Evaluation of Drug Information Query Patterns in a Tertiary Care Hospital, Chengalpattu

Harikumar [1], Kishore Rajkumar [2], Mohammed Sayeed Zaman K [3*]

[1]*Department of Pharmacy Practice, SRM College of Pharmacy, SRM Institute of Science and Technology, Kattankulathur, Chengalpattu, Tamil Nadu, India. Email: harikumar20171@gmail.com*
[2]*Department of Pharmacy Practice, SRM College of Pharmacy, SRM Institute of Science and Technology, Kattankulathur, Chengalpattu, Tamil Nadu, India. Email: kishorerajkumar2001@gmail.com*
[3]*Drug and Poison Centre, SRM Medical College Hospital and Research Centre, SRM Institute of Science and Technology, Kattankulathur, Chengalpattu, Tamil Nadu, India. Email: mohammek@srmist.edu.in, Orcid Id: 0000-0002-2288-3153*
**Corresponding Author: Mohammed Sayeed Zaman K*

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Drug Information Centre (DIC), Query, Drug Information Services, Patient care, Tertiary Care Hospital, Clinical Pharmacist

ABSTRACT
Drug information services support healthcare professionals in addressing patient-specific medication needs and promoting rational drug utilization. This study aims to evaluate the patterns of drug information inquiries among physicians, nurses, pharmacists, students, and other healthcare professionals in a tertiary care hospital. Over the course of three year, drug information queries were received, documented, and retrospectively analysed across several parameters, including the professional status of the requestor, mode of request and response, type and purpose of the query, and reference details. Out of 2651 queries received, the majority were answered by Physicians (n=796; 30.02%), followed by Interns (n=463; 17.46%), Nurses (n=359; 13.54%) Pharmacists (n=353; 13.31%) and Patients (n=291; 10.97%). The secondary resources like Micromedex (n=1124; 42.39%) and Medicines Complete (n=875; 33.01%) were used majorly. The most common drug related query was Pharmacological drug profile (n=743; 28.02%), Product dosage (n=429; 16.18%), Pharmacokinetics (n=349; 13.16%), Side-effects (n=312; 11.76%) and Therapeutic uses (n=224; 8.44%). Drug Information Services has been developed to promote rational prescribing patterns among prescribers, reduce medication errors and provide better clinical outcomes.

1. Introduction

Drug Information Center (DIC) educates medical professionals on pharmaceuticals, in response to inquiries from patients, healthcare professionals, committees, organizations, or members of the public. Drug Information Services offer accurate, unbiased, and correct information. When used effectively, DIC enhances the standard of evidence-based treatment and advances patient care.[1,2] Many developing nations experience a lack in drug information. In several regions of India, the enhancement of Drug Information Centres (DIC) enables Clinical Pharmacists to participate in patient care through interventions, a decreased number of medication errors, and the improvement of patient compliance.[3,4] Pharmacists are increasingly engaged in prescribing, necessitating the provision of unbiased, evidence-based information.[5] The global increase in the discovery of novel drugs and dosage forms presents challenges in the selection of drugs and drug - delivery systems.[6] According to World Health Organization (WHO), Independent Drug information centres are essential for promoting the rational use of drugs, and are to be primarily located within hospitals and communities.[7,8] This Retrospective study was conducted in a tertiary care hospital to analyse the pattern of drug information queries. This study aimed to evaluate the common purposes and types of queries requested.

2. Materials and Methods

Type & Site of Study:

A retrospective study was conducted at a tertiary care hospital in Chengalpattu, Tamil Nadu. It is a tertiary care teaching hospital with over 350 beds along with more than 15 medical departments. The Department of Pharmacy Practice offers clinical pharmacy services to healthcare professionals, as well as pharmacological information about drugs. The DIC is equipped with well-trained staff, computers, internet access, and electronic databases such as Micromedex and Medscape. The centre is managed

by qualified and trained individuals. It offers numerous services, including drug profiles, drug interactions, adverse drug reactions, patient counselling, toxicological profiles, and contraindications.

