Expectations of Health Care Professionals Regarding the Services Provided by a Drug and Poison Information Center

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A R T I C L E   I N F O

A B S T R A C T

Background: The provision of accurate and timely drug information to health care professionals is an important mechanism to promote safe and effective drug therapy for patients. World's Drug and Poison Information Centers (DPICs) are mainly affiliated to hospitals, rather rarely with faculties of pharmacy or with faculties of medicine and other related organizations.

Methods: Data was collected from a questionnaire which was distributed among 400 health care providers in April 2009. Data were analyzed using SPSS software (version 17).

Results: Medical reference books and drug information textbooks (36.7%) and expert colleagues (29.7%) were the "most commonly" used drug information resources. In addition, 77.8% of respondents "almost never" use DPICs. About 77% of respondents were non- acquainted with these centers' activities. Five expectations were considered 'very important' by respondents**:** Provide information on IV drugs incompatibilities (74%), Provide drug interaction information (70.1%), Provide new drugs information (56.5%), Education/training of health care professionals regarding rational drug therapy and prevention of medication errors (54.9%), Providing information on dosage forms of drugs available in Iran (53.5%).

Conclusion: Being non acquaintance with services of DPIC centers can be considered as the most important reason of not using them. Considering "announcement of availability of drugs in pharmacy" as one of the activities of DPICs, shows that the health care professionals are not acquainted with real services of these centers. It shows an urgent need for culture building activities to introduce them to these centers services.

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Introduction

Each year with increasing number of new available medications in the market and variety of treatment guidelines, it becomes difficult for busy physicians to

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keep abreast of new developments (1). The complexity of the current drug literature has made the selection and use of correct drugs in an appropriate manner, a challenging task (1,2). So the provision of accurate and timely drug information to health care professionals is an important mechanism to promote safe and effective drug therapy for patients. The term 'Drug Information' was coined in the early sixties and the first drug information center was opened at the University of Kentucky Medical Center in

1962 (2, 3).

A system of techniques and knowledge that permits the transfer of awareness about medicines to optimize drug therapy for the patients' benefit is called 'drug information'. A drug information center is a formal unit with relevant resources and a team of specialists for providing drug information (4).

World's Drug and Poison Information Centers (DPICs) are mainly affiliated to hospitals, rather rarely with faculties of pharmacy or with faculties of medicine and other related organizations (4). Iran's first DPIC was opened in Tehran Ministry of Health, Under-secretary of Food and Drugs in February 1997 (5).

Iran's first pharmaceutical care department was established in Dr. Shariati hospital in Tehran in December 2008. Drug- related problems exist in Iran's hospitals, as in many countries, and the lack of drug information centers is evident. To go some way to meet the needs of health care professionals in hospitals, we opened DPIC in pharmaceutical care department in May 2009.

The starting point for any business is to understanding the needs and expectations of their clients. When the professional expectations are known, the business can focus on services, which not only meet, but also exceed client expectations. A DPIC's clients in hospitals include health care professionals who are too busy to search the drug information resources by themselves. In addition, they need more diverse drug information in comparison to colleagues who do not work in hospitals. One of the ways to access their needs would be using DPICs as sources of information. Health care professionals have been surveyed concerning their *satisfaction* with DPICs services, but have rarely been questioned regarding their *expectations* (1, 6). This study was conducted to clarify the expectations of health care professionals in Dr. Shariati hospital regarding the services of DPIC located in pharmaceutical care department and estimation of their knowledge about activities done in such centers. As Dr. Shariati hospital serves as one of the largest teaching hospitals in Tehran, with a variety of different wards, we decided to conduct our survey in this hospital.

Methods

The study was descriptive and conducted in 2009, from 1st of April to 20th of April. Four groups of health care professionals including medical schools faculties, medical residents, medical interns and nurses who work in different departments of Dr. Shariati hospital were asked to participate in our survey. Twenty three percent of the respondents were attending, medical residents and medical interns and the rest %73 were nurses. The questionnaire was in Farsi and made up of 7 pages. A cover describing the study's objectives and request for professionals' participation was attached. The names of the respondents were not requested to maintain anonymity

and elicit an unbiased response that will better reflect the opinion of respondents. All questions were collated for two weeks from the day of distribution in different wards of the hospital. Of the 400 potential responders who received the questionnaires, only 157 fulfilled them, giving a response rate of %39. Questions in the study covered a number of areas as follows:

I) The first section included the survey population demographic information including age, sex, professional or educational qualifications, university degree and job experience.

