East and Central African Journal of Pharmaceutical Sciences
Vol. 10 (2007) 45-49

Information Technology Use in Community Pharmacies in Harare, Zimbabwe

L. USANGA, P. GAVAZA, S. MATEMA*, K.T. MUKOSERA

School of Pharmacy, University of Zimbabwe, P.O. Box MP 167, Mt. Pleasant, Harare, Zimbabwe.

Information technology (IT) has transformed the practice of pharmacy worldwide. This study was undertaken to determine the pharmacists' IT use, utilization patterns and their opinions regarding IT use. The majority of pharmacies had networked computers (71.7%) and internet connections (60.9%). Pharmacists had poor knowledge of IT (mean rating score = 2.28 ± 0.83) and limited knowledge of the available online resources. The majority of pharmacists used Google for internet literature searches. About 78.1% of pharmacists agreed/strongly agreed that IT had a role to play in pharmacy practice. Internet surfing (89.1%), web browser navigation (67.4%) and advanced e-mail management skills (58.7%) were the most cited pharmacists' future needs. Harare community pharmacists were found to have poor IT knowledge and generally under utilize IT. More structured informatics training should be given to pharmacists and pharmacy students to better their knowledge and utilization of IT.

Key words: Information technology, pharmacy, Harare, Zimbabwe

INTRODUCTION

The provision of health information is a key responsibility of the pharmacist [1]. Worldwide, pharmacists have benefited from advances in information technology (IT) through the use of computers, internet, CD ROMS and e-mail among others. The use of IT has helped pharmacists to keep up-to-date with new information on adverse drug reactions, drug-drug interactions, and to efficiently disseminate this information. The Pharmacists' efficiency and effectiveness have been enhanced by IT [2,3].

Despite the important contribution of IT to pharmacy and pharmacy practice in developed countries, its utilization is minimal and largely undocumented in Zimbabwe. This study was designed to determine IT use and utilization patterns in Harare community pharmacies and to investigate the pharmacists' opinions towards current and future IT use.

METHODS

This prospective cross-sectional study was carried out in Harare between January and February 2006. Harare is the administrative capital and commercial centre of Zimbabwe. The study population consisted of all registered community pharmacists practicing in Harare (n = 112). Using the Medicines Control Authority of Zimbabwe (MCAZ) [4] register of community pharmacies as the sampling frame, 15 high density, 25 low density and 20 central business district (CBD) community pharmacies (n = 60) were randomly selected. The pharmacists were categorized by location and 50% of the outlets were sampled from each of the three groups. The stratification served to cater for the marked income and socio-economic status differences among the residents of these areas.

A comprehensive questionnaire was designed as described previously with

*Author to whom correspondence may be addressed.

appropriate adaptations to the current study [5]. Knowledge was measured on a Likert scale of one to five (very poor to very good). The instrument was reviewed for validity. The questionnaire included questions on demographic factors, knowledge, attitudes and IT utilization in pharmacy practice. It was pilot-tested using six (6) pharmacists selected from three locations, namely CBD, high density and low density, and the relevant changes made to the questionaire. The questionnaire was administered to 60 informed and consenting pharmacists on duty at the selected pharmacies. Pharmacists who were not able to fill the questionnaire immediately were allowed to fill it later. Questionnaires that were not filled out within two weeks were abandoned.

The data obtained was analyzed using the Statistical Package for the Social Sciences (SPSS) v.12.0.1 for Windows® 2003 (SPSS Inc, Chicago, Illinois). Descriptive statistics were derived and frequency tables were presented for the important variables. A significance level of 0.05 was used for all statistical tests.

RESULTS

A usable response rate of 77% (n = 46) was obtained. Twenty two (47.8%) pharmacists worked in the low density, 15 (32.6%) in the CBD and 9 (19.6%) in the high density area pharmacies as shown in Table 1. The respondents' mean age was 30 ± 6 years (range 24-43 years). Twenty five pharmacists (54.3%) had less than 6 years of working experience while twenty four (52.2%) pharmacists were male. Twenty-eight (60.9%) pharmacies had internet connections while 33 (71.7%) pharmacies had networked computers.