Drug information queries were collected retrospectively over a three-year period (2021–2024) at a tertiary care hospital. A total of 2,651 queries were received, assessed, and analysed.

Data Collection:

Data were collected with regard to the professional status of the enquirer, medical department, mode of request, mode of reply, details of the query, classification of the questions, and the references utilized.

Analysis of Data:

Data analysis was conducted using Microsoft Excel.

The drug information service is provided by Pharm.D interns, supported by staff and the clinical pharmacy team in our Drug Information Center (DIC). They regularly participate in ward rounds with physicians and frequently address drug inquiries.

Communication Services:

The service is provided through telephone, participation in ward rounds, and direct access. Drug information queries are recorded in a structured drug information query request and documentation form which are maintained in a documentation file (Appendix 1 & 2).

3. Results

A total of 2651 queries were answered during the study period. Physicians made up the largest category among these queries (n=796; 30.02%), followed by the interns (n=463; 17.46%). The majority of the queries was obtained during ward rounds, accounting for 51.49% (n=1365), while Direct Access contributed to 33.79% (n=896).

The majority of queries were addressed in written format (n=1533; 57.82%), followed by printed format (n=923; 34.81%), as most requestors found this mode to be more convenient. The duration for an accurate response varied from a few minutes to 24-48 hours.

A total of 1134 queries (42.77%) were addressed within 1-2 hours, while 741 queries (27.95%) were resolved within a day, depending upon the severity of the inquiries. References were selected with precision due to their direct influence on patient health. The classification and analysis were conducted broadly.

Secondary resources such as MICROMEDEX (n=1124; 42.39%) and MEDICINES COMPLETE (n=875; 33.01%) were the preferred references for the majority of queries. The complete details of the drug information query (demographics of the study) are given in (Table 1).

Table 1: Details of the drug information query (Demographics of the study)

Details of the Drug Information Query			
SL.NO	**Characteristics**	**Number**	**Percentage (%)**
REQUESTOR'S PROFESSIONAL STATUS			
1	Physician	796	30.02
2	Nurse	359	13.54
3	Dentist	75	2.82
4	PG	246	9.27
5	Pharmacist	353	13.31

Details of the Drug Information Query			
SL.NO	**Characteristics**	**Number**	**Percentage (%)**
6	Patient	291	10.97
7	Intern	463	17.46
8	Others	68	2.56
MODE OF REQUEST			
1	Direct Access	896	33.79
2	During Ward Rounds	1365	51.49
3	Phone	327	12.33
4	Email	63	2.37
ANSWER PROVIDED BY (MODE OF REPLY)			
1	Oral response	148	5.58
2	Written format	1533	57.82
3	Printed format	923	34.81
4	Others	47	1.77
ANSWER GIVEN (DURATION OF RESPONSE)			
1	Immediately	428	16.14
2	Within 2-4 hours	1134	42.77
3	Within a day	741	27.95
4	Within 1-2 days	348	13.12
REFERENCES			
1	AHFS	129	4.86
2	Merck Manual	57	2.15
3	Martindale	128	4.82
4	Harrison	205	7.73
5	Medline	109	4.11
6	Medicines Complete	875	33.01
7	Micromedex	1124	42.39
8	Others	24	0.90

One of our objectives was to identify the primary type of query posed in the tertiary care teaching hospital. The most common drug information request was for the Pharmacological Drug Profile (n=743; 28.02%), followed by inquiries regarding the Dosage of the product (n=429; 16.18%). The pharmacokinetics profile of a drug is essential for prescribers, as maintaining a steady state of the drug in plasma is crucial for achieving optimal clinical outcomes. In our study, the queries (n=349; 13.16%) originated from details regarding the Pharmacokinetics Profile. The distribution of query types among requestors is presented in Table 2.

