Quality Assurance of Drug Information Service and Drug Therapy Review Provided by Clinical Pharmacists in an Indian Teaching Hospital

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ABSTRACT

Background: To ensure the competent delivery of patient care by clinical pharmacists, it is essential to evaluate services provided by them. **Objectives:** This study was conducted to assess the impact of Standard operating procedure (SOP) on quality of Drug information (DI) service and drug therapy review provided by clinical pharmacy department. **Methods:** The study was conducted at department of clinical pharmacy located at tertiary care teaching hospital. Quality assessment checklist was designed to assess the quality of both services. Based on score obtained from checklist each service was graded at different levels. Quality of services provided was compared before and after implementation of SOP. Also questionnaire was circulated among health care professionals of various medical departments to evaluate their perception and opinion about mentioned services provided. **Results:** Before implementation of SOP, out of 70 DI evaluated, 35.7% of them were found to be excellent, 41.4% of them were found to be good, whereas it was found that 22.9% of DI needed improvement.After implementation of SOP, out of 85 DI evaluated, 82.4% of DI provided was found to be excellent and remaining DI provided (17.6%) was found to be good. Before implementation of SOP, out of 64 interventions provided, 65.6% of them were found to be excellent and 26.6% of them were found to be good, however, 7.8% of them needed improvement. After implementation of SOP, 64 interventions were evaluated and out of which 87.5% of them were found to be excellent and 7.8% of them were found to be good. However, only 4.7% of them needed improvement. Majority of medical staff (77%) felt that clinical pharmacists actively contribute in drug therapy decision making and overall performance of clinical pharmacist was rated as "Good" by medical staff. **Conclusion:** The quality of both, DI service and drug therapy review was found to be improved after implementation of SOPs. Also, quality of both services provided is an important factor influencing the acceptability of clinical pharmacist's contributions.

Key words: Quality assurance, Clinical Pharmacy Services, Drug Information, Drug therapy review, Pharmacy Practice.

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INTRODUCTION

In past few decades, the role of pharmacists has been more of patient focused rather than product focused.[1] Introduction of clinical pharmacy practice has progressively changed the role of pharmacists in health care settings.[1-3] There are many published literature describing positive impact of clinical pharmacists' contribution on patient care by providing Drug information (DI) service, drug therapy review, adverse drug reaction (ADR) reporting and monitoring, patient counseling.[3-7] However, awareness and acceptance of these services across the world is not the same; role of clinical pharmacist is highly accepted and appreciated in many developed countries whereas in developing countries it is still in growing stage.[4,5,8]

The provision of Drugs and therapeutic information (DTI) is among the most

fundamental responsibilities of clinical pharmacists. Drug and therapeutic information refers to the provision of unbiased, well-referenced and critically evaluated up to date information on any aspect of drug use.[9] This clinical service of pharmacists assist medical practioners and other Health care professionals (HCPs) to individualize patients' drug therapy, to enhance therapeutic outcome of the patients, to reduce drug toxicities and certainly to minimize health care expenditure on drugs and hence contribute for better patient care. Availability and acceptability of DI service across the world is still a question due to various reasons like limited growth of clinical pharmacy services in many countries, traditional prescribing habits, lack of funding and lack of resources. However, promotion and acceptability of this service is essential in the current scenario due to increasing patient load, high number of patients with multiple co-morbid conditions, availability of large number of drugs in the market and routine arrival of new drug related updates from various research. Provision of DTI service helps practioners overcoming above mentioned barriers in patient care. Clinical pharmacists are considered as a '*Medication Experts'* and hence are well positioned for this service. They are well trained and skilled to evaluate literatures and other applicable information resources to formulate and deliver answer for the requested drug related queries.[10,11] There are many published literatures exploring contribution of clinical pharmacists in providing DTI service. As DTI is an integral part of health care service, it is crucial to monitor its quality.[11]

Drug therapy review is another important activity performed by clinical pharmacists which help clinicians in indentifying and resolving drug related problems during ongoing patient care. Drug related problem (DRP) is defined as an event or circumstance involving <u>drug</u> <u>treatment</u> that actually or potentially interferes with the patient experiencing an optimum outcome of medical care.[12] DRPs are one of the contributing factors in increasing morbidity and mortality in hospitalized patients.[12-16] Resolving DRPs can improve therapeutic outcome of the patients, reduce/prevent drug toxicities and minimize health care related expenses.[15] Authenticating DRPs after identification and resolving the same required professionally fair communication between clinical pharmacists and clinicians. Since, correction of DRPs may lead to change the prescribing orders and ongoing drug therapy so it is essential that DRPs are correctly identified, assessed, communicated, resolved and followed up appropriately.

