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Almazrou Dial Abdulrahman

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Assessment of Queries Received by the Drug Information Center at King Saud Medical City

Dlal Abdulrahman Almazroul¹, Sheraz Ali^{1,2}, Jasser Ali Alzhrani¹

¹Pharmaceutical Care Services, King Saud Medical City, Ministry of Health, Riyadh, Saudi Arabia, ²Institute of Biomedicine, University of Eastern Finland, Kuopio, Finland

ABSTRACT

Background: The complexity of drug therapies has increased the need to evaluate the drug information scientifically. In this regard, the aim of drug information centers (DICs) is to promote rational use of drugs in a health-care setting. DI pharmacists play a vital role in providing the necessary and reliable information on drugs to promote the concept of rational drug use, eventually leading to a better patient outcome. The objective of the present study was to assess the drug-related queries received by the DIC at the King Saud Medical City (KSMC) from health-care professionals working in a large tertiary care setting. **Methods:** A retrospective analysis was conducted from February 2016 to January 2017. Data were collected using the DI request form, available in both printed and electronic formats for use by the health-care professionals. Descriptive statistics were used to calculate frequencies and percentages. Data analysis was performed using the Statistical Package of the Social Sciences software, version 16.0. **Results:** The current study received a total of 139 queries that were answered by the DIC pharmacists over a period of 1 year. The majority of queries were asked by pharmacists (61.2%), followed by physicians (23.7%) and nurses (10.10%). About half of the queries were related to the dosage and administration of the drugs. Lexicomp[®] acted as the common resource of information. **Conclusion:** DIC has been instrumental in the dissemination of drug-related information to health-care professionals since its inception in February 2016, resulting in the provision of quality health care to the patients. However, based on yearly queries, there still exists a need to increase the awareness of health-care professionals about the DIC at KSMC, which will urge them to take drug consultation from DIC pharmacists and promote patient safety.

KEYWORDS: Drug information, health-care professionals, King Saud Medical City, pharmacist, queries

INTRODUCTION

The role of drug information centers (DICs) in the health-care settings has increased tremendously owing to the high influx of pharmaceutical molecules that pose serious challenges to health-care providers. DIC is “the subdivision of pharmaceutical care services that provide unbiased and factual information about the drugs and answers the questions that are received from health-care professionals and patients. Moreover, it evaluates the drugs in scientific and practical ways before adding them to the hospital formulary.”^[1] DI

pharmacists play a vital role in promoting the concept of rational drug use by providing useful and reliable information on drugs, eventually leading to better patient outcome.

Three general areas of responsibility exist for any DIC, namely, service, education, and research. In the area of service, specific functions such as answering questions, supporting the Pharmacy and Therapeutics (P&T)

Address for correspondence: Dr. Sheraz Ali, King Saud Medical City, Ministry of Health, Riyadh, Saudi Arabia. E-mail: sheraz@ksmc.med.sa

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Committee, and preparing newsletters are frequent.^[2] Educational responsibilities often include teaching students of pharmacy and new pharmacy staff about DI skills. Evaluation of the services has focused mostly on answering questions and the functions performed by the P&T Committee. Some DICs offer educational sessions or onsite visits for health-care providers to educate them about the center and its services.^[3,4] Commercial information systems used by DICs are sophisticated that offer an opportunity to improve the efficiency of DIC services. The funding for DICs is generally provided by their institutions. In 1973, the first formal survey identified 54 DICs in the United States. The number of DICs has fluctuated over the past three decades. After peaking in 1986, the number of DICs witnessed a steady decrease. In 1995, the number of pharmacist-operated DICs in the United States reached 120.^[5,6]

