

Original Article

Evaluation of performance of drug Information center providing quality of information services to healthcare professionals in a tertiary care teaching hospital of south India

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Abstract

Drug information centre (DIC) is an area where the pharmacist specialize in providing information related drug and its therapy to healthcare professionals and public. **Objective:** To evaluate the performance of drug information centre providing quality drug information services provided by the clinical pharmacists to the health care professionals. **Methodology:** It was a prospective study carried out for a period of six months (December 2012 to May 2013). The drug information services provided by the clinical pharmacists during ward rounds, direct access, telephone and mail were documented in the drug information request and documentation forms which were prepared by the department of pharmacy practice. The quality of drug information provided was assessed by receivers and providers, using feedback questionnaire and guidelines from the DSE/WHO seminar respectively **Results:** A total of 122 queries were received during six month period. On evaluation it was found that most of the queries were received from physicians-87(71.31%) and interns 25 (20.49%), nurses 6 (4.92%), pharmacists 4 (3.28%) from the following three selected departments general medicine 95 (77.87%), dermatology 15 (12.30%), paediatric 12 (9.84%) and most of the queries were for the purpose of better patient care 37 (30.33%) and to update knowledge 85 (69.67%). **Conclusion:** Drug information services provided by the Department of pharmacy practice, BMCH & RC, SJM college of Pharmacy, Chitradurga were useful, beneficial to the health care professionals to provide better patient care and to update knowledge.

Key words: DIC, Drug information services, Clinical pharmacists, Enquirers

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1. Introduction

Drug information is the provision of written and /or verbal information or advice about drugs and drug therapy in response to a request from

the other health care providers, organizations, committees, patients or members of the public [1]. These activities are undertaken by the especially well trained individuals i.e. Clinical Pharmacist and Doctor of pharmacy

professionals who are qualified and registered under the Board of state pharmacy council in providing information to optimising the drug therapy. This providing drug information to health care professionals is an important mechanism which is accurate and timely to provide safe and effective drug therapy to the patients, but in India this provision of providing drug information is still infancy [2]. A clinical pharmacist providing drug information services is an important part of his/her daily activities. Since one decade there were lot of new formulations more than 60,000 were came in to market and increasing the adverse drug events. It is difficult to remember all the side effects and adverse drug reactions of all drugs to the health care professionals to monitor the patients. So clinical pharmacist have a key role to identify such adverse reactions and to assess, monitor them with help of physicians. Health care professionals need to update their knowledge regarding drug therapy and management with the help of clinical pharmacist for better patient care.

In India physicians received the maximum drug information from the pharmaceutical company representatives. Most of the developing countries suffer from lack of drug information due to limited availability of current literature, poor documentation and less dissemination of little information available [3].

In India, Rosemary Sharp, a missionary from UK, started the first drug information centre at Christian Medical College, Vellore in the early 1970s and recognize the need of drug information to health care professionals as well as consumers, the WHO India country office in collaboration with the Karnataka State Pharmacy Council (KSPC) has supporting the establishment of 5 Drug information centres. These centres has been established in Haryana (Sirsa), Chhattisgarh(Raipur), Rajasthan (Jaipur), Assam (Dibrugarh), and Goa (Panaji), they started functioning in 2007 [4].

In 2009, the drug information centre was established by the S.J.M College of Pharmacy in Basaweshwara Medical College Hospital and Research Centre (BMCH&RC) Chitradurga, Karnataka. The drug information centre provides drug information services to the health care professionals (Physicians, nurses, pharmacists, internees etc) and public. Drug information services provide unbiased, well referenced, critically evaluated and up-to-date information on any aspect of drug use [5]. The centre focuses on providing unbiased drug information, well referenced, critically evaluated and up to date information which promotes safe and effective use of medication. DIC helps by updates the knowledge of health care professionals regarding drug therapy, management, monitoring adverse reactions, Interactions and Interventions for better patient care. The drug information centre provides information on the current and newly entered drugs in to market to the health care professionals. Clinical pharmacists and the staff working in our department were specially trained under drug information centre with adequate knowledge on Pharmacology, Pharmaceutics, Pharmacotherapeutics, Statistics, and Clinical research. Our DIC also provides information services to primary health care centres based on their requests and conducting many community programmes in the rural and urban areas on health awareness and enlighten the society. In a part of routine pharmacy practice effective drug information and evaluation skills play a major role. Pharmacists have become increasingly involved in influencing prescribing, so it is important that they should provide unbiased, evidenced based drug information to the prescribers [6]. After developing Drug information centres in various parts of India clinical pharmacists directly impact the patient care by numerous interventions, decreasing the medication errors and improve the patient compliance.

