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Assessment and Utilization of a Pharmacist-Assisted Drug and Poison Information Centre in Pakistan

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ABSTRACT

Objective: *To evaluate the utilization of the pharmacist-operated Drug and Poison Information Center (DPIC) services in Pakistan.* ***Methods:*** *All queries from 2015-2017 were retrieved from PharmAssist DPIC database and were retrospectively analyzed. The variables obtained for analysis were call types (drug or poison), type of callers, type of drug queries, and type of poison queries.* ***Results:*** *A total of 2209 queries were analyzed. The highest queries in the year 2015, 2016 and 2017 came from general public as 44.0%, 56.3%, and 80.6%, followed by consultants as 11.4%, 7.3%, 4.4%, general physicians as 7.20%, 3.40%, and 3.85%. Students and interns show least usage with students 2.20%, 2.30%, 0.29% and interns 0.27%, 0.23%, 0.09% in the year 2015, 2016 and 2017 respectively. The most frequent queries received at PharmAssist DPIC were related to miscellaneous queries (14.7%), indications (13.6%), strength (13.4%) and drug availability (12.1%). The majority of poison calls were for ingestion (80.3%), followed by animal bite (6.6%), dermal contact (5.5%), injection (2.2%) and inhalation (2.2%).* ***Conclusion:*** *It was concluded that as the awareness of our service enhanced, the utilization also increased. In order to have enhanced usage of the service, more frequent awareness activities need to be performed to have improved patient care.*

Keywords: Drug information, Poison information, Corporate Social Responsibility (CSR), Drug Information Centre, Drug and Poison Information Centre, Clinical pharmacist, Evidence-based medicine, Pharmacy, Pakistan

INTRODUCTION

Provision of abreast and appropriate drug and poison information to healthcare professionals, patients, and the public are essential [1]. DPICs are defined as functioning entities that provide scientific and technical information on medicines in an objective and timely manner, representing an optimal strategy to address specific needs for information [2]. DPIC seek to provide authentic, unbiased drug and poison information (DPI) to healthcare professionals, provide tailor-made counseling and DPI to patients/consumers as well as document adverse drug reactions within the healthcare facility [3]. The driver for their development is the need to use evidence-based medicine when making complex prescribing decisions in clinical settings where appropriate reference sources were not immediately available [4].

The global bodies representing pharmacy and pharmaceutical sciences like International Pharmaceutical Federation (FIP) and the American Society of Health-System Pharmacists (ASHP) have stated that the pharmacist plays a vital role in the provision of reliable and authentic information to patients [2]. According to the World Health Organization (WHO), 60% of drug-related problems can be prevented with appropriate information of drugs [5], keeping Drug Information Center (DIC) as a core component of national programs to promote the rational use of drugs [6]. The expedients used in gaining drug information are usually out of reach due to financial restraints and sometimes lack of internet availability [7]. Recently reviewed Cochrane database emphasized on the burgeoning role of pharmacist intervention and how they can improve not only patients' behavior as well as physicians prescribing while taking into account the patients' welfare, healthcare utilization, and the cost incurred [8].

Drug information centers were shaped in 1962 in the United States and since then they have provided timely and good quality medication information. A survey published in 1995, showed 120 full-fledged pharmacist-operated DIC in the USA, which received a broad usage from health care professionals. The national scenario shows that among private-sector hospitals in Pakistan, the Aga Khan University Hospital (AKUH) [9], Liaquat National Hospital and Shifa International Hospital Ltd have established this facility since long [10,11]. However, such a center in a public-sector

hospital was established in 2012 at the Jinnah Postgraduate Medical Centre (JPMC) [9].

The aim of this study is to evaluate the utilization of the call services and create awareness for increased usage of pharmacist-operated DPIC of Pakistan. With more advanced therapies and modalities being introduced, it is not possible for healthcare professionals to keep up to date with constantly changing information related to medicines. In Pakistan, limited studies have been conducted assessing the trend of drug information queries received at the DPIC which would help us elucidate information seeking behavior of health care professionals and the general public.

