ORIGINAL ARTICLE

Assessment of Drug-related Queries Received by Clinical Pharmacists in a Rural Community of India

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Abstract

Aim: This study aimed to assess how clinical pharmacist's at newly established drug information and patient counseling center responded to different drug information inquiries received in a rural community of India. **Method:** A prospective unicentric study was conducted from December 2021 to May 2023. Socio-demographic information, how inquiries were received and responded to, types of references used and other aspects were recorded in a specially designed data collection form based on a "modified systemic approach" for a drug information query. Descriptive analysis was carried out using frequencies and percentages and to streamline the reporting outcomes were displayed in tables and figures. **Result and Discussion:** During the study period, a total of 423 drug information queries were received, majority of queries were through direct walk-ins (50.12%), In written format (33.81%) followed by telephonic communication (12.53%). More than 50% of the queries were from people having graduate qualifications. In our study, the number of queries received (423) were less as compared to other studies and maximum queries were related to side effects and use of drugs. The tertiary sources such as textbooks and internet resources were the most frequently used resources to answer the queries. **Conclusion:** In this study a strong association between patients and Clinical Pharmacist's was observed as most of the inquiries were patient-specific. This highlights the growing role Clinical Pharmacist's which they can play in patient care and towards addressing the drug-related needs of rural India. Furthermore, to encourage the rational use of medicines, it is also necessary to raise awareness about drug information services among general public in rural areas.

Key words: Clinical pharmacist, drug information center, India, patient counseling

INTRODUCTION

In recent decades, the medical sciences have evolved dramatically as the number of medications and therapeutic methods has increased. On the other hand, a lot of biomedical literature comes onto the market every day. Therefore, it is a great challenge for a health-care practitioner to keep abreast of the latest trends in drug therapy and to promote rational use of drugs.[1] A major contributor to inappropriate medication use, which can lead to adverse drug responses and poor treatment outcomes, is a lack of proper or unbiased drug information (DI).[2] Thus, pharmacists play a crucial role in ensuring that health-care practitioners have access to accurate and reliable DI to make informed decisions for patient care. By providing evidence-based DI, pharmacists can help improve patient outcomes and minimize the risks associated with inappropriate medication use.[3,4] Further, the International Pharmaceutical Federation (FIP) mandates that pharmacists must provide patients with the necessary DI for safe and effective medication use.[5] Hence, the DI Center offers precise, objective, and customized information about medications, including uses, adverse effects, and other details, to consumers, patients, and health-care professionals.[6]

The concept of DI gained popularity in the 1960s, with the first center established at the University of Kentucky Medical Center in 1962.[7] DI service (DIS) is often easily accessible in developed nations; however, due to financial limitations, the majority of DI centers (DICs) in low-and middle-income

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countries have restricted access to current literature and information dissemination.[8] Due to the absence of DIS, health system policymakers at national level are not getting proper information about medication use and other drug-related issues at ground level and it is still a common problem.[9,10]

DIS in Indian scenario

In India, irrational medication use is common, which may result in antibiotic resistance, adverse drug reactions (ADRs), drug interactions, and other medication-related problems. Thus, it is imperative that health-care providers and the general public have access to current, pertinent, and easily accessible DI.[11] In response, the Karnataka State Pharmacy Council launched its DIC in August 1997, intending to provide neutral DI to medical professionals. Being listed on the International Registry of DIS, it is acknowledged as the first independent DIC. Furthermore, clinical pharmacy services are offered by a total of 15 DICs often referred to as independent DICs, in India.[12]

Although many DICs have been established, the services are limited to corporate hospitals and urban areas only.[13] On the other hand, the majority of people dwelling in remote areas or at the community level are deprived of the benefits of DIS. Various studies also confirm that most of the pharmacies in communities are run by unqualified persons having no basic knowledge of rational use of drugs and on the other hand, there is a high prevalence of self-medication.[14] Hence, the principal objective of this research was to evaluate DI queries sent to a CP for providing unbiased DI and to encourage rational use of medicines in a rural setup of India.

Overview of DIC in an institutional setup of a remote village in Arunachal Pradesh India

In September 2021, a DI and patient counseling center (DI&PC) was established in the Jullong village of Arunachal Pradesh, to provide authentic information about medications and to promote judicious use of medicines and patient safety. Despite being founded in April 2021, it was almost non-functional until November 2021 because of the COVID-19 pandemic. At the end of November 2021, a three-member team (one registered pharmacist with a Master's degree in Pharmacology and two registered pharmacists with a Bachelor of Pharmacy) was formed under the supervision of a registered Pharmacist with a Doctor of Pharmacy qualification. The members were provided with basic training on how to respond to DI queries and they were entrusted with the responsibility to render full-time DIS. The center is active 5 days a week and seven working hours a day except on Saturday and Sunday.