The most common affiliations reported by DICs continued to be hospitals and medical centers, while pharmacy schools remained the second most commonly reported affiliation. The percentage of DICs that offered 24-h services declined from 10% in 1992 to 5% in 2003. The national survey of pharmacy practice in hospital settings conducted by the American Society of Hospital Pharmacist reported a reduction in DICs and staff positions that were dedicated to respond to the queries of the health-care professionals. As suggested by the report, the drop might have been due to greater integration of pharmacists' job responsibilities. It might have also been owing to an increased self-reliance resulting from better training of pharmacists. Comprehensive computerized DI databases, handheld databases, and the Internet are currently widely available, making it easier, quicker, and more affordable for health-care professionals and the general public to access DI without having to contact a DIC.^[7,8]

In Saudi Arabia, the first DIC was established at the King Saud University College of Pharmacy in early 1978.^[9] Then, in the late 1980s, the King Khalid University Hospital and the King Faisal Specialist Hospital and Research Center established DICs and poisoning information centers.^[10] The first drug and poisoning information center at the Ministry of Health (MOH) was founded in 1989 at the King Saud Medical City (KSMC), previously known as "Riyadh Central Hospital." In 2016, the number of DICs in Saudi Arabia reached 31. With this background, the objective of the present study was to assess the queries received by DICs from health-care professionals working at the KSMC. This would help to increase awareness about the services offered by our DIC, thereby encouraging

health-care providers to ask and consult the DIC to obtain the most accurate and current DI to promote safe and effective drug therapy and improve patient outcomes.

METHODS

A retrospective analysis of drug queries was conducted from February 2016 to January 2017 at the DIC of KSMC, a large tertiary care MOH hospital with a 1400-bed capacity in Riyadh, Saudi Arabia. DIC works under the umbrella of Pharmaceutical Care Services, which is composed of inpatient pharmacy, outpatient pharmacy, intravenous pharmacy, clinical pharmacy services, medication safety unit, inventory, and the DIC. DIC is operated by two pharmacists, and their responsibility is to handle all drug-related queries asked by the health-care professionals. A DI pharmacist selects the most appropriate evidence based on updated literature for searching answers to drug queries. Moreover, search strategy starts with tertiary (e.g., textbooks, review articles, and clinical practice guidelines) followed by secondary (indexing and abstracting services, such as MEDLINE and International Pharmaceutical Abstracts) and then primary (peer-reviewed original studies) resources. The last step is to evaluate, interpret, and combine information from the resources used. A logbook is also maintained to record all the answers with respect to their query numbers. DIC is equipped with a computer with Internet access, printer, and telephone. The center maintains a subscription to Lexicomp DI database and has several electronic textbooks. It also has a temporary subscription to Micromedex.

DI request form was utilized for the purpose of documenting drug queries asked by the health-care professionals. This form consists of four parts: the first part is about patient's information, the second part is about requester's information, the third part deals with the medical history of the patient, and the last and most important part is about the drug-related query. The present study included 139 DI request forms. The variables included in this study were time of request, requestor's department, designation of health-care professional, type of request (drug identification, adverse drug reaction, pharmacokinetics, dosage/administration, drug availability or formulary, stability/compatibility, drug-drug interactions, drug-nutrition interactions, pregnancy/lactation, abuse/addiction, general DI, literature retrieval, and therapeutic use), question or query by health-care professional, query requested (by phone, e-mail, fax, and in person), priority

of the request, and resource or source of information. The response to the requester depends on whether the priority of the request is low (requestor wants answer to the query within 48 h), medium (requestor wants answer to the query within 12 h), or high (requestor wants answer to the query within 30 min). Statistical analyses were performed using the Statistical Package of the Social Sciences software, version 16.0 (SPSS Inc., Chicago, IL, USA). The study was initiated after obtaining approval from the Institutional Review Board of KSMC.

RESULTS

A total of 139 queries were received and answered by the DIC pharmacists from February 2016 to January 2017. The number of DI requests gradually increased in the fourth quarter [Figure 1]. Majority of the queries were received by phone. Consistent with this notion, most of the queries were asked by pharmacists (61.2%), followed by physicians (23.7%) and nurses (10.1%) as illustrated in Figure 2. The peak time of information request was noted between 2:00 pm and 3:00 pm. About half of the queries were related to the dosage and administration (48.2%) of the drug followed by drug availability or formulary [Figure 3].