The majority (67.9%) of the pharmacies with internet connections were in the low-density suburbs. Comparing the low and high density area pharmacies, a chi-square analysis revealed a significant relationship between the respondents' location of pharmacy and reported internet connection (X^2 =12.0, df = 1, p <0.05). In low-density area pharmacies, those with internet connection comprised a greater proportion of pharmacies (86.4%) than those that did not (13.6%). In high-density area pharmacies, more pharmacies (77.8%) had no internet connection than those that had internet connection (22.2%). In the CBD pharmacies, the proportion was almost equal (Table 1). Thus, The location of pharmacy was a significant predictor of internet connection (B = 0.64, β = 0.62, t = 4.3, p < 0.05).

A chi-square analysis showed no relationship between the respondents' primary practice, the pharmacy's internet connection and whether the pharmacy was part of a chain business or independent (X^2 = 0.17, df = 1, p > 0.05). Majority of respondents (71.7%) had not had any formal computer training. Among those who had received formal computer training, 12 had attended short courses. The pharmacists' mean IT knowledge score was 2.28 ± 0.83. Most pharmacists (52.1%) reported that they had poor/very poor knowledge of IT (Table 2). The pharmacists who had attended some computer training had significantly better knowledge (2.93, SD = 1.2) than those who did not (2.0, SD = 0.9), (t = -2.9, df = 44, p < 0.05).

The IT knowledge rating and age were not significantly related (p = 0.858). An independent groups t-test showed no significant difference in self-reported mean IT knowledge between male pharmacists (2.21, SD = 1.3) and female pharmacists (2.36, SD = 0.8), (t = 0.49, df = 39, p > 0.05).

About 97.8% of the respondents had e-mail addresses, thirty two (69.6%) had used a PowerPoint presentation while only 13% had used PowerPoint presentation after graduation. Twenty eight pharmacists (60.9%) used the internet in the pharmacy practice but only 6 (13.0%) used interactive CD-ROMs in their practice. Majority of the respondents (85.7%) used the internet in the

pharmacy mainly to access e-mail. Sixteen pharmacists (57.1%) used the internet mainly for medical research and less than 30% utilized the internet for news, film and other purposes. The Google search engine was the most accessed literature retrieval site on the internet.

Pharmacists rarely utilized other medical search engines and online literature sources. Forty four pharmacists (95.7%) had interest in learning about IT and informatics. Thirty six respondents (78.2%) agreed/strongly agreed that IT has a role to play in pharmacy practice (Table 4).

Table 1: Internet connection by location of pharmacy

Location	Internet connection		Total
	Yes (%)	No (%)	
High Density	2 (22.2)	7 (77.8)	9
Low Density	19 (86.4)	3 (13.6)	22
CBD	7 (46.7)	8 (53.3)	15
Total	28 (60.9)	18 (39.1)	46

CBD = Central Business District.

Table 2: Respondents' self reported IT knowledge rating

Rating of IT knowledge	Frequency (Percentage)
Very good	2 (4.3)
Good	1 (2.2)
Fair	19 (41.3)
Poor	10 (21.7)
Very poor	14 (30.4)
Total	46

Table 3: Literature retrieval sites accessed by respondents

Literature retrieval site	Frequency (%)
Google search engine	23 (50)
Ovid medical search engine	1 (2.2)
WHO drug information e-journals	3 (6.5)
Electronic database access (Pubmed or TOXNET)	3 (6.5)
USP DI/MD Consult/Clinical pharmacology	2 (4.3)

Table 4: Views and opinions of respondents with regard to IT use in pharmacy

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total
IT has role in pharmacy practice	0	1 (2.2)	9 (19.6)	11 (23.9)	25 (54.3)	46
Pharmacy transforming to an information center	3 (6.5)	4 (8.7)	13 (28.3)	9 (19.6)	17 (37.0)	46
The internet will be an indispensable tool in the future of pharmacy	1 (2.2)	5 (10.9)	11 (23.9)	12 (26.1)	17 (37.0)	46
Virtual pharmacies will partially displace traditional pharmacies	13 (28.3)	11 (23.9)	11 (23.9)	9 (19.6)	2 (4.3)	46

Figures in parentheses represent percentages.