MATERIALS AND METHODS

It was a retrospective descriptive observational study of PharmAssist DPIC in Karachi, Pakistan was conducted for a period of 3 years. The study was conducted on queries received at PharmAssist, DPIC helpline, based in Karachi. PharmAssist is a CSR initiative by PharmEvo Pvt. Ltd. which provides nationwide service. The study duration was retrospectively analyzed from January 2015 to December 2017 (3 study years).

Inclusion Criteria

Queries received at PharmAssist toll-free helpline 0800-82222 from January 2015 to December 2017. Table 1 elaborates the category of calls and their definitions for the purpose of clarity.

Table 1 Categories used for received drug and poison information queries

Category	Query Related To
Normal dose	The dose of a medicine in a specific indication
Adjusted dose	The dose of medicine in specific laboratory parameters
Administration	An inquiry related to the suitable formulation, preparation, dose, choice of administration route of medicines
Adverse effects	Inquiry related to adverse drug reactions results from using medicines.
Substitute	A brand substitute for a specific medicine
Strength	Any inquiry related to strength/power of ingredient in the medicine
Availability	Availability, the supply of medicine(s)
Dilution	Query related to thinning of the drug in a certain amount of diluent
Compatibility	The stability of a particular drug substance with a certain diluent
Dosage Forms	The different form of drug substance that exists
Contraindication	The signs or conditions where medicine cannot be indicated
Warnings/precautions	Where caution is needed in a certain condition or state
Storage	Specific temperature changes needed for the medicine
Stability	Time (hours/days) required for the drug product to remain stable
Interaction	Related to drug-drug, drug-food, drug-test or drug-disease
Miscellaneous	Patient counseling, diet changes, advice on side effects, storage, proper directions of use, disease education or other varied queries
Pregnancy	Inquiry related to use of medicines and safety during pregnancy
Lactation	Any inquiry related to the use of medicines and their safety whilst breastfeeding
Ingestion	Poison query related to any drug substance/non-drug substance taken by mouth
Inhalation	Poison query related to any drug substance/non-drug substance taken by breathing
Dermal contact	Any chemical spill on the skin
Insect bite	Query related to animal or an insect bite/sting

Exclusion Criteria

Any unforeseen connectivity issues with the helpline/calls that were unable to reach the helpline. Queries were related to doctor recommendation, hospital referrals, and prescription changes (by patients).

Data Collection Procedure

The service has a computerized database system for record keeping and data maintenance of queries received at the helpline and their answers with references. The data pool used has been extracted from the database for analysis. The ethical considerations of all patients were reserved by the center.

All answered calls were registered and documented by staff in the database. Interactive voice response (IVR) records of all calls received at the helpline are also maintained for quality assurance purposes. All drug information consults were performed according to a validated systematic approach, the principals of evidence-based medicine, and an ethical protocol that has been designed by our center [12]. All information requests from PharmAssist were peer-reviewed, that is to say, one pharmacist prepares and another pharmacist reviews the answer. All queries were logged systematically on a form designed to maintain data in a standard format. The details mentioned on the form were data and time of call, demographic data, patient history, medication history, separate sections for drug/poison query, the response provided, references used, time for response and pharmacist's signature. Awareness about PharmAssist was created by circulating brochures and interacting with health care professionals in different hospitals nationwide (Table 2). Print media and social media platforms were also utilized for spreading awareness.

The data were analyzed using Microsoft Excel according to the categories for statistical analysis and percentages were calculated for concerned responses. The historical trends of queries (the number of calls per month, type of calls, type of callers, type of drug calls, and type of poison calls) were determined graphically.

