakar Aisha Ahmed<sup>b</sup>, Adamu Sabiu<sup>c</sup>, Uwaya John<sup>c</sup>, Gwamna Ezekeil<sup>a</sup>, Yahaya Aliyu Ibrahim<sup>d</sup>

<sup>a</sup>Scientific Research Unit, Federal Medical Centre, Keffi, Nasarawa State, Nigeria

<sup>b</sup>Department of Community Medicine, Ahmadu Bello University, Zaria, Nigeria

<sup>c</sup>Pharmaceutical Services Department, Federal Medical Centre, Keffi, Nasarawa State, Nigeria

<sup>d</sup>SERVICOM Unit, Federal Medical Centre, Keffi, Nasarawa State, Nigeria

## 1. Introduction

Access to healthcare is a fundamental human right that has been enshrined in international treaties and recognized by governments around the world.<sup>1–3</sup> However, this fundamental right to health cannot be fulfilled when prescribers fail to comply with the Standard Treatment Guidelines (STG).

The STG is a list that contains the preferred pharmaceutical and nonpharmaceutical treatments for common health problems experienced by people in a specific health system. For each health problem, the pharmaceutical treatment is mentioned along with the dosage form, strength, average dose (pediatric and adult), number of doses per day, and number of days of treatment.<sup>4</sup> STG are used at different points of the therapeutic process. They may be used to diagnose, decide on treatment and pharmaceutical supply, and assist with adherence to the prescribed treatment thereby leading to the desired clinical outcome.<sup>4</sup>

The utilization of STG is necessary for therapeutically effective and economically efficient use of medicines.<sup>4</sup> When implemented effectively, an STG offers advantages to all stakeholder: patients (e.g., it provides more consistency and treatment efficacy), Healthcare providers (e.g., it gives an expert consensus, quality of care standard, and basis for monitoring), supply managers (e.g., it makes demand more predictable and allows for prepackaging), and health policy makers (e.g., it provides focus for therapeutic integration of special programs and promotes efficient use of funds).<sup>4</sup> For health care providers, it actually provides standardized guidance to practitioners; encourages high quality care by directing practitioners to the most appropriate medicines for specific conditions; encourages the best quality of care since patients are receiving optimal therapy; utilizes only formulary or essential medicines, so the health care system needs to provide only the medicines in the STGs; provides valuable assistance to all practitioners,

especially to those with lower level skills like Primary Health Care workers; enables providers to concentrate on making the correct diagnosis because treatment options will be provided for them.<sup>4</sup>

Presently, STG are in use in parts of the United States of America, Europe, Latin America, Asia, Africa, and the Western Pacific.<sup>4</sup> In Nigeria, the first edition of the national STGs was published in 2008 by the Federal Ministry of Health in collaboration with World Health Organization and DFID (Department for International Development).<sup>5</sup> However, Kaduna state was the first of thirty-six Nigerian states to prepare a STG for the purpose of streamlining clinical practices within its healthcare delivery system.<sup>6</sup> Its maiden edition of STG was published in 2012 in collaboration with PATHS 2 (Partnership for Transforming Health Systems 2) and DFID. Unlike Kaduna state, Nassarawa state (where our study facility is located) has no state STG but uses the national STG.

Effective implementation, however, is perhaps the greatest challenge in introducing STGs.<sup>4</sup> One of the factors impeding implementation of STGs is that they are not always available in wards/healthcare centres even when nationally produced.<sup>7</sup> Other challenges facing STGs is that of conflict of interest. Several studies have shown that conflicts of interest do affect the development process of clinical practice guidelines in several countries especially influence by pharmaceutical companies.<sup>8–10</sup> For example, the study conducted by Cosgrave et al, revealed that the prevalence of conflicts of interest among guideline development panel members was high. Financial ties to industry were disclosed by all members (100%) of the guideline development committee with members reporting a mean 20.5 relationships (range 9–33). Most of the committee members participated on pharmaceutical companies' speakers' bureaus.<sup>8</sup>

Essential Medicine List is a list of minimum medicines that are needed for a basic health-care system. The list contains the most efficacious, safe and cost-effective medicines for priority conditions.<sup>11</sup> The List is promoted by the World Health Organization (WHO) as a means to facilitate equality in access to medicines across the globe. It has been created to satisfy the priority health care needs of societies in terms of availability and affordability of

Peer review under responsibility of Alexandria University Faculty of Medicine.