Available resources and facilities

To provide authentic DI to the locality, the center has a variety of DI sources and a library with vast reference books to access internet sources; it has one computer and printer with an internet connection. To date, no study has been conducted focusing on the process of requests received by DIC in the region.

MATERIALS AND METHODS

Study design, duration, and site

It was a community-based prospective and observational study. The study was conducted for a period of 18 months from December 2021 to May 2023 in a newly established DI&PC in an intuitional setup of Jullong Village of Arunachal Pradesh, India

Study procedure and data collection process

The DI queries were answered and documented using "Modified systematic approach" to DI.[15,16] Documented DI requests were evaluated based on various parameters such as requester's demographics, qualifications, method of receiving requests and their response, category of request, references used, and feedback of the enquirer (5-point Likert scale).[17] Microsoft Excel (Windows 11) was used to examine the collected data. Frequencies and percentages were used in the descriptive analysis. For convenience of reporting, the results were displayed in tables and figures.

Selection criteria

Inclusion criteria

a. All patients or general public and health-care professionals visiting or sending queries through email, telephone, or social media to DI&PC or "Mobile Pharmaceutical Care Unit" (in health camps)
b. Guardians or patient relatives having some drug or disease-related query or issues.

Exclusion criteria

a. Patients approaching to have some information for self-medication with Schedule H, H1, and X drugs
b. Patients who have been confirmed or diagnosed as having psychiatric problems or disorders
c. Patients/persons with confirmed alcohol or drug intoxication
d. People who have questions about drugs that can encourage suicide
e. Patients who are unwilling to provide their identification or contact information.

Ethical approval

The study protocols were approved by the Institutional Ethics Committee of Sanjeevani Cancer Hospital, Chhattisgarh, India. Approval No. IEC/2021/108.

RESULTS

Sociodemographic information and general characteristics of DI queries

During the study period, the DIC received and responded to a total of 423 DI requests. The questioners included (251; 59.34%) men and (172; 40.66%) women. Most inquiries were made by participants who had a college degree (54.14%), a high school qualification (25.06%), and less than a high school education (20.80). The 18–40 age group accounted for the majority of inquiries (336; 79.43%), followed by the 41–60 age group (78; 18.44%), and almost 2.3% (9) of the requests came from people over 60 years old [Table 1].

The DIC received majority of inquires in the following ways: Direct walk-in to the DIC (212; 50.12%), in writing (143; 33.18%), by telephone (53; 12.53%), and a few by email (15; 3.553%). Most of the queries were patient specific (356; 84.16%), to update knowledge (40; 9.46%), and others (27; 24.3%). The responses were given in the following manner: Orally (227; 53.66%), in printed format (143; 33.81%), and by telephone (53; 12.53%). Time taken for the response ranged from 01 min to 480 min, with most of the queries (283; 66.90%) being responded in 5–30 min. Sequentially, slightly less than a quarter of the inquiries (103; 24.35%) were responded to within 5 min. Maximum time range to respond to the queries was 4–8 h (03; 0.71%). The references used were textbooks (226; 53.43%), Internet resources (138; 32.62%), package inserts (35; 8.27%), internal database (13; 3.07%), and other (11; 2.60%) [Table 2].

General classification of query

The maximum number of queries were related to ADR/side effects (110; 26%), pharmacology (102; 24.11%), therapy (61; 14.42%), interactions (56; 13.24%), availability (48; 43.2%), administration (8; 1.89%), other (7; 6.3%), pharmaceuticals (6; 1.42%), pregnancy (4; 0.95%), and pharmacokinetics (3; 0.71%) [Figure 1].

Table 1: Description of requester demographic details

Variables	*n*	Percentage
Gender		
Male	251	59.34
Female	172	40.66
Educational qualifications		
Less than high school	88	20.80
High school	106	25.06
Graduate	229	54.14
Age		
18–40	336	79.43
41–60	78	18.44
>60	9	2.13

Classification of query based on the pharmacological category of drug

The majority of DI requests in the pharmacological categorization were related to acid suppressants/proton pump inhibitors (68, 16.07%), oral hypoglycemic agents (66, 15.06%), less than a quarter were from antibiotics (56, 10.63%), and steroids (42, 9.92%) [Figure 2].

Frequency of queries received on monthly basis during study period

Averages of 20.35 requests were received at the start of the 9-month study period from December 2021 to August 2022. In the later phase from September 2022 to May 2023, a significant increase was observed with an average of 28.8 requests received [Figure 3].

