Full Length Research Paper

Pharmacists' expectations regarding the services provided by drug and poison information center

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Health care professionals have been surveyed concerning their satisfaction with Drug and Poison Information Centers' (DPICs) services, but have rarely been questioned regarding their expectations. Knowing these expectations would be the starting point for improvement of DPIC's services. As pharmacists are a major group of DPICs' clients, this study was aimed to clarify the expectations of Iranian pharmacists regarding the services provided by the DPIC in Tehran University of Medical Sciences. Data was collected from questionnaire which was distributed among 562 pharmacists in August, 2008. Data was analyzed by producing descriptive statistics using Statistical Package for Social Sciences (SPSS) software (version 17). The mean importance rating for each expectation was determined and sorted in descending order. A response rate of 87.9% was achieved. Drug information textbooks and medical reference books were the 'most commonly used' drug information resources. Thirty six expectations had a mean importance rating of ≥ 3 (3 = important). Currently, there is a good fit between Iranian pharmacists' expectations and DPIC services provided. This survey identified several areas where services was expected but not provided (e.g. provision of telephone consultation services 24 h a day). In instances, where there was a gap between expectations and services provided, the DPIC made programmatic changes to align service with expectation when feasible.

Key words: Drug and poison information center (DPIC), pharmacists, expectations.

INTRODUCTION

A Drug and Poison Information Center (DPIC) is a formal unit with a series of resources and a professionally trained team engaged in providing accurate and factual information about drugs and poisons (Hall et al., 2006; George and Rao, 2005). World's DPICs are mainly affiliated to hospitals, faculties of pharmacy, faculties of medicine and other related organizations (Mullerova and Vlcek, 1998). The provision of accurate, prompt, timely and evidence-based drug and poison information to health care professionals is an important mechanism to promote safe and effective drug therapy for patients (Lakshmi et al., 2003; Ngo Su-Yin and Ponampalam, 2009). The complexity of the current drug literature has made

the selection and use of correct drugs in an appropriate manner, a challenging task (Asiri et al., 2007). Lack of unbiased drug information is one of the factors that make the health care providers unable to update their knowledge about drugs which results in an increasing demand for drug information to promote patient care. Therefore, DPICs' services are necessary to provide support for health care providers (George and Rao, 2005; Wongpoowarak et al., 2010; Rosenberg, 1983).

The first drug information center (DIC), was established in 1962 at the University of Kentucky. Since then, DICs have expanded outside academic settings to include hospitals and pharmaceutical industry (Dada et

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Table 1. Demographic variables of survey respondents.

Demographic variable		Frequency n (%)
Gender	Male	201 (40.6)
	Female	291 (58.8)
Pharmacy practice experience (years)	< 5	129 (26.1)
	Between 5-10	86 (17.4)
	Between 10-15	108 (21.8)
	>15	162 (32.7)
Practice field	Hospital pharmacy	49 (9.9)
	Community Pharmacy	353 (71.3)
	Pharmaceutical Industry	32 (6.5)
	Others	47 (9.5)
Being familiar with DPICs' activities and services	Yes	224 (45.3)
	No	228 (46.1)
Estimated number of contacts with DPICs during last month	No contact	373 (75.4)
	< 5	60 (12.1)
	< 10	8 (1.6)
	> 10	5 (1.0)

al., 2008). Iran's first DPIC was opened in Tehran Ministry of Health, Under-secretary of Food and Drugs in February, 1997 with the intention of providing a centralized resource center for drug and poison emergency treatment advice and information to healthcare professionals, industries and general public (Nikfar et al., 2000). Health care professionals have been surveyed concerning their satisfaction with DPICs services, but have rarely been questioned regarding their expectations (Rheney et al., 2000). As the health care providers expect guidance and expert advice from DPICs', knowing client's expectations would be the starting point for improvement of DPICs' services (Scala et al., 2001). Pharmacists are one large group of DPICs' clients. This study was conducted to clarify the expectations of Iranian pharmacists regarding the services provided by the DPIC in Tehran University of Medical Sciences which was established in 2007.

METHODOLOGY

The study was descriptive. A questionnaire was prepared to investigate the pharmacists' expectations about DPICs. We invited all 562 pharmacists in Iranian Pharmacists Association Annual Congress which was held in August 2008 to participate in this survey.

A cover, describing the world's DPICs background and activities was attached to the questionnaire. The names of the respondents were not requested to maintain anonymity. Questions in this study covered a number of areas as follows:

1. The first section included the survey population demographic

information including age, sex, professional or educational qualifications, university degree and job experience.