\* Corresponding author.

E-mail address: [abdullahi.h01@gmail.com](mailto:abdullahi.h01@gmail.com) (A. Hassan).

<http://dx.doi.org/10.1016/j.ajme.2017.03.006>

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efficacious medicines.<sup>12</sup> A study by Bazargani et al revealed that EMLs have influenced the provision of medicines and have resulted in a higher availability of essential medicines compared to non-essential medicines particularly in the public sector and in low and lower middle income countries.<sup>13</sup> The findings revealed that the overall median availability of essential medicines for any product type was 61.5% while the availability of non-essential medicines was 27.3%. In the public sector, the median availability of essential and non-essential medicines was 40.0% and 6.6% respectively for any product type.<sup>13</sup> Availability also differ across income groups: in upper-middle income countries the availability of originator brands was considerably higher than other income groups both for essential and non-essential medicines (40% availability in both groups). Median availability of the two groups of medicines (essential vs. non-essential) differed significantly in low and lower-middle income countries for any product type of medicines (Difference = 25% and 11.3% respectively;  $p, 0.05$ ).<sup>13</sup>

One justification for including Hospital Drug Formulary (HDF) in the study is that, just like EML, it is another document that is important to both prescribers and patients in a hospital setting. It is a continuously revised compilation of pharmaceutical dosage agents with its important information which reflects the current clinical judgment of the medical staff. The hospital formulary system is a method whereby the medical staff of a hospital with the help of pharmacy and therapeutic committee selects and evaluate medical agents and their dosage form which are considered to be most useful in the patient care. It provides information for procuring, prescribing, dispensing and administration of drug under non proprietary names and instance where drugs have both names.<sup>14</sup>

Our study facility has a Drug and Therapeutics Committees (DTC) that was established in 2016. The DTC has five sub-committees (Policy and Guidelines; Pharmacovigilance and Drug Information; Drug Formulary; Drug Utilization Review and Need Quantification; Publicity) and all the sub-committees have five members, excluding Drug Formulary which has seven. The DTCs has been functioning sub optimally, which is a common problem with DTCs in Nigeria where only half (50%) of the DTCs meet regularly<sup>15</sup> and often times, this is due to lack of local expertise or a lack of incentives.<sup>16</sup>

This study was conducted to assess Prescriber's awareness of Essential Medicine List, Hospital Drug Formulary and utilization of STGs in a tertiary healthcare facility in North-Central Nigeria. It is the first of its kind in the study facility, and a search in all recognized internet search engines (using the research topics) revealed that the work has never been undertaken by any scholar.

## 2. Methods

A cross-sectional descriptive study conducted in a 300 bed tertiary healthcare facility, situated in Keffi town which is approximately 68 km from Abuja, Nigeria's federal capital territory. It is 128 km from lafia town which is the state capital of Nasarawa state. Keffi is located between latitude 8°5'N of the equator and longitude 7°8'E of the Greenwich meridian and is situated on an altitude of 850 m above sea level.<sup>17</sup> The study population comprises 70 Medical Doctors who were prescribers and within the cadre of Medical Officers, Registrars and consultants in various clinics of the hospital. A Sample size of 70 was obtained using the formula  $n = z^2pq/d^2$ . Respondents were selected using simple random sampling technique in which the staff list served as the sampling frame. Proportionate allocation technique was used to select respondents from the 3 different cadres. A structured, pre-tested self-administered questionnaire was used for data collection. The questionnaire assessed the socio-demographic profile of respondents and their Awareness of Essential Medicine List, Hospi-

tal Drug Formulary and Prescribing using generic names. Data concerning availability and utilization of STGs were gathered using a check-list. The variables in the questionnaire were selected based on rational drug use studies.<sup>18–20</sup> The questionnaire was pretested on 10 randomly selected prescribers in National Hospital, Abuja, Nigeria, a tertiary health facility with similar characteristics with the study area and 69.6 km away from study area.