The queries asked by departments of medical city hospitals, such as general, maternity, and pediatrics,

were comparatively lower than those asked by the pharmacy department, and the majority of the requests were received from the outpatient pharmacy [Figure 4]. About 55% of the requests were general questions about different aspects of the drug, such as drug stability, compatibility, and storage conditions, while 44% were patient-related queries. More than half of the queries were classified as “high priority” based on the requester’s preference, while the rest were classified as medium- and low-priority requests. Lexicomp, scientific articles, and drug leaflets were the most common resources utilized for answering the DI queries [Table 1].

DISCUSSION

The current study demonstrated that majority of the queries regarding drugs were asked by pharmacists, while less than one-third by physicians and nurses, which is consistent with earlier reports.^[6,8] In contrast

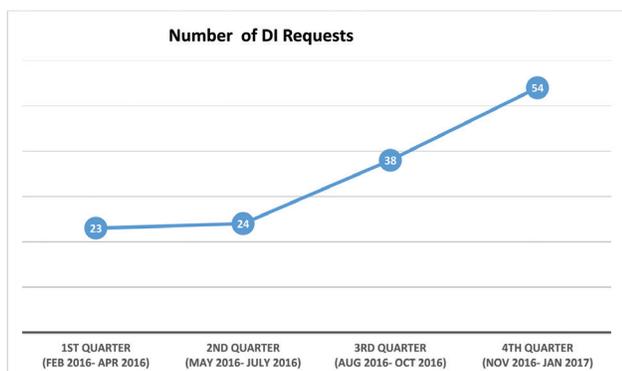


Figure 1: Number of DI requests

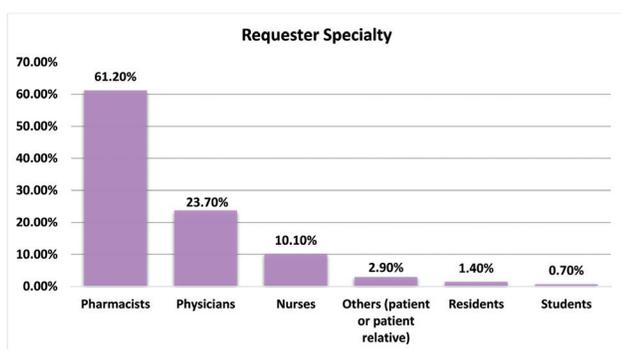


Figure 2: Requester specialty

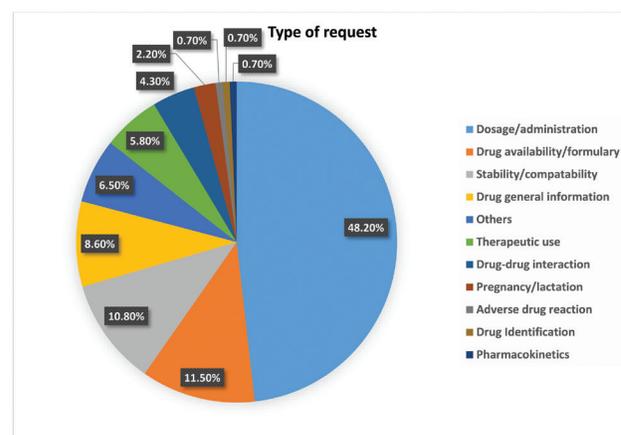
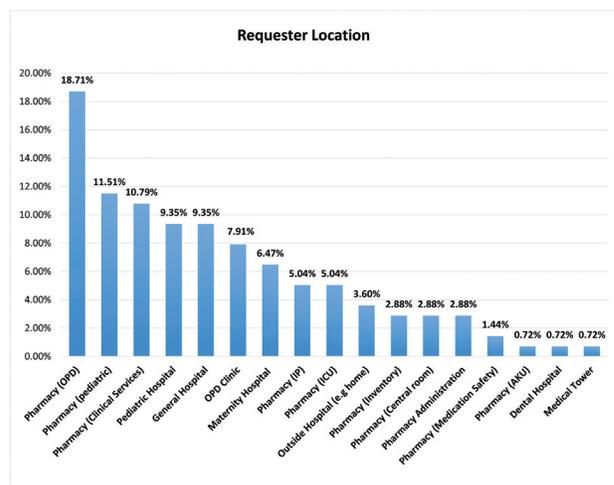