Table 2 Marketing channels for promoting PharmAssist

Awareness media	Process
• Presentations • Sales representatives • Healthcare professionals • Chemists, Distributors	Project brief sessions are done at hospitals, institutes, universities nationwide. Reminders sent via Service brochures, bookmarks, stickers, posters, key chains, and fridge magnets
Product information leaflet (PIL)	Helpline number placement in all PILs by PharmEvo
Product Development Aid (PDA)	Helpline number placement in all PDA by PharmEvo
Bulk Emails/SMS	Service Ads sent over to contacts via emails and SMS
Facebook, Instagram, Twitter	Social media Adverts circulated through various social media forums
Newspaper Advertisement (Dawn, Pulse)	Print media utilization for spreading awareness to healthcare professionals and general public
Prescription	Helpline number mentioned in hospital-owned prescription papers

RESULTS

Totally 2209 calls included 2023 queries related to drug calls and 186 calls related to poison queries that were offered to callers during the first, second and third study years, respectively. It was found that there was a significant increase in the number of calls from the year 2015-2016 and as the awareness increased the number of calls was significantly increased for the year 2017 when compared to the previous year (Figure 1).

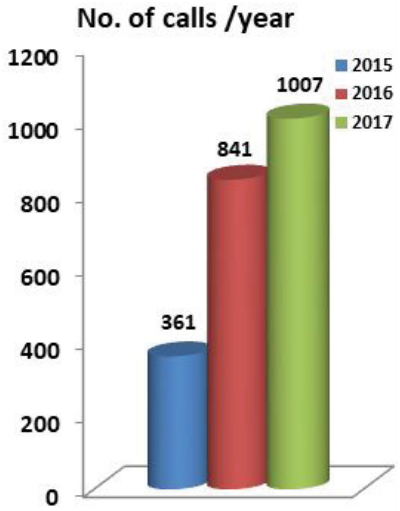

Figure 1 Volume of queries to PharmAssist Drug and Poison Information Centre, Pakistan (January 2015-December 2017)

Type of Callers utilizing PharmAssist Drug and Poison Information Center

The caller types can be split into a health care professional, chemists, students, and the general public. The composition of health care professionals includes consultants, general physicians, residents, pharmacists, and nurses. Among health care professionals clinical data provided to consultants was 11.4%, 7.3%, 4.4%, general physicians was 7.2%, 3.4%, 3.85%, residents accounted for 13.9%, 8.4% 1.78%, pharmacists 19.2%, 7.2%, 7.2% in the year 2015, 2016 and 2017 respectively (Table 3). Students and interns show least usage with students 2.2%, 2.3%, 0.29% and interns 0.27%, 0.23%, 0.09% in the year 2015, 2016 and 2017 respectively. In this regard, services were rendered to the general public as 44.0%, 56.3%, and 80.6% in the year 2015, 2016 and 2017 respectively.

Table 3 Type of callers utilizing PharmAssist Drug and Poison Information Center

Type of Callers	2015	2016	2017
Chemist/Medical Store	3 (0.83%)	116 (13.70%)	12 (1.18%)
Consultant	41 (11.30%)	62 (7.30%)	45 (4.45%)
General Physician	26 (7.20%)	29 (3.40%)	39 (3.85%)
General Public	160 (44.30%)	474 (56.30%)	815 (80.60%)
Pharmacists	69 (19.10%)	61 (7.20%)	73 (7.22%)
Nurses	3 (0.83%)	6 (0.70%)	5 (0.49%)
Medicine Intern	1 (0.27%)	2 (0.23%)	1 (0.098%)
Residents	50 (13.80%)	71 (8.40%)	18 (1.78%)
Students	8 (2.20%)	20 (2.37%)	3 (0.29%)
Total	**361**	**841**	**1011**

Types of Queries Received by PharmAssist Drug and Poison Information Center

The most common drug information queries received were related to these groups; miscellaneous (14.7%), Indications (13.6%), strength (13.4%), drug availability (12.1%), normal dose (11.3%). The characteristics of delivered information in the 3 study year's period. The other categories of queries include adjusted dose (2.3%), administration (8.6%), adverse effects (9.0%), lactation (0.7%), pregnancy (2.7%), stability (1.5%), and dilution (1.0%).