The administered questionnaires were analyzed using SPSS statistical software (version 20). Ethical clearance for the study was obtained from the Human Research and Ethics Committee of Federal Medical Centre, Keffi, Nigeria (Reference number: FMC/KF/HREC/083/15).

## 3. Results

As shown in Table 1, a total of 70 respondents participated in the study. Majority (52.9%) of the respondents were in the age group of 31–40 years and were mostly males (71.4%). Most of the respondents (52.9%) were in service for 5 or less than 5 years while 34.3% were in service between 6 and 10 years. Only a small proportion of the respondents (8.6%) have served for 11–15 years while those that served for 16 or greater than 16 years constitute just 4.3%. In terms of cadre, majority of the respondents (50%) were Medical officers, while 44.3% were registrars and 5.7% were Consultants. In terms of specialty, 22.9% were in Family Medicine; 18.6% were in specialty clinics; 17.% were in Internal Medicine; 14.3% were in Obstetrics and Gynaecology; 10% were in paediatrics; 7.1% were in Accident and Emergency; 7.1% were in dental Surgery; 1.4% were in Surgery unit and 1.4% were in Ear, Nose & Throat (ENT) unit.

As shown in Table 2, majority of the respondents (51.4%) were aware of EML, 35.7% were not aware of it, while 10% were not sure. Regarding possession of an EML, majority of the respondents (77.1%) claim to have a copy of it while 15.7% do not have a copy. Only 2.9% were not sure if they have a copy. As regards HDF, 41.4% of respondents were aware of it while 31.4% were not aware of it. Only 5.7% of respondents were not sure of HDF. As for possession of

**Table 1**  
Socio-demographic Characteristics of respondents.

Variable	Frequency (n = 70)	Percent (%)
<i>Age (years)</i>		
21–30	26	37.1
31–40	37	52.9
>40	7	10
<i>Gender</i>		
Female	20	28.6
Male	50	71.4
<i>Years of service</i>		
0–5	37	52.9
6–10	24	34.3
11–15	6	8.6
>15	3	4.3
<i>Cadre</i>		
Medical Officer	35	50
Registrar	31	44.3
Consultant	4	5.7
<i>Area of practice</i>		
Ear Nose & Throat (ENT)	1	1.4
Surgery	1	1.4
Dental Surgery	5	7.1
Accident and Emergency (A&E)	5	7.1
Paediatrics	7	10
Obstetrics & Gynaecology	10	14.3
Internal Medicine	12	17.1
Specialty clinics	13	18.6
Family Medicine (GOPD)	16	22.9

**Table 2**

Respondent's awareness of Essential Medicine List (EML), Hospital Drug Formulary (HDF) and Utilization of Standard Treatment Guidelines.

	Yes (%)	No (%)	Not sure (%)	No response (%)
Awareness of EML	36(51.4)	25(35.7)	7(10)	2(2.9)
Possession of EML	54(77.1)	11(15.7)	2(2.9)	3(4.3)
Awareness of HDF	29(41.4)	22(31.4)	4(5.7)	15(24.1)
Prescription using generic names	56(80)	12(17.1)	2(2.9)	0
Possession of STG	21(30)	49(70)	0	0
Need a copy of STG	53(78.6)	13(18.6)	1(1.4)	1(1.4)

STG, only 30% of respondents possess a copy of it while a majority (70%) do not. Majority of the respondents (78.6%) claimed they need a copy of the STG while 18.6% claimed they don't need it and only 1.4% were not sure if they need it.

#### 4. Discussion

The study assessed prescriber's awareness of Essential Medicine List, Hospital Drug Formulary and Utilization of Standard Treatment Guidelines in Federal medical centre, keffi (a tertiary health-care facility in Nasarawa state, North-Central Nigeria). In this section, there is limited comparison of our findings with other studies because there are no studies on same subject matter (to the best of our knowledge). A search of the digital electronic database using the 4 free text keywords "Awareness" "Essential medicines List" "Standard Treatment Guidelines" "Utilization" yielded no results in Google search, Google scholar, and African journals online (AJOL). This unproductive search made the authors to conclude that this study is the first of its kind.

