Access and use of medicines information sources by physicians in public hospitals in Uganda: a cross-sectional survey

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Abstract

Background: Rational and cost-effective prescription of medicines requires up-to-date and readily accessible medicines information. There are several studies on availability and access to medicines information sources, but have been conducted only in high-income countries.

Objective: To assess medicines information sources accessed by physicians in public hospitals in Uganda, and physicians' opinion on establishment of a medicines information centre in the country.

Methods: A cross-sectional survey including 369 physicians from six district, six regional and two university hospitals. Data was collected using a semi-structured self-administered questionnaire.

Results Response rate was 91%. This included 31, 136 and 168 physicians from the district, regional and university hospitals, respectively. In the district hospitals the source of medicines information reported to be most available was colleagues (100%), while in the regional and university hospitals it was literature from pharmaceutical companies (98%) and hard copy of research publications (99%) respectively. The most frequently used source in the district and regional hospitals was National Standard Treatment Guideline (90% and 73% respectively), and colleagues in university hospitals (89%). Accessibility problems with reported available sources were commonest with research publications in medical journals, both hard copy and through the internet, MIMS, pharmacists and pharmacologists. Need for a medicines information centre was indicated by 80% of the respondents.

Conclusion: Majority of the physicians in public hospitals in Uganda have limited access to unbiased drug information. Therefore, there is need to assess the feasibility of establishing a drug information centre, and then assess its use during a trial period.

Key words: Medicines information, physicians, Uganda

Running title: Medicines information sources in public hospitals in Uganda

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Introduction

Medicines are one of the most important tools available to physicians for therapeutic interventions in disease management. However, for their optimal use it is critical that the physicians remain informed about clinically relevant aspects of medicine use. To be able to prescribe rationally and cost-effectively, physicians require up-to-date, contextual and readily accessible information on medicines. It is, however, reported that, especially in resource-poor settings, prescribers have difficulties in accessing relevant information,[1,2] which may have severe consequences as the quality of prescribing has been found to be associated with accessible information on medicines.[3]

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Studies on medicine information sources available to physicians have been conducted mainly in high-income countries.[4-9] Only two studies conducted in Africa were found.[10,11] Most studies were conducted in primary health care settings,[4,5,7,10] with one in each of the secondary,[11] and tertiary levels,[8] and only two in all the three levels of healthcare.[6,9] However, among the accessible literature, no study on the problems of accessing available information sources was found. In Uganda, the only available study investigated sources of general health information used by different categories of healthcare professional in planning the delivery of healthcare services.[12]

This paper presents results of a study that assessed reported availability and use of medicines information sources in primary, secondary and tertiary public hospitals in Uganda. The country's population is 26.8 million, but with about 2,270 registered physicians, giving approximately a doctor patient ratio of 1:12,000.[13,14] There are three categories of public hospitals, namely national, regional and district

hospitals.[15] Most physicians work in these facilities, where the very sick, usually with multiple pathologies, seek medical care. These physicians, therefore, need contextually appropriate and accessible medicines information to be able to make the often-difficult therapeutic decisions. Therefore, the aim of this study was to determine sources of medicines information available to physicians in the public hospitals, and to assess use and problems of accessing the sources. In addition, physicians' opinion on establishing a medicines information centre was assessed.

Materials and methods

A cross-sectional study, using a semi-structured self-administered questionnaire to physicians in selected public hospitals in Uganda, including six district hospitals, six regional and two university hospitals, was conducted from February to June 2004. At that time there were 51 public hospitals in the country, including two university teaching, 11 regional and 38 district hospitals.[15] The hospitals from Northern and some parts of Eastern Uganda were not included due to civil war in these areas at that time of the study. All regional hospitals and one district hospital from each of the accessible regions were included. Ethical clearance was obtained from Makerere University Research Committee and Uganda National Council for Science and Technology. The participating physicians gave informed consent.