Many respondents highlighted the internet search (41), web browser navigation (31) and advanced e-mail management skills (27) as their major IT needs in their practice. Other needs cited by pharmacists include presentation skills, statistical softwares, word processing and data base management. To improve IT utilization in the pharmacies, respondents recommended the following:

a) Training pharmacists in computer applications and IT during formative training.
b) Offer pharmacists seminars and continuing education on available IT options.
c) Policy change to make computers, software packages and pharmacy interactive CD ROMs easily accessible and affordable by pharmacists.
d) Make foreign currency readily available to enable interested pharmacists access IT.

DISCUSSION

The fact that 39% of the pharmacies did not have internet connections is worrisome. The study findings show that IT services were unevenly distributed by location in Harare. There is a digital divide between the pharmacies serving the predominantly rich customers in the low density areas and those serving predominantly poor customers in the high density areas. This is in line with findings made by Gregory who found that IT services are unevenly distributed around the world and even within countries [6].

Pharmacists practicing in low density areas may be compelled to update their IT knowledge to meet the needs of their elite customers. The low mean knowledge rating score show that pharmacists had poor knowledge of IT and computer use. Less than 5% reported a good knowledge of IT. This is much lower than 39.9% obtained by Balen *et al.* in a Canadian acute adult tertiary care teaching hospital in Vancouver, British Columbia [5]. The situation is expected to be even worse for pharmacies in smaller cities and towns in Zimbabwe. The poor IT knowledge level may be attributed to lack of formal training in computer and informatics at the University of Zimbabwe where most of the pharmacists are trained. Indeed, the situation is similar in most pharmacy schools [7]. Incorporating computer training into the curricula is likely to improve the pharmacists' knowledge of IT in the future.

The study results showed that younger male pharmacists did not have a better interest and understanding of information technology than the older and female pharmacists. The large number of pharmacists (97.8%) who had active e-mail addresses for communication purposes is encouraging. However, the use of interactive softwares and CD ROMs, was very low (13.0%). This was consistent with Ogunyande and Oyibo findings in a study in the University of Lagos, Nigeria [8].

The respondents mainly relied on Google searches for seeking clinical information. The use of medical search engines like Ovid, medical electronic databases like TOXNET, Medline and Pubmed, WHO e-journals and other medical references like the MD Consult and USP DI was being employed by less than 12% of the pharmacists. There is need to put strategies in place in order to improve the use of available online resources by pharmacists in Harare. This is particularly important as the pharmacists' role in disseminating information expands. The majority of respondents agreed that IT had a role to play in pharmacy practice showing that they recognize the important role of IT in the profession.

CONCLUSION

The community pharmacists in Harare had poor IT knowledge and generally under-utilized IT. More structured informatics training should be given to pharmacists and pharmacy students to better their knowledge and utilization of IT.

REFERENCES

[1] WHO Consultative Group, New Delhi. 13-16 Dec., 1988.

[2] R.M. Balen, P. Miller and D.L. Malyuk, J. Inform. Pharmacother. 2 (2000) 306-318.

[3] B. Felky and W. Villaume, Int. J. Pharm. Educ. 2 (2004) 1-6.

[4] Medicine Control Authority of Zimbabwe, MCAZ lists, Harare. 2005.

[5] R. Balen and P. Jewesson, J. Med. Internet Res. 1 (2004) 1-3.

[6] L.R. Gregory, European American Business Council Report, Washington DC. URL:http://www.ntia.doc.gov/ntiahome/speeches/2000/eabc80300.

[7] J.C. Poiken, American Association of Colleges of Pharmacy Annual Meeting Report, San Diego. 2000.

[8] T.O. Ogunyande and W.A. Oyibo, J. Med. Internet Res. 31 (2003) e7.