The majority of poison calls received were related to ingestion (80.3%), followed by animal bite (6.6%), dermal contact (5.5%), injection (2.2%) and inhalation (2.2%). The queries related to poison management were dealt vigilantly keeping in view the resources were from updated databases like Micromedex Poisondex®.

DISCUSSION

Access to authoritative and independent information is fundamental for the rational and effective use of drugs [3]. Pakistan has very few DPICs, with pharmacists providing information to their respective institutes rather than facilitating multiple hospitals and the general public.

The PharmAssist Drug and Poison Information Centre commenced operation in 2014. PharmAssist, the first toll-free service introduced by one of the leading pharmaceutical companies in Pakistan, PharmEvo as its Corporate Social Responsibility (CSR) initiative. The facility provides evidence-based drug and poison information by a clinical pharmacist. PharmAssist is aiding health care providers from public and private sectors across Pakistan by providing expert advice on drug information, patient counseling, medication usage, their side effects, and poison management. The telephonic guidance can be reached through the toll-free number. It also provides assistance through email, live chat, and SMS/WhatsApp (24 hours assistance).

It is questionable whether the utilization of DPICs is optimal. Low awareness can be cited as one of the reasons for underutilization. Published data regarding awareness about DICs are rare. A study conducted by Asif, et al., states that 282 (92%) physicians strongly mentioned the need for DPICs [9]. The best time to inculcate awareness and proper attitude is during the education phase [13,14]. In this study, we tried to evaluate the utilization of the call services and creating awareness for increased usage of pharmacist-operated drug and poison information center of Pakistan.

A total of 2209 queries were received and handled at PharmAssist DPIC and were retrospectively analyzed. The question types' requests received at PharmAssist Drug and Poison Information Centre are mentioned in Figure 2.

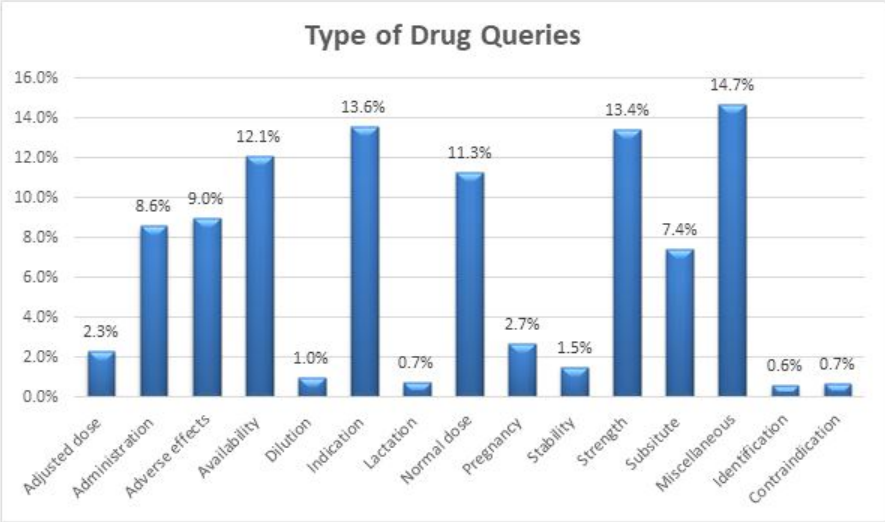

Figure 2 Types of drug queries received during the study period (January 2015-December 2017)

In this study, it was observed that as awareness of PharmAssist Drug and Poison Information Centre increased, the number of queries received have also increased (Figure 3). This is in comparison to a study conducted by Peter, et al., where a gradual increase in the number of utilization of drug information service during the prospective analysis period was observed. This was due to the impact of awareness created in the hospital regarding drug information center [6]. The different modes of awareness created have been mentioned in Table 2. Our study has also a similar outcome to Pamela, et al., where the results showed an increase in the annual mean number of queries in 2010 and 2013, which was explained by the promotion of the service conducted through presentations, and the distribution of promotion materials conducted by team of pharmacists for healthcare professionals [2].