Table 2: Distribution of type of Queries

DISTRIBUTION OF TYPE OF QUERIES			
SL.NO	**TYPE OF QUERY**	**NUMBER**	**PERCENTAGE (%)**
1	Drug Information	743	28.02
2	Dosage	429	16.18
3	Cost	173	6.52
4	Pharmacokinetics	349	13.16
5	Side-effects	312	11.76
6	Therapeutic use	224	8.44
7	Abuse / Addiction	73	2.75
8	Pregnancy / Lactation	76	2.86
9	Drug availability	134	5.05
10	Paediatrics / Geriatrics	95	3.58
11	Others	43	1.62

A higher proportion of queries originated from the General Medicine department (n=535; 20.18%), followed by other departments. Queries from different departments are presented in Table 3.

Table 3: Query from various Departments

QUERY FROM VARIOUS DEPARTMENTS			
SL.NO	**NAME OF THE DEPARTMENT**	**NUMBER**	**PERCENTAGE (%)**
1	Cardiology	142	5.35
2	General Medicine	535	20.18
3	Paediatrics	429	16.18
4	General Surgery	321	12.10
5	Gynaecology	164	6.18
6	Psychiatry	172	6.48
7	Nephrology	209	7.88
8	Neurology	227	8.56
9	Respiratory Medicine	213	8.03
10	Pharmacy	152	5.73
11	Gastroenterology	87	3.28

4. Discussion

This retrospective study aimed to evaluate the pattern of queries received in the DIC and the utilization of DIC as a referral service by healthcare professionals in a tertiary care hospital. Evaluating the pattern of drug information queries is crucial for enhancing the quality of a drug information centre.

Of the total 2651 queries, the majority pertained to pharmacological drug profiles. Physicians constituted the main users of this service, followed by interns in medical and allied health sciences, as well as other healthcare professionals. The majority of queries were addressed during ward rounds and responded to in written or printed format, facilitating future reference.

Ward round queries were significantly higher than those received via telephone and email, attributed to the greater involvement of Clinical Pharmacists in delivering services within the wards. In comparison to other modes of response, replies via email were less frequent. Evaluation revealed that

the majority of queries originated from the Department of General Medicine, while departments such as Paediatrics and General Surgery received a comparable number of queries, with minor variations.

This may be attributed to general physicians managing patients with comorbidities, thereby necessitating drug-related information. The majority of queries required only 1-2 hours to complete the literature search and respond to requestors, as they were prioritized. Approximately 27.95% of queries received responses within a 24-hour period. The maximum response time for queries was 1-2 days, accounting for 13.12% of cases. All enquirers received appropriate responses within a reasonable timeframe relative to the severity of their enquiries.

The physicians and other healthcare professionals at the institute utilize DIC as a referral service solely for queries that they cannot resolve independently. The predominant purpose of the queries was self-education and knowledge enhancement, with a secondary focus on patient care. The primary resources utilized for the references were MICROMEDEX and MEDICINES COMPLETE.

Our study included factors such as inquiries from various departments and the response time to specific queries. DIC has played a crucial role in the distribution of drug-related information to healthcare professionals. An analysis of the Drug Information Query revealed that the predominant users of the service were doctors and postgraduate students from the department of medicine, with most utilizing the services to enhance patient care.

The analysis of the feedback form (Appendix 3) indicated that most requestors expressed satisfaction with the quality of services provided by the drug information centre. The Drug Information Centre serves as a liaison between healthcare professionals and patient care. Novel initiatives, including the provision of therapeutic drug monitoring services and the identification of poisonous substances in biological samples, are being implemented. Future research may also examine user satisfaction.

5. Conclusion

In a tertiary care hospital, DIC can function as a referral service similar to other specialties, provided it is utilized appropriately by other clinicians. Raising awareness of DIC in hospitals is crucial, and healthcare professionals should be encouraged to utilize available services to enhance patient care. Government and private hospitals should take initiative to establish additional DICs to enhance the quality of patient care. Therapeutic failure represents a significant challenge within the healthcare system, often stemming from healthcare professionals' insufficient access to current drug information. Additionally, increased frequency of awareness programs is necessary to promote and enhance the utilization of drug information services.