II) 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, drug information softwares, journals, internet, fellow colleagues) and the frequency of the sources usage was ranked to the following three levels:

Almost never, occasionally, frequently

III) Survey instructions directed the respondents to rank the importance of each expectation as the following:

Not important, somewhat important, important, very important

The list of expectations included these items:

The need for drug and poison information centers in hospitals; the respondent's individual need and his or her own view on whether such a service should be accessible 24 hours a day, introduction of other centers if this center cannot answer the question,

IV) In the last part of the questionnaire the respondents were asked to list their most needed drug-related subjects to be the first presented in educational classes, seminars, etc and also to propose their most liked drug related topics to be inserted in DPIC's newsletter. The questionnaire data were entered into a database and analyzed using SPSS (Statistical Package for Social Sciences Version 17).

Results

The demographics of the responders are summarized in Table 1. According to the results, 77.5% of respondents were non-acquainted with DPICs' activities. In addition, 77.8% of the respondents 'almost never' use DPICs. Among four categories of the most needed drug information which proposed by responders, 'adverse drug effects' (44.4%) followed by drugs availability in hospital's pharmacy (33.3%) were considered as the most important (Table 2).

The main resources used by responders for drug information are listed in Table 3. 'Drug information textbooks and medical reference books' followed by 'expert colleagues' formed the large bulk of the 'most commonly' used drug information resources (Table 3).

Expectations were presented in Table 4. Five expectations were considered 'very important' by respondents. 1) Provide information on IV drugs incompatibilities (74%), 2)Provide drug interaction information (70.1%), 3)Provide

Table 1. Demographic variable of survey respondents.

Demographic variable (N=157)	N (%)
Gender	
Male	14.3
Female	85.7
Field of study	
Medicine	23.7
Nursing	73.1
Others	3.2
Educational qualification	
University student	9.9
BS	73.5
MS	2.0
MD	0.7
Medical resident	9.3
Attending	4.7
Number of years of hospital practice	
Less than 5	34.5
5 to 10	11.0
11 to 15	32.4
Greater than 15	22.1

new drugs information (56.5%), 4)Education/training of health care professionals regarding rational drug therapy and prevention of medication errors (54.9%), 5)Providing information on dosage forms of drugs available in Iran (53.5%) (Table 4).

Nearly 90% of responders were eager to participate in educational classes and workshops on drug related issues. Also, responders were asked to mention the most needed drug related subjects to be presented in educational classes and workshops, and also to be inserted in center's newsletter. Totally, they included nine different categories of drug information in the questionnaires. All of them are summarized in Tables 5, 6. The respondents considered ' drug interactions' and 'adverse drug effects' as the most needed topics to be presented in educational classes and workshops, and ' introduction of new drugs' , 'drug interactions' and 'adverse drug effects' as the most needed topics to be inserted in center's newsletter (Table 5).

Discussion

Businesses use expectation surveys to improve the match between provided services and the client expectations. Our expectation survey instrument was developed for the drug and poison information center. We surveyed Dr. Shariati's care-providers because they frequently need the services of the DPICs. Comprehensive reviews of drug and poison information centers have been reported, but relatively little is known of the expectations of care-providers regarding the services of these centers.

In 1999 a survey of drug information centers in Singapore

noted that physicians constituted the major class enquirers for drug information centers located in the hospitals, followed by pharmacists. The drug information centers in the hospitals received a preponderance of questions on dose (20-25%) followed by product availability (13-16%). Other fields were: drug identification, choice of therapy, administration, adverse drug reactions and drug safety (7).