2. The current sources of drug and poison information being utilized by respondents were elicited from a list of suggested options (drug and poison information centers, textbooks, software's, journals and websites and colleagues) and the frequency of the sources usage was ranked to the following three levels: almost never, occasionally and frequently.

3. Thirty seven expectations were developed in five choices Likert-Scale. Survey instructions directed the respondents to rank the importance of each expectation on a scale of 1 to 5, where 1 = not important, 2 = somewhat important, 3 = important, 4 = very important and 5 = extremely important.

Statistical analysis

The filled questionnaires were analyzed by producing descriptive analysis using the Statistical Package for Social Sciences (SPSS for MS windows version 17). The mean importance rating for each expectation was determined and sorted in descending order.

RESULTS

Demographics

Out of the 562 potential responders who received the questionnaires, 494 fulfilled them, giving a response rate around eighty eight percent (87.9%). The average age of the respondents was around 41 years (41.49 ± 12.61). 95.1% of the pharmacists surveyed had a PharmD degree. The demographics of the responders are summarized in Table 1 (Note that the percentages through

Table 2. Frequency of using each source of drug information.

Variable	Frequency (%)
Using DPICs	
Almost never	175 (35.4)
Occasionally	176 (35.6)
Frequently	16 (3.2)
Using drug information textbooks and medical reference books	
Almost never	23 (4.6)
Occasionally	157 (31.7)
Frequently	250 (50.5)
Using drug information software's	
Almost never	94 (19.0)
Occasionally	179 (36.2)
Frequently	75 (15.2)
Using medical and pharmaceutical journals	
Almost never	36 (7.3)
Occasionally	232 (46.9)
Frequently	147 (29.7)
Using drug information websites	
Almost never	84 (17.0)
Occasionally	180 (36.4)
Frequently	98 (19.8)
Consulting expert colleagues	
Almost never	42 (8.5)
Occasionally	230 (46.5)
Frequently	109 (22.0)

this manuscript are all computed considering the number of missing cases in questionnaires).

The main resources used by responders for drug information are listed in Table 2. Tertiary sources, such as 'drug information textbooks and medical reference books' followed by 'medical and pharmaceutical journals and 'expert colleagues' formed the large bulk of the frequently used drug information resources for answering the queries (Table 2).

There were 36 expectations included on the survey instrument. Expectations are presented in the order of descending mean importance rating in Table 3. Thirty six (97%) survey expectations had a mean importance rating of ≥ 3 (3 = important). 'The provision of new drug information' and 'the provision of information on radiopharmaceutical and chemotherapeutic drugs preparations' had the most and the least importance ratings among all expectations, respectively.

The respondents' acquaintance with the DPIC's services and their future approach to make phone calls with these centers are summarized in Table 4.

DISCUSSION

DPICs are established with the primary goal of providing information to health care providers in need of medication-related issues (Sawalha, 2008). Expectation surveys are being used to improve the match between services provided and the client expectations (Karen et al., 2000). Comprehensive reviews of DPICs' services have been reported, but relatively little is known of the expectations of health care professionals regarding the services of these centers. We surveyed pharmacists, because they frequently use the services of the DPICs, so, constituting the major class enquirers for these centers.

Our survey data indicate that there is a good match between our pharmacists' expectations and services provided by DPIC. Most of the expectations with the highest importance ratings are the center's basic functions, like 'provision of new drug information', 'provision of drug use during pregnancy information' and 'provision of drug-drug and drug-food interaction information'. Similar to our

Table 3. Importance ratings for pharmacists' expectations.