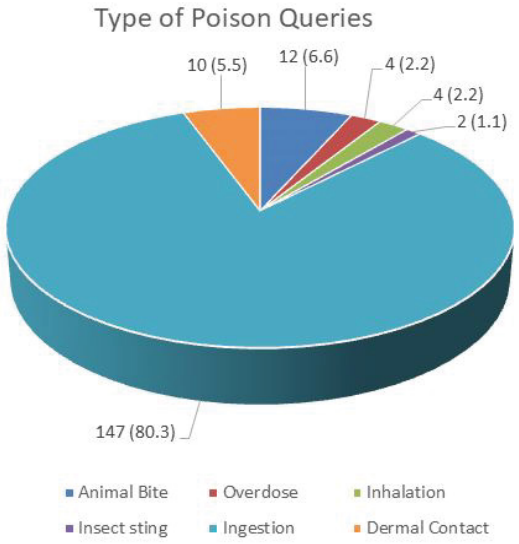

Figure 3 Types of poison queries received during the study period (January 2015-December 2017)

From this study, we found that the greatest users of our service are general public. This can be attributed to the fact that modes of awareness for the general public are expanded, creating awareness through social media, prescription papers, posters, brochures, and website. This is also consistent with a study by Shadnia, et al., which shows an increase in the number of calls from the general public. This shows more sensitivity and concern of the general public regarding their disease and medication [15]. This usage of DPIC service is utilized by chemists, pharmacist, consultants, residents, general physicians, students, nurses, and interns. Chemists mostly inquired about alternate brands, availability and price concerns. The lower DPI service usage by healthcare professionals' from this study can be attributed to low

awareness regarding the service. Increasing the frequency of awareness in healthcare professionals might help in increasing utilization. For marketing activities to create a lasting impact, it is necessary that they should be conducted more frequently. It is the role of both doctors and pharmacists to conduct marketing of DPIC [15]. According to a study by Peter, et al., the physicians maximally utilized the drug information services which comprise more than 40% of consult volume compared to PG/interns, surgeons and other health-care professionals [6]. In a DIC linked to a hospital, it was frequent to observe a high number of requests made by nurses (30% to 40%) and physicians (11% to 17%), besides pharmacists [2]. Hence, for a hospital-based drug and poison information service, it is not surprising that the greatest users are healthcare professionals themselves rather than the general public.

From our study, it was shown that the most frequent drug information queries were related to miscellaneous, indications, strength, drug availability, normal dose. The miscellaneous queries as explained in Table 1, comprising of queries coming from the general public regarding patient counseling, diet specifications, and disease awareness. The general public as mentioned earlier is the greatest user of our service. Our results were comparable with findings by Maleki, et al., where the most common 5 drug information queries were related to therapeutic uses (indication) of drugs, drug identification, drug availability, side effects, and drug administration [12]. From our study, it was found that the most common place of exposure to poison queries was ingestion. This result is consistent with a study from Hong Kong, which shows that the commonest route of poisoning was oral exposure [16].

CONCLUSION

To sum it up, it was observed from our study that as the awareness activates were enhanced, the usage of PharmAssist DPIC also increased. The underutilization of DPIC can be attributed to 2 factors; one is less frequent awareness activities due to which the users do not know where to access the evidence-based information. Education phase is the best time to inculcate proper attitude and awareness. Hence, promotional and marketing activities must be done on a continual basis in order to have enhanced awareness about the service. The second reason can be attributed to the fact that information is easily available on the internet, which is biased and not reliable or authentically referenced. Lack of access to information remains a major barrier to knowledge-based healthcare in developing countries. Thus, the balance needs to be maintained between the needs of the patients and the role of different stakeholders in order to achieve better patient care.

DECLARATIONS

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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