In order to ensure the professional competence of clinical pharmacists it is recommended to regularly evaluate clinical pharmacy services like DI service and drug therapy review by clinical pharmacists in order to ensure that they are provided in a correct manner and to identify further scope of expansion and improvement if needed. Evaluation of services can help in structuring the processes which in turn can strengthen the practice.[17]

AIM OF THE STUDY

This study was designed to assess impact of Standard operating procedure (SOP) on quality of drug information service and drug therapy review provided by clinical pharmacy department.

METHODS

This was a prospective study conducted by clinical pharmacy department located at tertiary care teaching hospital. This department of clinical pharmacy is a well known DI centre in the region and actively provides drugs and therapeutic information services in addition to other clinical pharmacy services like drug therapy review, patient medication counseling, and pharmacotherapy referrals for individualized drug therapy, patient referral for assessment of drug reactions and its management. Post graduate students of pharmacy practice (M. Pharm) and doctor of pharmacy (Pharm. D) students are considered as trainee clinical pharmacists/ward pharmacists at the study hospital and are usually posted to different medical departments on rotation basis to attend the ward rounds with the chief clinician, medical students and other health care professionals and to provide patient care services.

Trainee clinical pharmacists posted in to different wards received DI queries from different HCPs during their ward rounds, through direct access to DI centre and via telephone. All the queries were thoroughly reviewed, processed and answered in the consultation with senior academic clinical pharmacists. Trainee clinical pharmacists also reviewed treatment chart and other relevant patient records during ward rounds and identified DRPs. The DRPs identified were estimated for their potential significance and categorized as having minor, moderate and major clinical significance. The criteria used to assess the clinical significance of DRPs were that described by Alderman.[18] All the identified DRPs were discussed with senior academic clinical pharmacists and appropriate recommendation(s) were provided to concern HCPs to resolve those DRPs. All the answered DI queries and DRPs were documented manually and electronically in to department database (Microsoft Access 2007). DI and drug therapy review database of the department were explored to review nature and extent of drug information provided by department.

Quality assessment panel was constituted with involvement of five members; four clinical pharmacists (2 senior level and 2 junior levels); one physician (senior level). In order to assess quality of the DI and drug therapy review suitable quality assessment checklist was designed. A draft copy of quality assessment checklists were reviewed by all senior staff members (n=4) of the department and 1 physician. Final copy of quality assessment checklists were prepared after incorporating given suggestions (Table 1, 2). Based on the score obtained from checklist each evaluated DI and DRPs was categorized at different quality level; Excellent; Good; Can Improve; Should Improve. It was estimated to evaluate 50% of the total DI queries documented and 100% of all DRPs reported. DI queries' evaluation was limited to 50% due to high volume of queries. However, no sample size calculation

Table 1: Quality Assessment Checklist for Drug Information Service

JSS MEDICAL COLLEGE HOSPITAL, MYSORE
Department of Clinical Pharmacy
Quality Assessment Checklist: Drug Information
Date of Documentation of Drug Information:
Name of Attending Pharmacist:
Date of Audit:
Reference No:

Quality Assessment questionnaires			
Sl.No	Question	Yes	No
1	Was patient specific background information collected?	☐	☐
2	Was Details of enquirer collected?	☐	☐
3	Were appropriate resources referred?	☐	☐
4	Was appropriate answer given?	☐	☐
5	Was drug information provided reviewed by staff?	☐	☐
6	Was drug Information provided within specified time?	☐	☐
7	Was drug information provided documented completely?	☐	☐
8	Were efforts made to follow-up for further information wherever needed?	☐	☐

Grade: A (Excellent), B (Good), C (Can improve), D (Should improve)
Note: A= 7-8 points, B=5-6 points, C=4 points, D=3 or less
Remarks:
Auditor:
Signature
Note: Checked Yes carries 1 point. Checked No carries 0 point.