Expectation	Mean rating	Standard deviation
Provide new drug information	4.31	0.89
Provide telephone consultation services 24 hours a day	4.13	0.95
Provide drug use during pregnancy information	4.08	0.93
Provide drug-drug and drug-food interaction information	4.06	0.90
Provide pediatric drug dosing information	3.96	1.00
Provide continuing education courses about drug information for health care professionals	3.94	0.95
Provide drug use during lactation information	3.89	0.99
Provide treatment information for toxic ingestions	3.82	0.97
Provide information on drugs' adverse drug reactions	3.78	0.98
Provide foreign drug identification	3.73	1.02
Provide drug dosing information	3.65	1.04
Provide cleaning substances hazards information	3.62	1.04
Provide other referral services (i.e., if the center does not have the information, refer the caller to where the information is available)	3.60	0.98
Provide consultation for health-care providers regarding poisoning	3.54	1.02
Provide clinical signs and symptoms information regarding toxic ingestions	3.50	1.03
Provide pesticides hazard information	3.49	1.04
Provide carbon monoxide hazards information	3.47	1.07
Provide drug storage condition information	3.44	1.03
Provide smoke inhalation hazards information	3.44	1.03
Provide drug dosing information in special patients	3.41	1.11
Research information from manufacturers for various products	3.41	1.03
Education/ training of center's health care professionals	3.39	1.03
Provide patient-specific recommendations in electronic/ written format	3.37	1.44
Provide printed material from our library of information including fax services	3.37	1.08
Provide insect stings hazards information	3.35	1.01
Collect and provide demographic/epidemiology information (e.g., regarding poisonings, trends in overdoses of street drugs)	3.34	1.01
Referral of the general public to physician when needed	3.32	0.99
Provide education of the general public regarding poisoning	3.32	0.99
Provide dietary supplement information	3.30	2.23
Provide chemical spills and industrial exposures hazards information	3.30	1.08
Identify ingredients of brand-name products	3.21	1.06
Provide information on herbal drugs	3.14	1.07
Provide green chile dermal exposure hazards information	3.12	1.05
Provide rattlesnake bites hazards information	3.11	1.13
Provide identification of tablets or capsules	3.06	1.04
Provide information on radiopharmaceutical and chemotherapeutic drugs preparations	2.88	1.19

Table 4. Pharmacists' future approach towards using DPICs.

Future approach	Frequency (%)
Previous acquaintance/Future phone calls	225 (45.5)
Previous acquaintance/No future phone calls	2 (0.4)
No Previous acquaintance/Future phone calls	161 (32.6)
No Previous acquaintance/ No future phone calls	1 (0.2)

findings, 69% of the respondents in a study by Rosenberg et al. (2009) indicated that the primary mission of the drug information centers is 'the provision of not-for-profit new drug information services'. In addition, the most frequent type of inquiries in a drug information center at the University of Kansas Medical Center involves information on these subjects: therapeutic use, dosage, product identification and adverse drug reactions (Pradhan, 2002). Also, the majority of inquiries which are most frequently asked in Food and Drug Administration (FDA) DPIC are related to 'investigational new drugs' and 'adverse drug reactions' (Dada et al., 2008).

According to our results, the service with the lowest importance ratings centered on the 'provision of information on radiopharmaceutical and chemotherapeutic drugs preparations'. This view was reinforced in a study by Karen et al. (2000) where 'provision of radiopharmaceutical drug information' was the expectation with the lowest importance rating (Sawalha, 2008). Although, there is a possible reason for this service's low importance rating (the respondent may not see a true need for the service as it relates to their practice), it would be better to ask this question in a way that health care providers who are directly involved in radiopharmaceutical and chemotherapeutic drugs preparations, could provide a separate rating for this expectation.

Using a stepwise approach, most drug information searches should begin by using tertiary literature (e.g. reference books, Micromedex Healthcare Series), followed by secondary indexing and abstracting data-bases (e.g. Medline) leading to primary literature (e.g. journal articles) when necessary (Nathan and Gim, 2009). The results of our study showed that the main drug information resources used frequently by the pharmacists for answering the patients queries are tertiary sources, such as 'drug information textbooks and medical reference books' followed by 'medical and pharmaceutical journals' and 'expert colleagues'. Similar findings were made in a study done in Singapore, assessing the need for drug and poison information, where the most used resources were 'standard text books' followed by 'expert colleagues' (Ponampalam and Anantharaman, 2003). In a paper by Rheney et al. (2000), North Carolina health care providers rarely use DPICs as sources of drug information. This was reinforced in our study, where 35.4% of the respondents almost never use this kind of drug information service. Being non acquaintance with existence of such centers and their services would be considered as the most important reason of not using them as sources of drug information. Even after 13 years of opening of the first DPIC in Iran, the health care professionals are not familiar with these centers' unique activities yet.

Expectations having a mean importance rating of ≥ 3 (3 = important) were reviewed to determine whether the service was currently provided. After reviewing the results, we began to develop active steps to bring the center's services closer in line with pharmacists' expectations. For

expectations. For instance, as the 'provision of continuing education courses regarding drug information' had a high importance rating (3.94), we began to provide this service in our center. Pharmacists now regularly participate in our DPIC's continuing education sessions.

Conclusion

Conclusively, identifying pharmacists' expectations regarding DPIC services would be the starting point for its services improvement. At present, there is a good fit between pharmacists' expectations and DPIC services currently provided. In instances, where there was a gap between expectations and services provided, the DPIC made programmatic changes to align service with expectation when feasible.

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