Thus, the aim of the present study was "To evaluate the performance of drug information

centre providing quality drug information services provided by the clinical pharmacists to the health care professionals”.

2. Materials and Methods

Evaluation of drug information services provided by the clinical pharmacists under drug information centre were carried out in Basaweshwara Medical College Hospital and Research Centre (BMCH&RC) Chitradurga, Karnataka, which is 600 bedded hospitals. This was a prospective study carried out for a period of six months from (December 2012 to May 2013). Drug information centre was established by SJM College of Pharmacy at attached hospital BMCH&RC in 2009. This centre was well equipped with the trained staff and a library consisting of textbooks, national and international journals, computer with internet facility with an electronic database i.e. Micromedex. Drug information was provided by using the three sources like primary sources, secondary sources and tertiary sources and services were provided between 9am to 5pm in week days except in Sunday and government holidays. Drug information services were provided by the clinical pharmacists during ward rounds, direct access, telephone and mail, which were documented in the drug information request and documentation forms prepared by the clinical pharmacists of department of pharmacy practice. These services were free of cost and voluntarily provided for the aim of better patient care. These forms were evaluated prospectively on various parameters like speciality, status of enquirer, purpose of the enquiry, mode of request and question category etc. Microsoft access was used for electronic documentation. These documentation forms were filed and maintained by the department.

2.1 Assessment and evaluation of drug information services were carried out in three steps

The evaluation of drug information services involved in three steps. First step is assessment of drug information request and documentation forms, carried prospectively for a period of six months, for various parameters like “status of the enquirer, medical speciality, mode of request, type of queries, mode of reply, time frame to reply and references used to provide queries”

Second step is assessment of the quality of services from receivers perspective by providing feedback questionnaire circulated, which comprised of questions on awareness, utilization, ease of contact, and quality of services provided by the DIC. Questionnaire was given to 31 health care professionals out of which all 31(100%) were responded, includes Physicians, Postgraduate trainees, House surgeons, Nurses of various departments in the hospital where clinical pharmacists were working. Two days time was given to the requestors and filled questionnaires were collected on third day. We also collected the suggestions from the requestors for the further development of clinical pharmacy department. Third step is assessment of quality of drug information services from the providers perspective by using the guidelines developed in the DSE/WHO seminar [7]. According to these guidelines responses were categorised in to judgemental and non-judgemental types. The former type of queries were require judgement, integration of new data with pre-existing knowledge and experience and extensive searching of secondary and tertiary references and primary literature review. These judgemental queries are often patient specific. Non-judgemental queries represents lower degree of sophistication and do not require judgement. The key points which were considered for evaluation includes effectiveness in obtaining the demographic data of the enquirer and collection of background information, level of understanding of the question, using search strategy, evaluation of

Status enquirer:

Table: 1

Speciality	Number of queries	Percentage
Physicians	87	71.31%
Interns	25	20.49%
Nurses	6	4.92%
Pharmacist	4	3.82%
Total	122	100%

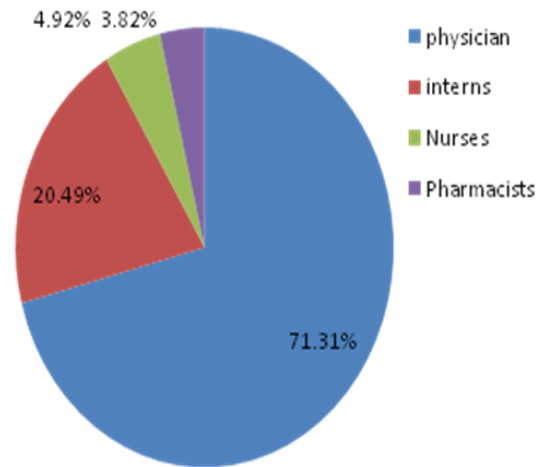


Fig no: 1 Status of the enquirer

Medical specialist of the enquiry

Table no : 2

Specialty	Number of queries	Percentage of queries
General medicine	95	77.85%
Dermatology	15	12.30%
Paediatrics	12	9.84%
Total	122	100%

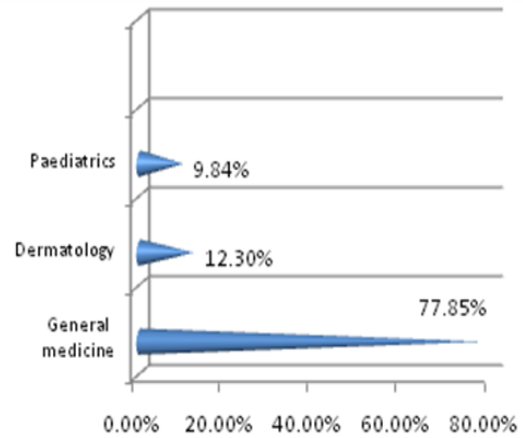


Fig no: 2 Medical speciality of the enquirer

literature and the response given by the provider.