The health care workforce in the study facility was predominantly young and this was reflected in their age group where majority (90%) were aged between 21 and 40 years. It also reflected in the years of service where majority (52.9%) were less than 6 years in service. This young nature of participants could affect their awareness of Essential Medicine List, Hospital Drug Formulary and Utilization of Standard Treatment Guidelines.

Among respondents, consultants were few compared to medical officers and registrars. This is because, as one progresses along the cadre, the number of consultants, who are mostly older and at the top of the control chain, becomes relatively few.

The high level of awareness of EML (51.4%) could be due to several factors such as its availability in the study facility since 77.1% of respondents own a copy. This high level of awareness and access to EML was most likely responsible for the high level (80%) of prescription using generic names. This is a good development and in line with Nigerian National Drug Policy.<sup>21</sup> On the other hand, awareness of HDF was low (41.4%). This could be due to non-availability of HDF or low access to it among health workers.

Majority of the respondents (70%) do not have STG. This is a disturbing finding because prescribers cannot utilize STG when they don't even have a copy of it. This indirectly implies that only a low proportion (30%) were utilizing the STG. This low level of utilization and access to STG is similar to findings from another related study in Lagos, Nigeria, where only 13% of the doctors in an army hospital possessed the current National Antimalarial Treatment Guidelines.<sup>22</sup> In a related study in Sri Lanka, less than 40% of medical practitioners were aware of STG.<sup>23</sup> Most of respondents (78.6%) in our study claimed they need a copy of the STG.

Based on findings of this study, the authors suggest that the drug and therapeutics committee of the study facility needs to hold regular meetings and follow up on prescribing practices and adherence to STGs. Also, since STGs are readily available on the internet, it is recommended that the hospital DTC should download it and make it available to prescribers and in the wards. Prescribers should also be encouraged to download the documents and store

them in their mobile phones for easy and fast access at any time and any place. There is also need to put in place strategies that will ensure compliance such as training/update workshops on STG and constitution of a monitoring and evaluation unit for the DTC (which is currently missing). Other measures that can improve compliance include ensuring physician trust in those developing the guidelines, as this was one of the factors that resulted in a high adherence rate (over 90%) to the 'Wise List' in Stockholm County (Region) in Sweden. This is a list of approx. 200 medicines that were carefully selected using evidence based principles by a multidisciplinary expert group.<sup>24</sup>

Other limitations of the study include Recall and Courtesy bias which cannot be ruled out in the study. The former has to do with respondent's inability to correctly recollect an event due to long time lag while the latter has to do with respondents telling interviewers what they think they'd like to hear.

#### 5. Conclusion

The results indicated high awareness of EML and HDF but a very low access to STG and its utilization among prescribers in the study facility. It is recommended that the hospital DTC should download STGs from the internet and make it available to prescribers and in wards and put in place strategies that will ensure compliance. This will benefit patients by improving consistency and treatment efficacy. It will also benefit providers by improving their quality of care standard and serve as a basis for monitoring. It will also benefit the management of the facility because it will make demand more predictable and allow for prepackaging.

#### Conflict of interest

The authors declare that they have no competing interests.

#### Authors' contribution

**Hassan Abdullahi** led in the design and coordination of the study, carried out the field work and data collection, performed statistical analysis of the data collected and drafted the manuscript. **Abdulrazaq Abdullahi Gobir** participated in the design and coordination of the study and reviewed the manuscript. He also contributed to the discussion section. **Abubakar Aisha Ahmed** reviewed the manuscript and contributed to the discussion section. **Pharm (Dr.) Sabiu Adamu** edited the proposal and contributed to the discussion segment of the Study and proof read the manuscript. **Pharm. John Uwaya; Pharm Ezekiel Gwamna and Aliyu Ibrahim Yahaya** carried out field work and assisted in data analysis.

#### Acknowledgement

The authors would like to thank both the management of Federal Medical Centre, Keffi and the respondents for their support in the preparation and implementation of the study.

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