Table 2: Quality Assessment Checklist for Drug Therapy Review

JSS MEDICAL COLLEGE HOSPITAL, MYSORE
Department of Clinical Pharmacy
Quality Assessment Checklist: Drug therapy review
Date of Intervention documented:
Name of Attending Pharmacist:
Date of Audit:
Reference No:

Quality Assessment Questionnaires			
Sl.No	Question	Yes	No
1	Was all required background information collected?	☐	☐
2	Was/Were drug related problem(s) identified appropriate?	☐	☐
3	Was the latest information used for intervention?	☐	☐
4	Was the suggestion given appropriate?	☐	☐
5	Was opinion discussed with staff before intervening?	☐	☐
6	Was problem identified discussed with concerned health care professional?	☐	☐
7	Was suggestion provided at appropriate time? (at most earliest time)	☐	☐
8	Was intervention documented completely?	☐	☐
9	Were efforts made to follow patient for further feedback?	☐	☐

Grade: A (Excellent), B (Good), C (Can improve), D (Should improve)
Remarks:
Auditor:
Signature:
Note: Checked Yes carries 1 point. Checked No carries 0 point.

Table 3: Standard Operating Procedure for Answering Drug Information Queries
Standard Operating Procedure for answering Drug Information
1.0 Purpose and Scope
1.1 This SOP enables the staff, postgraduate pharmacy practice and Pharm.D students to adopt uniform approach in providing drug information service.   1.2 Drug information service is provided to healthcare professionals, postgraduate medical Students and patients of JSS hospital, Mysore.
2.0 Activity and Responsibility
2.1 Receive drug information (DI) query from requester through direct access/telephonically/ during ward rounds.   2.2 Ask requester to fill drug information request form/get the DI request and documentation form as per required.   2.3 Secure the demographics of requester and contact details.   2.4 Ask the requester about the purpose of request, mode and time of reply.   2.5 Assess the perception of requester about query and also resources consulted previously.   2.6 Collect all the required details pertaining to query.   2.7 Review the query received and categorize the query as per the categories specified in the DI request and documentation form.   2.8 Identify the appropriate references.   2.9 Collect the information from various suitable Journals, Text books and other references available.   2.10 Critically analyse the available information and its usefulness in a given situation.   2.11 Formulate the answer from the available information to suit the requester's need.   2.12 Ensure that the final answer is appropriate, clear, specific and concise.   2.13 Consult the staff in-charge for the appropriateness of answer before providing the Information.   2.14 Provide the formulated answer in a requested mode and timely manner.   2.15 Follow up the case for the outcome and act as appropriate.   2.16 Document the answer

Table 4: Standard Operating Procedure for Drug Therapy Review Standard Operating Procedure for Drug Therapy Review
1.0 Purpose and Scope
1.1 This SOP enables the staff, postgraduate pharmacy practice and Pharm.D students to adopt uniform approach in making therapeutic intervention.   1.2 Therapeutic intervention service is made available, through healthcare professionals to patients of JSS hospital, Mysore.
2.0 Activity and Responsibility
2.1 Review the patient's case record of the assigned unit including the medication order routinely.   2.2 Critically assess for the appropriateness of medication use.   2.3 Identify the drug related problem that requires intervention.   2.4 Analyse the problem identified.   2.5 Review all the appropriate literatures and collect information pertaining to resolving of problem.   2.6 Prepare the remedial action for the identified problem.   2.7 Ensure the appropriateness of action to be taken prior to intervention.   2.8 Consult with staff in-charge prior to recommending the remedial strategies.   2.9 Address the issue only with concerned staff and inform other member of health care team as appropriate.   2.10 In case of multiple interventions, prioritize the problems need to be addressed, and address only those interventions that are of highly clinical significance.   2.11 Address the interventions with confidence and should be straight forward.   2.12 Provide appropriate reference(s) as a supporting evidence, if required.   2.13 Conduct follow-up to assess the outcome of intervention.   2.14 Document the details