From the total queries which were collected during the study period, 40 queries were taken and divided into judgemental and non-judgemental 20 in each. After evaluation queries were scored from 1-5, in which 5 indicates that information given was excellent, 4 indicates as very good, 3 indicates good, 2 as adequate and 1 indicates that the consultation was unacceptable for use. The minimum acceptable level of rating was considered to be 3.

3. Result

A total number of 122 queries were received to the drug information centre of BMCH & RC during a period of six months December 2012 to May 2013.

3.1 Evaluation of the quality of drug information services from receivers perspective

A total of 31 questionnaires were distributed to the healthcare professionals of physicians, postgraduate's students, interneers and nurses randomly of different departments in the hospitals for their feedback on the quality of drug information services, of which all (100%)

Mode of request of received queries:

Table no.: 3

Mode of request	Number of queries	Percentage
Direct access	33	27.05%
Ward rounds	49	40.16%
Email	24	19.67%
Telephone	16	13.11%
Total	122	100%

answer in time and 65% were received the answer appropriately. Out of all 77.41% accepted that they were easily contact the services in the hospital. Along with these some enquires were provided some suggestions to improve the performance of drug information centre.

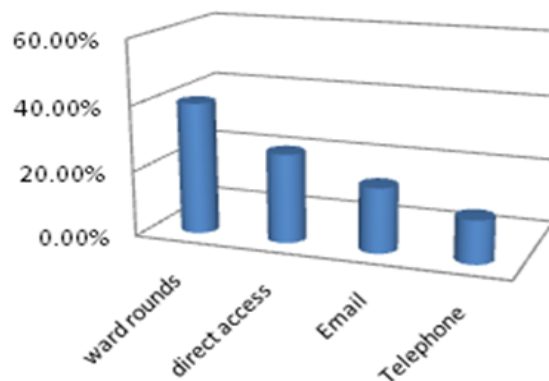


Fig. no: 3 Mode of request

Type of queries:

Table no : 4

Mode of query	Number of prescriptions	Percentage
Indication	26	21.31%
Dosage	23	18.85%
Adverse reactions	20	16.39%
Contraindications	13	10.66%
Pharmacokinetics & Pharmacodynamics	12	9.84%
Interactions	11	9.02%
Pregnancy & lactation	7	5.74%
Others	10	8.20%
Total	122	100%

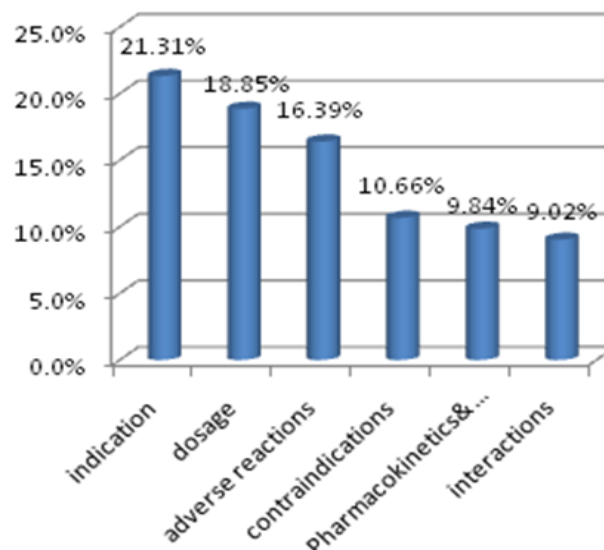


Fig no: 4 Type of queries

responded. Of all the respondents 83.87% were aware of drug information centre in the hospital and 65% are utilized the drug information services in their routine. For a question among the respondents who utilized the drug information services, 65% of the respondents received the

3.2 Evaluation of quality of drug information services from providers perspective

Out of the total queries, 20 judgemental and 20 non-judgemental queries were randomly selected for evaluation using quality assurance form. Among the 20 judgemental queries, 9 of them had

a score of 5 which was the highest, 7 queries were rated 4 (very good) and 4 queries was 3. In the 20 non-judgemental queries 8 were rated as 5 excellent, 7 queries rated as very good and 5 were rated as 3 good. By analysing the all responses judgemental queries shows great rating than the non-judgemental queries. All the responses were rated above 3, there by satisfying the minimum acceptable level of quality shows in the following table no: 9.