In a study assessing the need for drug and poison information, the main resources used by Singapore physicians for drug and poison information were: DIMS[1] (73.7%), standard textbooks (70.1%), colleagues (44.6%) and pharmacists (41.0%). In the opinion of the majority of participants (82.4%) one well run and efficient drug and poison information center was adequate for the country (8). Similar findings were made in our study, which found the 'drug information textbooks and medical reference books' as the most used sources of drug information, followed by 'expert colleagues'. Also, a large majority (82.4%) of Singapore physicians' who wanted access to DPICs' services, wanted it to be available 24 hours a day (8). This view was reinforced in our study, where 51.9% of respondents considered providing telephone consultation services 24 hours a day as 'important' and 42.9% considered it as 'very important'.

In a paper by Rheney et al., North Carolina physicians' access to drug information resources was discussed and it showed that the most common print references responding physicians reported having access to in daily practice were the PDR[2] and various medical journals. Of the various human drug information resources, physicians reported using pharmacists most frequently, followed by physician colleagues (1). In addition, similar to our findings they rarely use DPICs as sources of drug information. According to the results of our study, 77.5% of respondents were non- acquainted with these centers' activities. In contrast to this, 78.9% of New Mexico emergency physicians 'frequently' use the New Mexico Drug and Poison Information Center as a resource of information. This survey data indicated that the highest percentage of their expectations centered on 'providing telephone consultation services 24 hours a day'. The expectation with the lowest importance centered on the 'drug dosing information' (6).

According to the results, 'adverse drug effects information' followed by 'information on IV drugs incompatibilities' and 'drug interaction information' constituted the most needed drug information. While, in a paper by Lakshmi et al., most of the queries from physicians of Karnataka fell in to these categories: 'product availability/ identification' (22.0%), contraindications/

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1 Drug Index of Malaysia and Singapore

2 Physicians' Desk Reference

Table 2. The most needed drug information field and the most urgently needed hours of the day to contact DPICs

Variable	Frequency N (%)
Being acquaintance with DPICs' activities and services (n= 151*)	
Yes	34 (22.5)
No	117 (77.5)
Estimated number of contacts with DPICs in the last month (n=153*)	
No contact	149 (97.4)
Less than 5	4 (2.6)
5 to 10	-
Greater than 10	-
The most needed drug information field (n=9*)	
Adverse drug effects	4 (44.4)
Drugs availability in pharmacy	3 (33.3)
Drug information of routinely used drugs in a special hospital ward	1 (11.1)
Pharmacokinetics and pharmacodynamics of drugs	1(11.1)
The most urgently needed hours of the day to contact DPICs (n=13*)	
8 am to 8 pm	11 (84.6)
8 pm to 8 am	2 (15.4)

*N= number of respondents who answered the question.

Table 3. Frequency of use of each source of drug information

Drug information source	Almost never	Occasionally	Frequently
Using DPICs	119 (77.8)	34 (22.2)	-
Using drug information textbooks and medical reference books	8 (5.3)	89 (58.0)	56 (36.7)
Using drug information softwares	61 (39.9)	73 (47.8)	19 (12.3)
Using medical and pharmaceutical journals	54 (35.2)	90 (58.6)	9 (6.2)
Using drug information websites	62 (40.4)	75 (48.9)	16 (10.6)
Consulting expert colleagues	10 (6.9)	96 (62.8)	45 (29.7)

safety (15.5%), adverse drug reactions (13.0%) (3). The type of information mostly required by the Singapore physicians included toxicological information (88.8%) and pharmacological information (86.7%) such as side effects of drugs, drug interactions, drug dosing, etc (8), whereas the most frequent type of inquiries in a drug information center at the university of Kansas medical center, is reported to involve information on therapeutic use, dosage, product identification and adverse drug reactions (10).

The specialty of drug information is an integral part of clinical pharmacy. Drug information pharmacists make an important input to the clinical management of patients. 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 (11). Our survey clearly identified expectations of Dr. Shariati hospital's health care providers regarding DPICs' services. In instances where there was a gap between expectations and services provided, we made programmatic changes to align services with expectations when feasible. In addition, being non acquaintance with services of DPICs would be considered as the most important reason of not using them. Even after 13 years of opening of the first DPIC in Iran, the health care professionals are not familiar with these centers' services and activities yet. Considering "announcement of availability of drugs in pharmacy" as one of the activities of DPICs, shows that the health care professionals are not acquainted with *real* services of DPICs. This survey

Table 4. Importance of health care professionals' expectations.