was performed to estimate the sample. The panel conducted a weekly audit of DI queries and DRPs to assess the quality. Disagreement among panelists if any, were sorted out by considering opinions of majority panelists. The quality was assessed for both the services for initial four months. After conduct of an audit each time, concerned students and/or staff members involved in the activity were invited to share discrepancies found and were requested to give their opinion about possible justification for discrepancies with the intention of quality improvement. Through initial four months' evaluation all the discrepancies reported during an audit were studied and they were considered to be factors leading to poor quality of services. Based on findings of initial four months, SOPs were developed for drug information service and drug therapy review. A draft copy of SOP for both services were provided to all the senior staff members of the department (n=4) and one physician. There were few revisions of the draft SOPs after receiving feedback from SOP reviewers and then final SOP was prepared (Table 3, 4). After designing SOPs all post graduate student of pharmacy practice, Pharm. D students and staff members were educated about SOPs and they were advised to follow the same. The SOPs of both services were made available in department for general reference of all. Both the services were evaluated
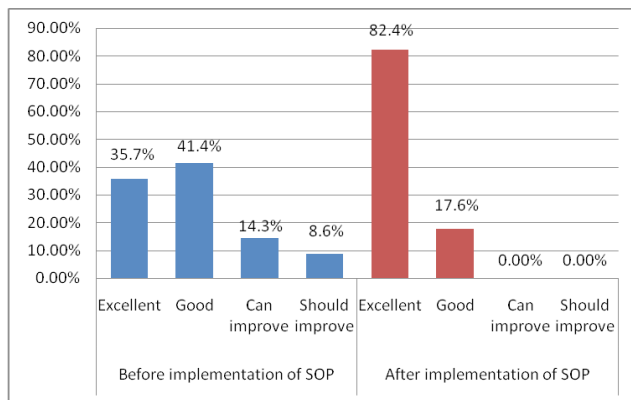
Figure 1: Quality Assessment of Drug Information Service Before and After Implementation of Standard Operating Procedure

Figure 2: Quality Assessment of Drug therapy Review Before and After Implementation of Standard Operating Procedure

for next 3 months after implementation of SOP. Nature, extent and quality of each service were measured in terms of percentage.

A questionnaires consisting of 17 questions was circulated to all medical staff which includes unit chief of all wards, post graduate medical students, interns and nurses to assess awareness, perception and opinion of them about drug information service and drug therapy review provided by clinical pharmacists. Sufficient time of 7 days was given to complete the questionnaires given and to return it. Circulated feedback questionnaires were collected and assessed for perception and opinion of various HCPs towards drug information service and drug therapy review. Opinions of HCPs on questions were estimated in terms of percentage. This study was approved by institutional ethical committee of JSS College of Pharmacy, Mysore, India.

RESULTS

Drug information-Nature, Extent and Quality

A total of 291 DI queries were received during the study period of nine months. Of 291queries received, majority of them were received during ward rounds (52.5%) followed by direct access to DI centre (30%) and telephone (17.2%). Majority of the DI queries were requested for better patient care (52.9%), followed by to update knowledge (42.9%) and remaining for academic research. Post graduate medical students requested majority (34.3%) of DI, followed by physicians (32.6%). Interestingly, majority of DI were for dosage/administration (36.1%), followed by adverse drug reaction (13.1%), Availability/cost (7.9%), Indication (7.9%) and pregnancy and lactation (6.9%). It was found that out of 291 DI queries, department of general medicine requested 36.7% of queries, followed by department of
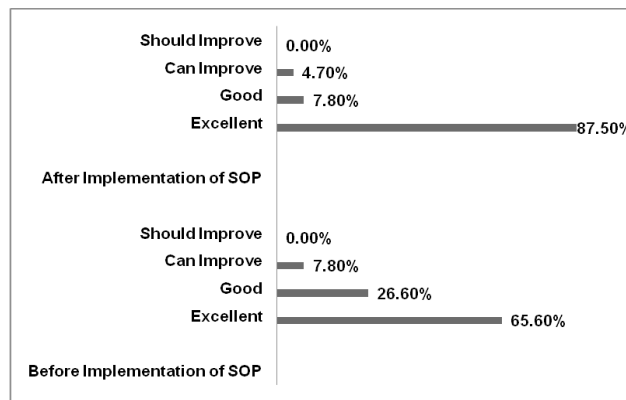
paediatrics (19.6%), nephrology (8.6%), surgery (7.5%) and pulmonology (6.2%).