The study participants were physicians working in the selected hospitals who were identified using lists obtained from the hospital administration. All those employed at the time of the study were included, except in one university teaching hospital where the population was large. In this hospital, the physicians were stratified according to professional qualifications. Then systematic sampling was done within each stratum to ensure proportionate representation. It was estimated that about 385 physicians would be needed to determine availability of drug information sources at a precision of 5% and a confidence level of 95% if the true value was 50%.[16] This sample size was corrected for a finite population giving a necessary number of 323.[17] So as to cater for possible non-response, 369 physicians were recruited, of whom 9% were from district, 38% from regional and 53% from university teaching hospitals. This was approximately corresponding to the proportionate facility distribution of the Ministry of Health figures of 8.5%, 40% and 51.5% respectively.[15]

Data were collected using a semi-structured, self-administered questionnaire that had been pre-tested using 15 physicians. It contained three sections. Section one inquired about participant's characteristics, including gender, age, and level of qualification. In section two each participant was asked to indicate, from a list of medicines information sources (Figure 1), those available and their frequency of use. They were also asked to indicate the available sources they had problem accessing, and the type of problem. They were further asked to rank the usefulness of commercial and non-commercial sources using the alternatives "Not useful at all", "Useful" and "Very useful". In section three the participants were requested to give their opinion on the need for a medicines information centre in Uganda, and the preferred functions of such a facility.

The questionnaire was hand-delivered, and collected from the participants by the first author, assisted by data collectors. Those who did not return the questionnaire within 15 working days were regarded as non-respondents.

The data were entered using Epi Info Version 6.04, and analyzed using, SPSS version 10.0 for Windows. The hospitals were stratified into three categories, district, regional and university teaching hospitals. The proportion in each category that had access to a certain information source was calculated. For the district and regional hospitals and the smaller university teaching hospital, the proportion presented is the true proportion at that particular time, except for the non-respondents, since all physicians were included. For the larger hospital, where stratified random sampling had been done, the true proportion was not known. Therefore, the proportion that had access to each medicines information source was estimated statistically,[18] and a 95% confidence interval was calculated. However, the figures were not different from the ones obtained through the interviews. Therefore, the figures from the interviews were used in the analysis. The difference in sampling method and physicians' professional qualifications, and the small numbers in the district hospitals precluded statistical analysis of differences between the hospital categories.

Results

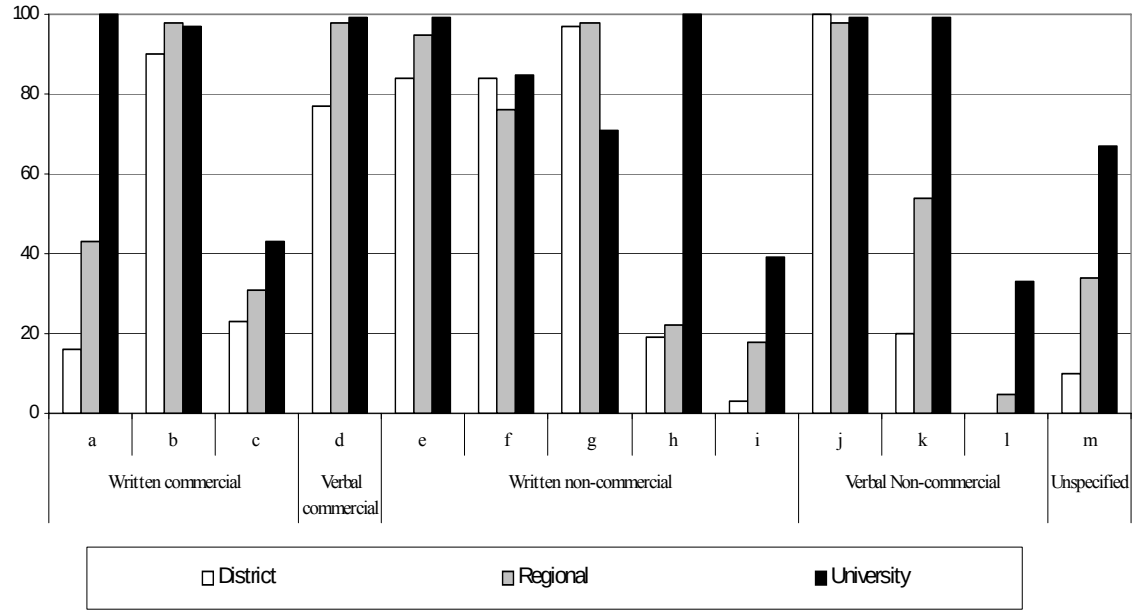
The response rate was 91% (n = 369). Twenty-nine non-respondents were from university, four from regional, and one from district hospitals. There was no difference in professional qualification between non-respondents and respondents in each hospital category. Respondents were predominantly males (77%). The reported age range was 20 to 68 years, with a mean of 37. There was a difference in the professional background of the doctors in the different hospital categories (Table 1).