Purpose of queries

Table no. : 5

Purpose of query	Number of queries	Percentage
Better patient care	37	30.33%
Update knowledge	85	69.67%
Total	122	100%

Mode of reply:

Table no. : 6

Mode of reply	Number of queries	Percentage
Printed format	64	52.46%
Verbal format	24	19.67%
Mail	19	15.57%
Written format	15	12.30%
Total	122	100%

4. Discussion

Drug information centre provides the services in all departments of the hospital to all healthcare professionals with well trained clinical pharmacists

teaching faculty, students of doctor of pharmacy. In our study we conducted prospective evaluation

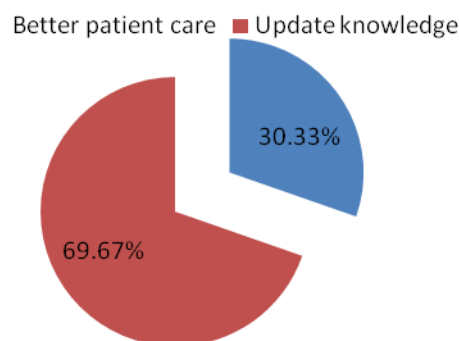


Fig no: 5 Purpose of the received queries

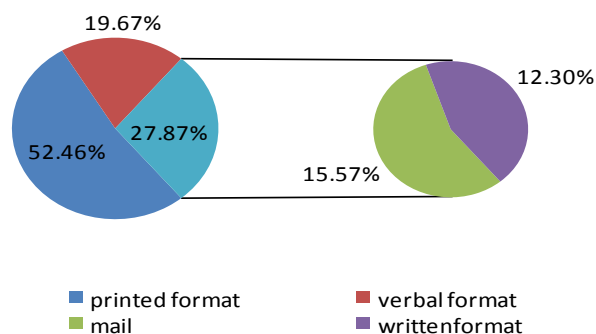


Fig no: 6 Mode of reply of queries

of these services provided by the department for a period of six months in selected three department's general medicine, dermatology and paediatrics. A total of 122 queries were received from all healthcare professionals like physicians, interns, nurses and pharmacists. Average number of queries per month was 23.6. Among the total number of queries maximum were from the department of general medicine (66.90%). Because in medicine department we see maximum number multiple diseases and there is a major utilization of drug information services. From a study of Jeevangi V M *et al* of nine months period shows maximum number of queries were arises from the

department of general medicine which supports our study [8]. Queries from other two departments are dermatology (24.65%), paediatrics (8.45%) were moderate.

Time frame to reply

Table no : 7

Time frame	Number of queries	Percentag
1-2 hrs	23	18.85%
2-4 hrs	47	38.52%
Within 24hrs	51	41.80%
More than 24hrs	1	0.82%
Total	122	100%

mail of the department (19.67%), and telephone (13.11%). From a previous literature which supports our study, George *et al* conducted a retrospective study for a period of twelve months provides 666 queries, shows that maximum numbers of queries were received during ward rounds (70.7%) [9].

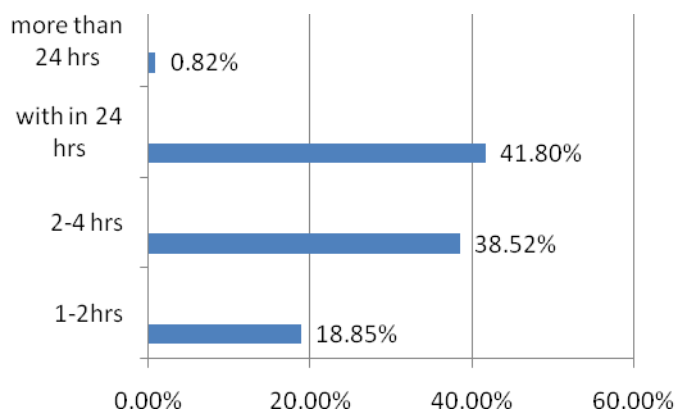


Fig no: 7 Time frame to reply the queries

References used to answered queries

Table no. : 8

Sources used to answered queries	Number of queries	Percentag
Micromedex	72	59.02%
Text book	39	31.97%
Journals	7	5.74%
Websites	2	1.64%
Others	2	1.64%
Total	122	100%