Before implementation of SOP, out of 70 DI evaluated, 35.7% of them were found to be excellent, 41.4% of them were found to be good, whereas it was found that 14.3% of DI could be improved and 8.6% of DI should be improved. After implementation of SOP, out of 85 DI evaluated, 82.4% of DI provided was found to be excellent and remaining DI provided (17.6%) was found to be good. Figure 1 shows quality of DI assessed before and after implementation of SOP.

Drug Therapy Review-Nature, Extent and Quality

A total of 128 DRPs were identified during study period of nine months, out of which overdose (21.1%) was commonly found, followed by failure to receive drug (14.8%), drug administration errors (12.5%), improper drug selection (9.4%) and untreated indication (9.4%). Also, sub therapeutic dose and drug use without indication was found in 7.8% and 7% of cases respectively. Majority of DRP identified were of 'Moderate' significance (57.8%), followed by of 'Minor' significance (32.8%) and of 'Major' significance (9.4%). Interestingly, 96.1% of DRPs identified were accepted by clinicians and recommendations made for 91% of them were implemented by clinician for improvising patient care. Only 9% of DRPs intervened were not implemented for patient care.

Before implementation of SOP, 64 interventions were evaluated, out of which 65.6% of them were found to be excellent and 26.6% of them were found to be good, however, 7.8% of them needed improvement. After implementation of SOP, 64 interventions were evaluated and out of which 87.5% of them were found to be excellent and 7.8% of them were found to be good. However, 4.7% of them needed improvement. Figure 2 shows quality of DRPs assessed before and after implementation of SOP.

Result of feedback questionnaires circulated to Health care professionals

A total of 121 HCPs were circulated with clinical pharmacy feedback questionnaires, out of which 89 (73.5%) HCPs returned the questionnaires after answering them. Out of 89 HCPs, 40% were professors and assistant professors, 31% of them were post graduate medical students from various departments and 22% of them were interns and 7% of them were nurses. Perception and opinion of HCPs towards clinical pharmacy services is described in form of answers provided in Table 5. Due to limited space available, only important questions expressing HCPs' opinion about services are presented in Table 5.

DISCUSSION

Quality health care is essential to prevent patient harm and to avoid wastage of health care resources in terms of under use, over use and misuse of medications and treatment. Desired quality in health care can be achieved by introducing quality indicators which can benchmark the process of health care delivery and by periodic assessment and evaluation of health care services in order to identify the areas of improvement. In spite of wide spread availability and use of quality criteria to evaluate health care services, pharmacy profession has adopted the concept of continuous quality assessment and improvement to very limited extent.[19] Main goals

Table 5: Result of Feedback Questionnaires from Health Care Professionals

1. Are you aware of the existence of the Clinical Pharmacy Department in our hospital?   Yes=87 (97.75%), No=02 (2.25%)

2. Have you visited Department Of Clinical pharmacy, anytime?
Yes=83(93.25%)
No=06(6.75%)If Yes, How often,
Always= 07 (8.43%) Frequently=27 (32.53%)
Sometimes=20 (24.10%) Rarely=29 (34.94%)

3. If yes, do you think that it is well equipped (in terms of texts, journals, softwares etc.) to provide clinical pharmacy services?
Yes=83 (93.25%)
No=00 (00.00%)
Do not know=06 (6.75%)

4. Which of the following clinical pharmacy activities are you aware of?
Drug information: 08 (9.19%), Pharmacist's intervention: 06 (6.89%)
Adverse drug reaction reporting: 05 (5.75%), Patient referral: 04 (4.60%)
Patient counselling: 05 (5.75%),
All of the above: 59 (67.82%) None of the above: 00 (00.00%)

5. Have you utilised any of the above Clinical Pharmacy Services?
Yes=85 (97.70%)
No=02 (2.30%)
If yes, how often,
Always=22 (25.87%) Frequently=41 (48.22%)
Sometimes=12 (14.10%) Rarely=10 (11.76%) None=02 (2.35%)