Table 1 Professional qualification of respondents

Professional qualification	Qualification within each hospital category		
	District (n = 31) %	Regional (n = 136) %	University (n = 168) %
Consultant	0	19	21
Specialist (below consultant)	10	32	23
Senior House Officer	0	0	27
Medical Officer	90	34	9
Intern	0	15	20
Total	**100**	**100**	**100**

A variety of sources were reported to be available to many respondents (Figure 1). Sources reported to be commonly available by respondents from all the three hospital categories were literature and representatives from pharmaceutical companies, standard pharmacology textbooks, British National Formulary (BNF), National Standard Treatment Guidelines (NSTG), and colleagues. These were reported to be available by over 80% of the respondents, except for pharmaceutical company representatives that was reported by 77% in the district hospitals. Research publications on the Internet were available to 3.2%, 18.4% and 39% of the physicians in the district, regional and university hospitals respectively.

Figure 1: Percentage of physicians reporting availability of a particular medicines information source



Legend for Figure 1: District: n = 31; Regional: n = 136; University: n = 168

a = Drug advertisements in medical journals, **b** = Literature from pharmaceutical companies, **c** = MIMS Africa, **d** = Pharmaceutical company representatives, **e** = Standard text books, **f** = British National Formulary, **g** = National Standard Treatment Guideline, **h** = Research publications in medical journal: hard copy, **i** = Research publications in medical journals on Internet, **j** = Colleague, **k** = Pharmacist, **l** = Pharmacologist, **m** = Unspecified drug information from Internet.

Among the medicines information sources reported to be available, the most frequently used were non-commercial (Table 2). In district and regional hospitals, the most frequently used source was NSTG (90% and 73% respectively), while in university hospitals, it was colleagues (89%).

Table 2 Reported use of available medicine information sources*

Source of medicines information		Hospital category (n = No. reporting source to be available)	Frequency of use in % At least weekly	At least Monthly	Yearly or less (Never)
Commercial	Drug advertisements in medical journals	District (5)	0	60	40 (0)
		Regional (59)	32	20	41 (7)
		University (166)	9	18	40 (33)
	Literature from pharma ceutical companies	District (28)	25	54	21 (0)
		Regional (134)	25	60	14 (1)
		University (162)	26	58	14 (2)
	Pharmaceutical company representatives	District (24)	42	25	21 (12)
		Regional (134)	20	58	21 (1)
		University (165)	30	50	19 (2)
Non-commercial	Standard text books	District (26)	77	19	4 (0)
		Regional (129)	66	21	13 (0)
		University (165)	73	16	9 (2)
	British National Formulary	District (26)	77	15	8 (0)
		Regional (104)	69	17	13 (1)
		University (142)	82	11	4 (3)
	National Standard Treatment Guideline	District (30)	90	7	3 (0)
		Regional (133)	73	13	12 (2)
		University (146)	58	11	28 (3)
	Research publications in medical journal hard copy	District (6)	0	67	33 (0)
		Regional (30)	14	30	53 (3)
		University (166)	15	24	41 (20)
	Colleagues	District (31)	87	10	3 (0)
		Regional (133)	72	20	7 (1)
		University (164)	89	5	5 (1)
	Pharmacist	District (6)	67	0	33 (0)
		Regional (73)	11	33	41 (15)
		University (165)	10	14	41 (35)

Accessibility problems were reported for almost all the available sources (Table 3). However, research publications in medical journals, MIMS, pharmacists and pharmacologists were reported by the majority. Irregular supply and lack of time to access the source were the main problems for hard copy of research publications, while for the internet source high access cost and lack of time were the main barriers. Pharmacists and pharmacologists were reported to be unavailable for consultation when needed. Lack of time was also reported as a barrier to access information from standard pharmacology textbooks and literature from pharmaceutical companies. The available textbooks, MIMS Africa and British National Formulary were said to be outdated. Information sources reported to have minimal access problems included National Standard Treatment Guidelines, pharmaceutical company and Colleagues.