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Conflict of Interest:

The authors declare that there is no conflict of interest

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NIL

Reference:

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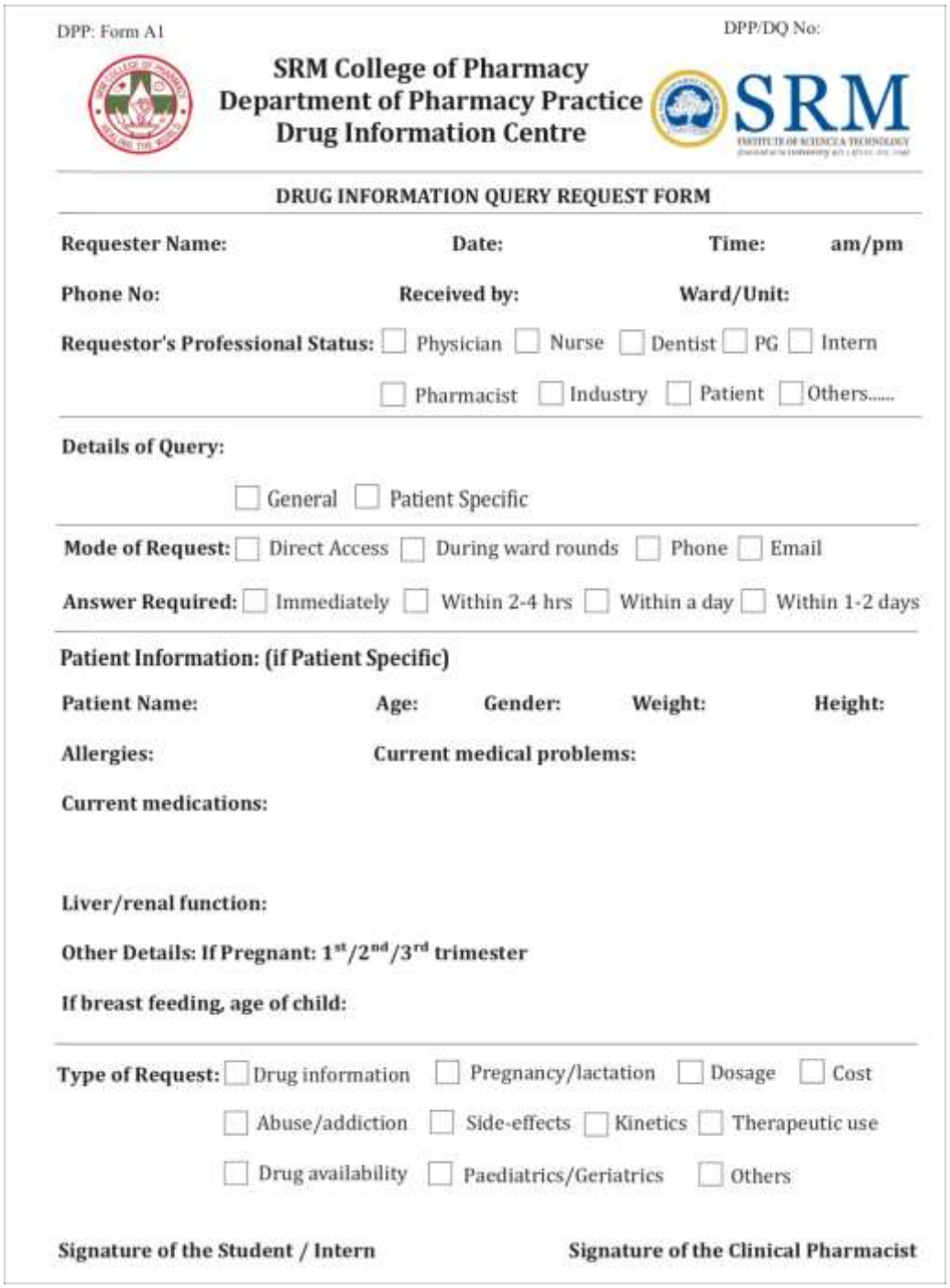
Appendix 1:



DPP: Form A1 DPP/DQ No:

SRM College of Pharmacy
Department of Pharmacy Practice
Drug Information Centre

SRM INSTITUTE OF SCIENCE & TECHNOLOGY

DRUG INFORMATION QUERY REQUEST FORM

Requester Name: **Date:** **Time:** **am/pm**

Phone No: **Received by:** **Ward/Unit:**

Requestor's Professional Status: ☐ Physician ☐ Nurse ☐ Dentist ☐ PG ☐ Intern ☐ Pharmacist ☐ Industry ☐ Patient ☐ Others.....

Details of Query:

☐ General ☐ Patient Specific

Mode of Request: ☐ Direct Access ☐ During ward rounds ☐ Phone ☐ Email

Answer Required: ☐ Immediately ☐ Within 2-4 hrs ☐ Within a day ☐ Within 1-2 days

Patient Information: (if Patient Specific)

Patient Name: **Age:** **Gender:** **Weight:** **Height:**

Allergies: **Current medical problems:**

Current medications:

Liver/renal function:

Other Details: If Pregnant: 1st/2nd/3rd trimester

If breast feeding, age of child:

Type of Request: ☐ Drug information ☐ Pregnancy/lactation ☐ Dosage ☐ Cost ☐ Abuse/addiction ☐ Side-effects ☐ Kinetics ☐ Therapeutic use ☐ Drug availability ☐ Paediatrics/Geriatrics ☐ Others

Signature of the Student / Intern **Signature of the Clinical Pharmacist**

Appendix 2:

DPP: Form A2 DPP/DQ No:

SRM College of Pharmacy
Department of Pharmacy Practice
Drug Information Centre

SRM INSTITUTE OF SCIENCE & TECHNOLOGY

DRUG INFORMATION DOCUMENTATION FORM

Query No: **Date:** **Time:** **am/pm**

Phone No: **Received by:** **Ward/Unit:**

Requestor's Professional Status: ☐ Physician ☐ Nurse ☐ Dentist ☐ PG ☐ Intern ☐ Pharmacist ☐ Industry ☐ Patient ☐ Others.....

Details of the answer:

References: ☐ AHFS ☐ G & G ☐ Martindale ☐ Harrison ☐ Merk Manual ☐ Others ☐ Medline ☐ Computer data base (Micromedex) ☐ WEB

Answer Given: ☐ Immediately ☐ Within 2-4 hrs ☐ Within a day ☐ Within 1-2 days

Answer Provided by: ☐ Oral ☐ Written ☐ Printed form ☐ Others

Answer Communicated by: ☐ Direct visit ☐ Phone ☐ Email ☐ Others

Query answered by:

Date & Time of answer:

Signature of the Student / Intern **Signature of the Clinical Pharmacist**

Appendix 3:

DPP: Form A3 DPP/DIFB No:

SRM College of Pharmacy
Department of Pharmacy Practice
Drug Information Centre

SRM INSTITUTE OF SCIENCE & TECHNOLOGY

DRUG INFORMATION SERVICE QUALITY FEEDBACK FORM

Query received on : **Query received from:**

Answer provided on: **Mode of reply:**

S.No	Service Provided	Quality of Response
1.	Search question was clearly noted with relevant reference selection	☐ *Excellent* ☐ *Good* ☐ *Acceptable* ☐ *Unacceptable*
2.	Literature and information retrieved were relevant (Critically evaluated)	☐ *Excellent* ☐ *Good* ☐ *Acceptable* ☐ *Unacceptable*
3.	Response was accurate and conclusion was complete	☐ *Excellent* ☐ *Good* ☐ *Acceptable* ☐ *Unacceptable*
4.	Service provided promptly	☐ *Excellent* ☐ *Good* ☐ *Acceptable* ☐ *Unacceptable*
5.	Overall performance of drug information service	☐ *Excellent* ☐ *Good* ☐ *Acceptable* ☐ *Unacceptable*

Comments (if any):

Name & Signature with seal