6. Which of the following Clinical Pharmacy Services you utilize most?
Drug information: 13 (14.84%), Pharmacist's intervention: 06 (6.89%)
Adverse drug reaction reporting: 07 (8.05%), Patient referral: 03 (3.45%)
Patient counselling: 09 (10.34%),
All of the above: 47 (54.03%) None of the above: 02 (2.30%)

7. Do you think any of the Clinical Pharmacy Service(s) should be improved in terms of quality?
Drug information: 13 (14.84%), Pharmacist's intervention: 04 (4.59%)
Adverse drug reaction reporting: 18 (20.69%), Patient referral: 06 (6.90%)
Patient counselling: 06 (6.90%),
All of the above: 00 (00.00%) None of the above: 40 (45.98%)

8. How would you rate the quality of clinical pharmacy services provided by Department of Clinical services?
Excellent=19 (21.83%) Good=40 (45.98%)
Can improve=18 (20.69%) Should improve=10 (11.50%)

9. Whether Clinical Pharmacy Services provided on time?   Yes=71 (81.61%), No=16 (18.39%)

10. Do you feel that Clinical Pharmacy Services provided are useful in assisting in patient care?   Yes=82 (94.25%), No=05 (5.75%)

11. Do you think that clinical pharmacy services provided by the Dept. improve the patient outcome?
Yes=72 (82.76%) No=15 (17.24%) if yes, how often,
Always=14 (19.44%) Frequently=38 (52.78%)
Sometimes=11 (15.28%) Rarely=09 (12.50%)

12. How do you find the presence of clinical pharmacist in your ward?
Very useful=51 (58.62%) Useful=24 (27.58%)
Sometimes useful=12 (13.80%) Not useful at all=00 (00.00%)

13. Does the clinical pharmacist actively participate in drug therapy decision making, during ward rounds?
Yes=67 (77.01%)
No=20 (22.99%)
If yes, how often
Always=13 (19.40%) Frequently=28 ((41.79%)
Sometimes=14 (20.89%)   Rarely=12 (17.92%)

14. How would you rate clinical pharmacist performance in the ward?
Excellent=17 (19.54%), Good=42 (48.28%)
Can improve=23 (26.43%) Should improve=05 (5.75%)

15. Are there any drawbacks in the Clinical Pharmacy Services provided?
Yes: 19 (21.48%) No: 68 (78.16%)
Common drawbacks suggested:
1.Involvement of pharmacist in emergency, NICU, (Intensive Coronary Care Unit) ICCU, Respiratory Intensive Care Unit (RICU) is limited.
2.No pharmacist assistance is available in Outpatient department (OPD) for better patient care.

16. What other services do you expect from the Department Of Clinical Pharmacy?

1. Interdepartmental interaction for discussion on newer aspects of drug therapy.
2. Education to HCP about new drug monograph.
3. Continuous education program for HCP about various aspects of drug use and ADRs.

17. Any suggestions and comments to improve the clinical pharmacy services provided by Department of Clinical Pharmacy?

1. Twenty four hours service in emergency for patient care.
2. Twenty four hours service to answer poison information.
3. PG students/staff can be posted to OPD for their assistance for outpatients.
4. Special assistance needed to select chemotherapy regimen.
5. Drug-drug interaction should be assessed properly for elderly and special population.

of doing quality assurance of clinical pharmacy services are to ensure the provision of an appropriate clinical service to the patients and other HCPs involved in their care, to monitor and evaluate services and its standards, to identify areas of improvement and/or expansions along with its action plan, to propose potential strengths and limitations of the service and of course to motivate practicing pharmacists and interns to maintain continuous quality processes to deliver competent patient care. Effective quality assurance program to evaluate clinical pharmacy services can be structured by designing clear objective(s) of the program in accordance to the practice setting, by designing and implementation of policies and procedures to provide each service and by identifying and implementing strategies to overcome weaknesses of services offered.[17]

In India clinical pharmacy practice is still under developing stage and regulations pertaining to quality assessment and improvement are not defined. To our knowledge this is the first study from India mentioning about the standardized approach to provide DI service and drug therapy review and its impact on quality of services. A study conducted by Beena G evaluated nature, extent and quality of DI service in Indian hospital without any

structured approach and instrument. However, method of collecting feedback from HCPs was similar to present study.[11] Conceptual model proposed by Bruchet for quality improvement was action based and its outcome measures are not comparable to present study.[19]