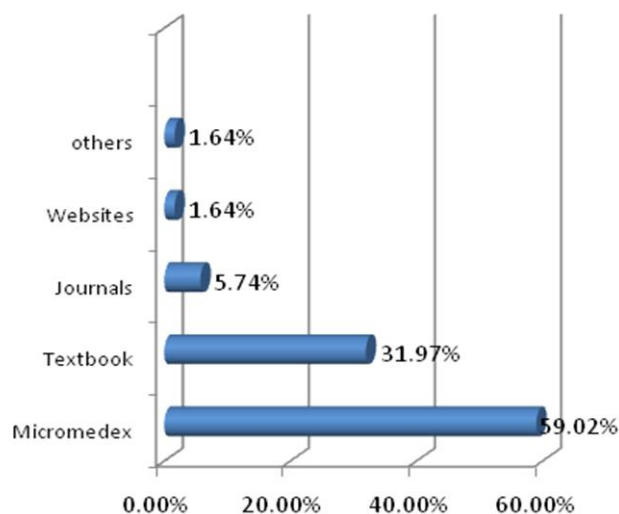


Fig no: 8 References used to answered queries

Drug information queries were received during on regular ward rounds attended by the students of Pharm-D, by mode of direct access, telephone, and mails. Out of 122 queries maximum queries were received during ward rounds (40.16%) along with doctors and interns. The remaining queries were received by direct access (27.05%), through

Drug information services were provided to all healthcare professionals, of the total 122 queries maximum were given to the physicians (71.31%)

Qualitative assessment and evaluation of randomly selected drug information queries from the providers' perspective

Table no.: 9

Rating	Judgmental n=20		Non-judgmental n=20	
	Number	Percentage	Number	Percentage
Excellent (5)	9	45%	8	40%
Very good (4)	7	35%	7	35%
Good (3)	4	20%	5	25%
Adequate (2)	0	0	0	0
Unacceptable (1)	0	0	0	0

followed by interneers (20.49%), nurses (4.92%), pharmacists (3.28%). The aim of the all healthcare professionals was to provide better patient care and updating knowledge. Here in our study maximum queries were for better patient care (59.86%) and for updating knowledge (30.33%). Out of 122 queries time frame of providing information was as follows, 23 queries (18.85%) were received information immediately 1-2hours, 47queries (38.52%) were received information within 2-4 hours ,51 (41.80%) queries were received within 24 hours and remaining 1 query was provided more than 24 hours.

From the study Mahendra kumar BJ *et al* conducted for a period of one year showed that maximum number of queries were on dosage and administration [10]. Present study shows that out of total 122 queries maximum were focused on indication (21.31%) followed by dosage (18.85%), adverse reactions (16.39%), pharmacokinetics pharmacodynamics (9.84%), contraindications (10.66%), interactions (9.02%), pregnancy and lactation (5.74%). To answer the received queries we used the following primary, secondary, and tertiary sources.

Maximum number of queries was answered by using an electronic database i.e., Micromedex (59.02%), followed by textbooks (31.97%), journals (5.74%), and websites (1.64%).

Evaluation of the quality of drug information services

A small survey conducted in the hospital, a greater percent of healthcare professionals were aware of the drug information centre in the hospital and about 65 % of them utilized these services in several times. Most of all the health care team received their answers appropriately and within time and very few of them didn't get their answers in appropriately. Along with this enquirers put some suggestions to improve the performance of drug information centre.

Suggestions provided by the clinicians

- Post the students of doctor of pharmacy in orthopedics department
- Daily visit one clinical pharmacist to the special wards and ICU & NICU and provide your valuable services here also
- To improve the awareness about the drug information activities and their services in the hospital
- To improve the interaction between the healthcare professionals and clinical pharmacists of drug information centre for further development

- To provide information regarding new drugs available in the market, their adverse reactions and their interactions
- Extend the drug information services round the clock if possible online services

By the analysis of feedback questionnaire we found most of the health care professionals appreciated the services which were provided by the drug information centre in the hospital. Along with that by the evaluation of responses which were provided by the drug information centre revealed that they were within the acceptable limits of quality. The overall performance of drug information centre is found to be good and this shows that drug information centre maintains the quality of services

Conclusions

The drug information services provided in the Basaweshwara medical college hospital & Research centre by the department of clinical pharmacy to the healthcare professionals were unbiased and strictly evaluated before providing responses for better patient care and to update knowledge. Even though quality services were provided, still there is need to improve the some more services in the hospital and to bring greater awareness in healthcare professionals and encourage them to utilize the services of drug therapy and management. Upon evaluation of the feedback questionnaires, it was found that the quality of the services provided by the centre was appreciated by majority of its users.

Conflict of Interest- None

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