Expectation	Not important N (%)	Somewhat important N (%)	Important N (%)	Very important N (%)
Provide DPIC services in all hospitals (n= 155*)	2 (1.9)	7 (4.5)	79 (51.0)	66 (42.6)
Provide telephone consultation services 24 hours a day (n=154*)	2 (1.3)	6 (3.9)	80 (51.9)	66 (42.9)
Provide other referral services (i.e. if the center does not have the information, refer the caller to where the information is available.) (n=153*)	4 (2.6)	11 (7.2)	85 (55.6)	53 (34.6)
Research information from manufacturers for various products (n=150*)	4 (2.7)	9 (6.0)	71 (47.3)	66 (44.0)
Provide internet access to the center (n=153*)	2 (1.3)	18 (11.8)	83 (54.2)	50 (32.7)
Provide consultation for health-care providers regarding poisoning (n=153*)	4 (2.6)	7 (4.6)	77 (50.3)	65 (42.5)
Provide new drugs information (n= 154*)	3 (1.9)	2 (1.3)	62 (40.3)	87 (56.5)
Provide information on dosage forms of drugs available in Iran (n=155*)	-	7 (4.5)	65 (41.9)	83 (53.5)
Provide drug interaction information (drug-drug, drug-food, drug-lab tests) (n=154*)	-	1 (0.6)	45 (29.2)	108 (70.1)
Provide information on IV drugs incompatibilities (n=154*)	-	3(1.9)	37(24.0)	114(74.0)
Education/training of health care professionals regarding rational drug therapy and prevention of medication errors (n=153*)	1 (0.7)	1 (0.7)	67 (43.8)	84 (54.9)
Provide presentations and workshops at local meetings (n=154*)	2 (1.3)	8 (5.2)	74 (48.1)	69 (44.8)

*n= number of respondents who answered the question

showed an urgent need for culture building activities to introduce them to these services.

Finally, we admit that a survey of DPICs' clients expectations should be repeated after opening of the center using similar parameters to enable trends be identified and parallel comparisons to be made with the situation.

Acknowledgment

References

1. Rheney CC, Byerly WG, Connelly JF. North Carolina physician access to drug information resources. Drug Inf J 2000; 34: 69-73.
2. Hunashal R, Kudagi BL, Kamadod MA, Biradar SS. Drug Information Center. The Internet Journal of Medical Informatics 2008; volume 4, number1.
3. Lakshmi PK, Gundu Rao DA, Gore SB, et al. Drug Information Services to Doctors of Karnataka, India. Indian J Pharmacol 2003; 35: 245- 7.
4. Mullerova H, Vlcek J. European drug information centers- survey of activities. Pharm World Sci 1998; 20 (3): 131-5.
5. Nikfar S, Abdollahi M, Chraghali A. Going from strength to strength- Iran's Drug and Poison Information Service. Essential Drugs Monitor 2000; 28 &29: 30, 31.
6. Dominguez KD, Gupchup GV, Benson BE. A Survey of the Expectations of New Mexico Emergency Physicians Regarding the Services of the New Mexico Poison and Drug Information Center. Clin Toxicol 2000; 38(3): 309- 19.
7. Lim LY, Chui WK. Pharmacist-operated drug information centers in Singapore. J Clin Pharm Ther 1999; 24: 33-42.
8. Ponampalam R, Anantharaman V. The Need for Drug and Poison Information- The Singapore Physicians' Perspective. Singapore Med J 2003; 44(5): 231- 242.
9. Hall V, Gomez C, Fernandez-Llimos F. Situation of drug information centers and services in Costa Rica. Pharmacy Practice 2006; 4(2): 83-7.
10. Pradhan SC. The performance of drug information center at the university of Kansas medical center, Kansas City, USA- experienced and evaluations. Indian J Pharmacol 2002; 34: 123-9.
11. Scala D, Bracco A, Cozzolino S, et al. Italian drug information centers: benchmark report. Pharm World Sci 2001; 23(6): 217-23.
12. Asiri YA, Al-Arifi MN, Al-Sultan MS, et al. Evaluation of drug and poison information center in Saudi Arabia during the period 2000-2002. Saudi Med J 2007; 28(4): 477-9.