Figure 3: Type of DI requests



OPD= Outpatient Department, IP= Inpatient, AKU= Artificial Kidney Unit

Figure 4: Requester location

Table 1: References used for answering the DI queries

Resource	Percentage (%)
Lexicomp	41.14
Scientific articles	17.71
FDA inserts or drug leaflet	6.28
Micromedex	5.71
UpToDate	3.43
Company document/official replies	2.28
Others	23.42

to earlier findings, the present study revealed that most of the queries were related to the dosage and availability of a drug.^[6] However, these findings were similar to the results of a descriptive study conducted in the government and private tertiary care settings of Saudi Arabia.^[11] DIC received 139 queries in 1 year demanding the need for conducting awareness sessions about DIC services for health-care professionals. A survey conducted in the Saudi Arabia and the United Arab Emirates also revealed that majority of the health-care professionals were oblivious to the existence of DIC in a health-care setting.^[7,12] More than two-thirds of health-care professionals were not aware of the scope of DIC services in Saudi Arabia.^[7] Majority of the queries were classified as high priority, as doctors and pharmacists usually had to provide instant information to patients during their hospital visits. In a systematic review that included 72 studies, doctors raised 0.16–1.85 questions per patient seen.^[13] In a recent review, physicians perceived that searching of high-quality literature is a time-consuming process, advocating the importance of DIC at a tertiary care setting to provide evidence-based information to the health-care providers.^[14,15] Consistent with this notion, doctors spend less than 2–3 min for seeking an answer to a specific question that arises during clinical care while searching for evidence-based literature from MEDLINE. Cochrane database takes time and efforts of health-care professionals.^[13]

Based on the results, the origin of the majority of drug-related queries was the pharmacy department, which comprised the highest share of total DI queries. The only explanation of a large number of queries from pharmacy department is its role of providing drug-related information to the patients and their caregivers. Consistent with this notion, pharmacists also verified the prescription order before dispensing the drugs.

The current study also revealed a gradual increase of DI queries in the last quarter, which was certainly due to the educational and awareness sessions conducted by DI pharmacists in each department of the hospital. Moreover, surveys were conducted for health-care

professionals that highlighted the lack of awareness about DIC services in the hospital. More than two-thirds of the requestors sought the information by telephone, which is in line with the earlier reports.^[11,16,17]

In the present study, Lexicomp[®] was the most common online resource utilized by DI pharmacists for drug-related queries, which is consistent with the recent findings of a multicenter study conducted in the Eastern Province of Saudi Arabia.^[15] The DIC at KSMC has an annual subscription of Lexicomp[®]; installation codes for mobile application were also provided to 200 health-care professionals. The use of mobile versions of DI databases was also acknowledged in a previous study.^[6] DI databases have become an integral part of DICs worldwide; Lexicomp[®] is recognized as the most preferred online database for providing point-of-care DI to patients and health-care professionals. Lexicomp[®] received the highest quality and performance and satisfaction scores than other DI databases in a study conducted in the British Columbia.^[18]