Non-commercial sources were reported to be more useful than commercial ones. Written and verbal non-commercial sources were reported to be useful by 97% and 90% respectively. The figures for the corresponding commercial sources were 86% and 41% respectively. Need for a medicines information centre was indicated by 80% of the participants in each of the district and regional, and 77% in university hospitals. The commonest preferred role of the centre was to provide information to prescribers (Table 4).

Table 3: Problems with accessing reported available sources (District: n = 31; Regional: n= 136; University: n = 168)

Source of medicines information	Hospital category	Frequency of reporting availability of source	Frequency of access problem (%)
Research publications in medical journals (Hard copy)	District	6	5 (83)
	Regional	30	22 (73)
	University	166	91 (55)
Research publications in medical journals on internet	District	1	0
	Regional	25	17 (68)
	University	81	50 (62)
Standard pharmacology textbooks	District	26	1 (4)
	Regional	129	14 (11)
	University	165	17 (10)
MIMS	District	7	3 (43)
	Regional	42	8 (19)
	University	61	27 (449
British national formulary	District	26	5 (19)
	Regional	104	16 (15)
	University	142	14 (10)
National Standard Treatment Guidelines	District	30	1 (3)
	Regional	133	5 (4)
	University	146	10 (7)
Literature from pharmaceutical company	District	28	0
	Regional	124	20 (15)
	University	162	20 (12)
Colleagues	District	31	0
	Regional	133	4 (3)
	University	164	3 (2)
Pharmaceutical company representatives	District	24	1 (4)
	Regional	134	18 (13)
	University	165	21 (13)
Pharmacist	District	6	2 (33)
	Regional	73	34 (47)
	University	165	103 (62)
Pharmacologist	District	0	-
	Regional	7	6 (86)
	University	41	25 (61)

Table 4 Reported preferred functions of the medicines information centre

Preferred function	Respondents in different hospital categories		
	District (n =27)%	Regional (n =110)%	University (n = 168)%
Providing information on drugs[+]	100	98	100
Providing drug related continuing medical education (CME)	56	50	30
Conducting drug related research	30	30	29
Receiving reports on adverse drug reactions	33	23	41
Providing information on management of adverse drug reactions	26	23	28
Providing relevant drug information to the public	4	4	15

Key

[+]Drug information included: indications, dose, side effects, interactions, and contraindications

Discussion

This is the first large study that has explored the availability and use of medicines information sources by physicians in an African country. It has also investigated the problems of accessing the available sources, and the opinions of the local physicians on the need for a medicines information centre in the country. The two accessible previous studies were conducted in limited settings[10, 11]. One investigated sources used to access information about adverse reactions to medicines in a sample of only five physicians in private practice,[10] and the other included physicians from only one urban secondary level hospital.[11] The response rate in this study (91%) is higher than the 24% to 75% obtained in previous studies where the questionnaire was mailed to the participants.[6-9] This could probably be attributed to the hand delivering and collection of the questionnaire. Most physicians had a variety of sources of medicines information available to them, though some had access problems. The majority of the physicians indicated need for establishing a medicines information centre.

The study found that most commercial and non-commercial sources of medicine information are theoretically available to the majority of the physicians in all the hospital categories. This differs from results obtained in a previous study, conducted in a primary health care setting, where commercial sources were the most commonly available.[7] Research publications in medical journals, pharmacologist and pharmacist, important non-commercial sources, were however, not available to most physicians in the district and regional hospitals. In these facilities, there are no resources allocated for libraries, hence the unavailability of medical journals. However, even if journals were available, this would not be sufficient since the busy physician needs evaluated and concise information. At the time of the study, there were less than 200 registered pharmacists, and less than 30 clinical pharmacologists in the whole country, thus making them inaccessible to the majority of the physicians.