The present study involved designing of quality indicators to evaluate DI service and drug therapy review. These quality indicators were designed considering our practice setting, professional level of service providers (Pharm. D interns and post graduate students of pharmacy practice) and criteria(s) which can possibly evaluate and grade the service to the appropriate level. While providing clinical pharmacy services and being in academic hospital setting, staff members used to face few challenges like improper communication by students to staff regarding provided clinical service, poor communication of students with senior academic clinical pharmacy practioners with regard to identification and corrections of DRPs, improper handling of telephonic DI queries, poor documentation and follow up of the services provided. In the back drop of this reality we felt a need of standardized structured approach to provide DI service and drug therapy review. Through weekly audit both the services were evaluated during initial phase of four months and their quality

was reported. Lack of required background information to process DI, lack of follow up after providing DI, poor and incomplete documentation and underuse of authenticated information resources were some of the findings during initial evaluation of DI. While auditing DRPs in the initial phase we reported some of the findings like insufficiently collected details about past medical history of the patient, wrongly perceived DRPs, DRPs identified late, poor interactions of ward pharmacists with senior pharmacists due to high workload, poor documentation and follow up. Necessity of SOP became more evident after initial assessment of both the activities as we reported that almost 23% DI queries needed an improvement and were not of required standard. We also realized that even though quality of majority of DRPs was fairly reasonable but still had a scope of improvement. All the findings were reviewed and considered during ongoing SOP development. It is recommended to involve practioners and educators too in quality improvement process and hence all the interns and academic practioners were educated about SOPs and its implementation. After implementation of SOP, 82.4% of DI queries evaluated were found to be of 'Excellent' quality and was improved compare to initial phase when SOP was not implemented. This findings was complemented by survey questionnaires to HCPs where answer to question 1 was suggestive of DI service to be the most widely used clinical pharmacy service by HCPs. Looking at the quality of DRPs, 87.5% of the evaluated DRPs were identified and resolved correctly so were considered of "Excellent' quality. This finding was supported by answer of question 4 and 5 indicating acceptance and appreciation of clinical pharmacists in wards for drug therapy decision making. A feedback of survey questionnaires to HCPs was found to be very useful to us to evaluate the quality of services provided by clinical pharmacy department. Most of the clinicians felt that having clinical pharmacists in wards is an added advantage for appropriate drug therapy decision making and to identify and resolve DRPs. Overall performance of clinical pharmacists in wards was rated as 'Good' by HCPs. Feedback of HCPs provided an idea about further improvement and expansion of services like posting pharmacists in outpatient department, gynecology, Ear-Nose-Throat, emergency and critical care units. This feedback helped us in planning training of prospective students in area of drug-drug interactions, cancer chemotherapy, prescribing in elderly and poison information. Also, few clinicians felt that clinical pharmacists should provide information about new drugs, drug safety and related aspects in form of ward seminars and we felt it is a good platform to strengthen the professional relationship with medical staff.

LIMITATIONS

Clinical pharmacy services provided were reviewed from department database, paper based documentation and with information provided by ward pharmacists and staff members wherever applicable. Medical records were not reviewed by authors to collect the information regarding outcome of interventions made by pharmacists. 32 of 121 HCPs could not return the survey questionnaires so their opinion could not be obtained.

CONCLUSIONS

Periodic evaluation of clinical pharmacy services is essential to ensure the quality and to identify areas for further improvement. Implementation of SOP can help improving quality of DI service and drug therapy review provided by clinical pharmacists. Standardized approach to deliver clinical pharmacy practice can guide trainee pharmacistsand pharmacy practice educators to deliver quality patient care. The study recommended the areas that have to be improved and expectation from HCPs so same will be useful to us to modify our practice with clinicians.

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ABBREVIATIONS

SOP:	Standard Operating Procedure
DI:	Drug information
DRP:	Drug Related Problem
ADR:	Adverse Drug Reaction
DTI:	Drugs and Therapeutic Information
HCP:	Health Care Professional
Pharm.D:	Doctor of Pharmacy
M.Pharm:	Master of Pharmacy

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