CONCLUSION

DIC has been instrumental in the dissemination of drug-related information to health-care professionals since its inception in February 2016, resulting in the provision of quality health care to patients. The most frequently asked query was pertinent to the dose of a drug, while Lexicomp[®] was the most commonly utilized database for answering drug-related queries of health-care professionals. Based on yearly queries, there is a need to increase the awareness of health-care professionals about the DIC services at KSMC that would urge them to take drug consultation from DIC pharmacists and promote patient safety.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Ghaibi S, Ipema H, Gabay M, American Society of Health System Pharmacists. ASHP guidelines on the pharmacist's role in providing drug information. *Am J Health Syst Pharm* 2015;72:573-7.
- Amerson AB. Drug information centers: An overview. *Drug Inf J* 1986;20:173-8.
- Hunashal R, Kudagi B, Kamadod M, Biradar S. Drug information center. *Internet J Med Inform* 2007;4:1-6.
- Pohjanoksa-Mäntylä MK, Antila J, Eerikäinen S, Enäkoski M, Hannuksela O, Pietilä K, *et al.* Utilization of a community pharmacy-operated national drug information call center in Finland. *Res Social Adm Pharm* 2008;4:144-52.

5. Müllerová H, Vlcek J. Drug information centre - analysis of activities of a regional centre. *Int J Med Inform* 1997;45:53-8.
6. Pradhan SC. The performance of drug center at the University of Kansas medical Center, Kansas City, USA - Experiences and evaluations. *Ind J Pharmacol* 2002;34:123-9.
7. Abou-Auda HS. Information-seeking behaviors and attitudes of physicians toward drug information centers in Saudi Arabia. *Saudi Med J* 2008;29:107-15.
8. Rosenberg JM, Koumis T, Nathan JP, Cicero LA, McGuire H. Current status of pharmacist-operated drug information centers in the United States. *Am J Health Syst Pharm* 2004;61:2023-32.
9. Asiri YA, Al-Arifi MN, Al-Sultan MS, Gubara OA. Evaluation of drug and poison information center in Saudi Arabia during the period 2000–2002. *Saudi Med J* 2007;28:617-9.
10. Timm DM, Swartz KM, Amoh KN. King Khalid University hospital drug and poison information service. A descriptive report and comparison with the University of Minnesota drug information center. *J Pharm Technol* 1991;7:179-83.
11. Alamri SA, Ali Al Jaizani R, Naqvi AA, Ghamdi MS. Assessment of drug information service in public and private sector tertiary care hospitals in the Eastern province of Saudi Arabia. *Pharmacy (Basel)* 2017;5:37.
12. Gharibyar H, Sharif Y, Al-Quasme K, Fahmy S. Physicians perception of drug information resources in the emirate of Abu Dhabi – UAE. *J Pharmacol Pharm* 2013;4:52-6.
13. Del Fiol G, Workman TE, Gorman PN. Clinical questions raised by clinicians at the point of care: A systematic review. *JAMA Intern Med* 2014;174:710-8.
14. Swennen MH, van der Heijden GJ, Boeije HR, van Rheenen N, Verheul FJ, van der Graaf Y, *et al.* Doctors' perceptions and use of evidence-based medicine: A systematic review and thematic synthesis of qualitative studies. *Acad Med* 2013;88:1384-96.
15. Hedegaard U, Damkier P. Problem-oriented drug information: Physicians' expectations and impact on clinical practice. *Eur J Clin Pharmacol* 2009;65:515-22.
16. Hazra A, Sen A, Roy S. One year experience of drug information service in the NGO sector. *Ind J Pharmacol* 2001;33:44-5.
17. Nobili A, Gebru F, Rossetti A, Schettino F, Zahn RW, Nicolis E, *et al.* Doctorline: A private to II-free telephone medical information service. *Ann Pharmacol Ther* 1998; 32:120-5.
18. Mountford CM, Lee T, de Lemos J, Loewen PS. Quality and usability of common drug information databases. *Can J Hosp Pharm* 2010;63:130-7.