Table 2: Description of general characteristics of DI requests received and responded

Variables	*n*	Percentage
DI query receiving mode		
Direct walk-in	212	50.12
Telephonic	53	12.53
In written format	143	33.81
Email	15	3.55
Type of DI queries		0.00
Patient related	356	84.16
For upgrading knowledge	40	9.46
Others	27	6.38
Time taken to respond		
0–5 min	103	24.35
5–30 min	283	66.90
30 min–1 h	32	7.57
1–4 h	02	0.47
4–8 h	03	0.71
Source of information		
Reference books	226	53.43
Internet resources	138	32.62
Package inserts	35	8.27
In-house database	13	3.07
Others	11	2.60
Mode of response		
Oral	227	53.66
Printed format	143	33.81

DI: Drug information

Enquirer's feedback

After evaluating feedback question one, "Did you clearly understand the information about the medications provided?," it turned out that the majority of questioners (389; 91.9%) fully agreed that they clearly understood the information about the medications provided by the CP, <10% (30, 7.0) tended to somewhat agree that they clearly understood the information provided. Six questioners remained neutral in their opinion, while one disagreed on understanding the information clearly. When evaluating the second question, would you like to use this type of DI service in the future?, it was found that 421; 99.5% of the inquirers were strongly in favor of having DI service in the future, while (02; 0.47) were somewhat agree to have DI service in the future. Analysis of third question "Are you satisfied with the quality of service in relation to Communication and Delivery?" revealed that (370; 87.47%) enquirers strongly agreed to found the service effective, while (23; 5.4%) found that service somewhat good (10; 2.36%) remained neutral and (20; 4.72%) were somewhat disagreed to have a good service. After evaluating the feedback question four "Do you think that a pharmacist needs to be consulted if there are medication problems?," it was found (400; 94.5%) that the respondents strongly agreed to consult a pharmacist if there were medication problems, (15; 3.54%) were somewhat agreed to consult a pharmacist, (06; 1.41%) remained neutral, and (02; 0.47%) were somewhat disagreed to consult a pharmacist [Table 3].