Two major initiatives, Health InterNetwork to Research Initiative (HINARI) and Programme for the Enhancement of Research Information (PERI), have availed free or highly subsidized online health information to some institutions in resource-poor settings in the world.[2,19,20] Despite this, in this study, research publications on the Internet were reported to be available by only 3.2%, 18.4% and 39% of the physicians in the district, regional and university hospitals respectively. This could be because in Uganda most physicians rely on Internet cafes, which are commonly slow and expensive. It is also most likely that few of the respondents were aware of the initiatives, though this was not investigated in this study.

Though most commercial and non-commercial sources were reported to be available, the latter were more frequently used. The most frequently used sources were colleagues, standard pharmacology textbook, BNF and NSTG, which were reported to be used at least weekly by more than 50% of the respondents. However, though the dates of publication were not investigated, quite often the available copies of BNF and textbooks are outdated, and NSTG has limited information on medicines. It should also be noted that colleagues are not likely to be much more informed. Research publication and pharmacist, reported to be available by over 98% in the university hospitals, were rarely used. The time and effort required from the busy physician to access journal articles may explain the failure to use the source frequently. Similar to previous studies, non-commercial sources were rated higher than commercial.[5-8] This is most likely due to awareness of the aim and content of information from commercial sources by physicians. The physicians' preference for non-commercial sources of information for therapy seen in this study is in agreement with the findings of previous studies.[4-11]

Identified barriers to access reliable sources of healthcare information has been stated to include lack of time and equipment, cost, and inadequate Internet infrastructure.[2] In this study, a number of similar problems with accessing the available medicine information sources were reported. Access to information from written literature, especially hard copy of research publications in medical journals, and from pharmacists, were indicated to be most problematic. The main problems were lack of time and unavailability of individuals for consultation respectively. It was, however, not verified if the physicians had actually tried to contact the pharmacist. The small number of these health professionals in the country makes them inaccessible to the majority of the physicians. However, with the wide telephone network and the fact that the majority of the pharmacologists and a large number of the pharmacists are employed in one of the university teaching hospitals, establishing a medicines information centre at this facility, where they would participate in providing medicines information to healthcare professionals through telephone communication, could be a practical way of utilizing this important source of information. Such a centre, staffed by this type of personnel, has been reported to be successful in Nepal.[21]

The majority of respondents expressed need for a medicines information centre. This may be because

they know that the sources available are not providing adequate information, and therefore, hope that the centre would be a better source for providing answers, especially to patient specific queries. In a previous study, it was found that the need for a medicines information centre and expert advice service on pharmacological problems is a necessity to the physician in the total management of the patient.[9] This is because it is a heavy task for the busy physician to access information relating to medicines, which is usually to be found in many places and forms. The centre bridges this gap by consolidating a rich source of medicine information that is readily available and accessible to many users, which is a more cost-effective way of accessing reliable information.[21] In Uganda, accessing information from a medicines information service is likely to be easy because mobile phones are extensively used among physicians throughout the country.

There were some limitations in the study. The selection of the study sites was purposive because of the high transport cost that would be incurred if random sampling were to be used. It is however unlikely that the results would have been very different in other hospitals as the medicines information sources are most likely uniform. Reasons for non-response and opinion of non-respondents are unknown because there was no follow up. However, because of the high response rate, this could be regarded as a limited problem. The self-reporting of physicians may have been a source of some response bias, though the direction of this influence is difficult to evaluate.

Conclusion

This study shows that though both most commercial and non-commercial medicines information sources are available to physicians in public hospitals in Uganda, lack of time and high costs are important obstacles to accessing information from journal publications, recent textbooks and the Internet. Therefore, the sources that were more frequently used are unlikely to provide the most up-to-date and objective medicine information, which could compromise the quality of patient care resulting in unnecessary patient suffering and increased healthcare expenditure. The expressed need for a medicine information centre by the majority of the respondents is an indication that they know that current available sources do not satisfy their medicine information needs.

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