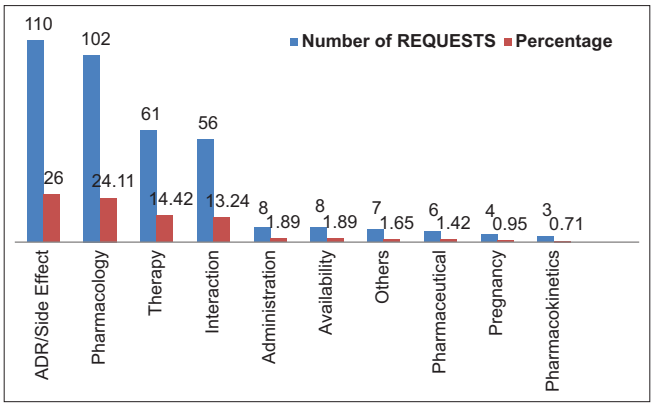

Figure 1: General classification of the requests received

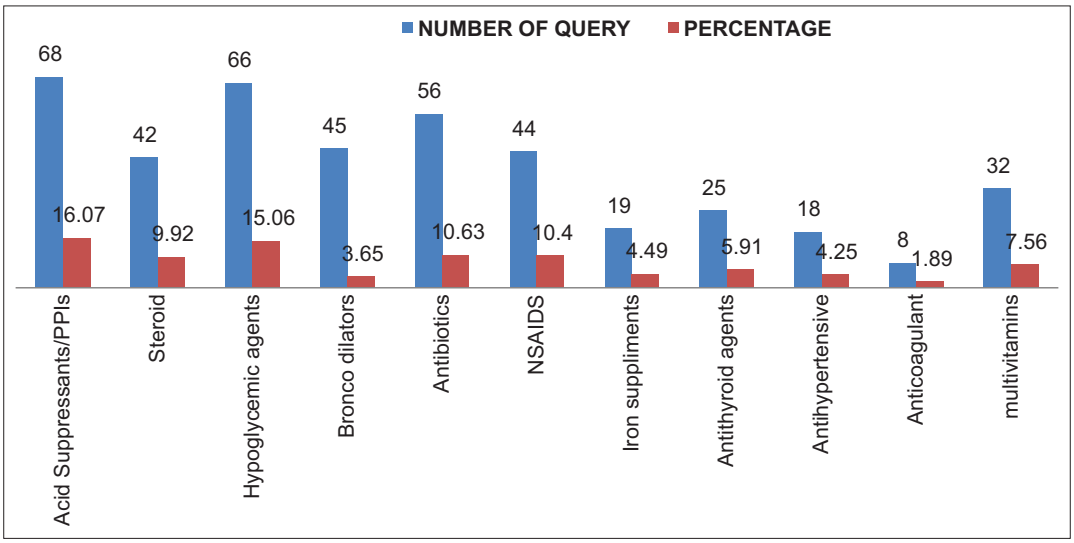

Figure 2: Description of the pharmacological categories of the drugs

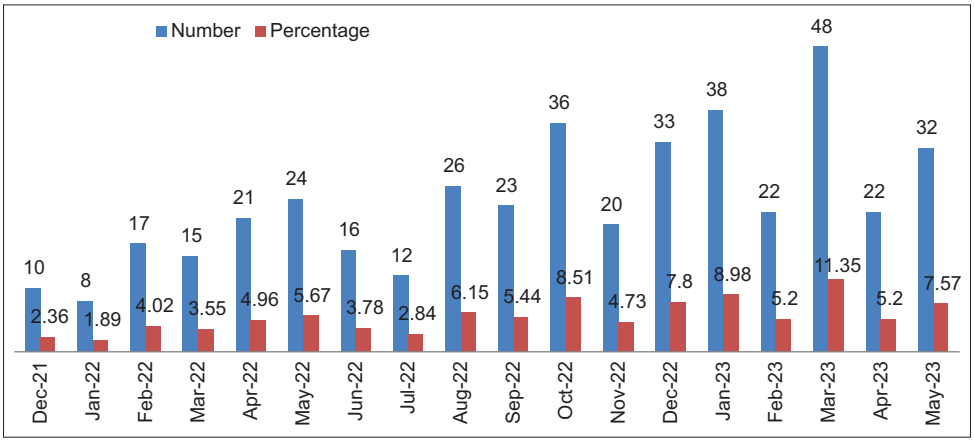

Figure 3: Month-wise drug information queries received during the study period

Table 3: Enquirer's feedback after receiving DI response

Enquirer's feedback after receiving DI response		
1. Did you clearly understand the information about the medication provided		
Strongly disagree	0	0.00
Somewhat disagree	1	0.23
Neutral/no comment	6	1.41
Somewhat agree	30	7.0
Strongly agree	389	91.9
2. Whether you like to have this type of DI service in the future?		
Strongly disagree	0	00
Somewhat disagree	0	00
Neutral/No comment	0	00
Somewhat agree	2	0.47
Strongly agree	421	99.5
3. Are you satisfied with the quality of service (communication and delivery)?		
Strongly disagree	0	0.00
Somewhat disagree	20	4.72
Neutral/no comment	10	2.36
Somewhat agree	23	5.43
Strongly agree	370	87.47
4. Do you think, a pharmacist/doctor must be consulted for any drug-related issues?		
Strongly disagree	0	0.00
Somewhat disagree	2	0.47
Neutral/No comment	6	1.41
Somewhat agree	15	3.54
Strongly agree	400	94.5

DI: Drug information

DISCUSSION

In this study, the DI requests received (423) were lower than the other studies.[18,19] This is because the COVID-19 pandemic has caused the public to pay less attention to the recently established DIC during the early phase of 9 months of study which started from December 2021 to August 2022. In our study, most of the inquiries were received from the general public having a university degree, which is not comparable to other studies in which most of the inquiries were generated from health-care professionals such as doctors, pharmacists, nurses, and health-care students, and very few of them were reported, by general public or patients.[20-23] This is because, unlike the other studies, which were carried out in tertiary care hospital settings or urban areas, ours was done in a community where health-care practitioners are uncommon due to its remote location.

The pattern of receiving DI queries was through direct walk-in (50.12%) which is almost similar to a study conducted in tertiary care hospital in India.[24] The majority of responses (53.66%) were given verbally which is also similar to a study carried out in teaching hospital in India.[3] This may be because the questioner asked for an immediate answer. In this study, most requests were patient specific, which is not comparable to other studies in which requests were related to knowledge updating and other aspects.[25,26] The reason we received more patient-specific queries in our study may have been due to better interaction between patients and CP.

In line with our research, the findings of other studies also revealed that the most commonly asked DI questions were related to dose and ADRs. On the other hand, the most commonly used resources to answer the questions were tertiary sources such as textbooks and the Internet.[27,28]

Contrary to our study, numerous studies accessed instant DI sources such as Micromedex®.[29-31] In our study, we did not use Micromedex due to its high subscription costs.

A thorough evaluation of feedback questions from requesters revealed very high percentage of acceptance or satisfaction in receiving the DISs rendered by CP which is similar to other studies conducted in India as well as other countries.[32,33] In addition, requesters strongly agreed to have DI services in the future. The reason may be due to better interaction and confidence between enquirers and CP.

CONCLUSION

The study evaluated DIS provided by CP in a resource-limited community. It found a strong association between patients and CP, with most inquiries being patient specific. This highlights that the growing role CP can play in patient care and addressing drug-related needs in rural India. Feedback showed satisfaction with CP's services. The study suggests collaboration between private and public health systems and increased awareness programs to promote the widespread use of DISs.

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