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PROSPECTIVE STUDY ON IMPLEMENTATION OF CLINICAL PHARMACY SERVICES TO GENERAL MEDICINE DEPARTMENT IN A TERTIARY CARE HOSPITAL

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ABSTRACT

The study aims at Prospective Study on implementation Of Clinical Pharmacy Services to General Medicine Department in a Tertiary Care Hospital. It was a Propective study conducted for a period of Nine months in a tertiary care teaching hospital in south India. The Patient data was collected from the case sheets. The patients were enrolled in the study after receiving information consent form. The Research work is carried out after obtaining permission from Ethical committee. The total 100 patients were enrolled in the study. In our study we have Provided 274 clinical pharmacy services in general medicine department of tertiary care hospital respectively in our study Period. It includes 97 drug information services, 100 patient counselling services and 64 drug interactions and 13 adverse drug interactions in the individual prescriptions. The statistical analysis was performed to analyse the data using Graph Pad Prism soft ware. The P value is <0.0001 respectively. The Present study concludes that clinical Pharmacist play a key role in patient safety. In Particularly general medicine department important for educating guiding the health care professionals related to safety use of medications. Providing drug information to doctors and nurses on daily basis in order to improve better patient care services in hospital.

Key Words: Diseases, Drug interactions, Adverse drug reaction, Drug information services.

INTRODUCTION

Clinical pharmacy is defined as that area of pharmacy concerned with the science and practice of rational medication use. Clinical pharmacy is the branch of pharmacy in which pharmacists provide patient care that optimizes the use of medication and promotes health, wellness, and disease prevention. Clinical pharmacists care for patients in all health care settings but the clinical pharmacy movement initially began inside hospitals and clinics. Clinical pharmacists often work in collaboration with physicians, nurse practitioners and other healthcare professionals. The Clinical Pharmacist Stating explicitly that the clinical pharmacist cares for patients in all health care settings emphasizes two points: that clinical pharmacists provide care to their patients and that this practice can occur in any practice setting. The clinical pharmacist's application of evidence and evolving sciences points out that clinical pharmacy is a scientifically rooted discipline the application of legal, ethical, social, cultural, and economic principles serves to remind us that clinical pharmacy practice also takes into account societal factors that extend beyond science. The clinical pharmacists are expected to cater the need of information regarding drugs and doses. Healthcare team is totally dependent on clinical pharmacists in the matters of DDI, Drug-Food interactions and ADRs. The Pharmacists should be ready to cater the demands of doctor, nurses and patients in the matters of drugs.

Clinical Pharmacy Practice areas in hospital:

1.	General medicine & general surgery	2.	Drug Information services	3.	Poison information services
4.	Geriatrics and long -term care	5.	Internal medicine	6.	Cardiology
7.	Endocrinology	8.	Gastroenterology	9.	Infectious disease
10.	Neurology	11.	Nephrology	12.	Obstetrics and gynecology
13.	Pulmonary	14.	Psychiatry	15.	orthopedics
16.	Nutrition	17.	Pediatrics	18.	general surgery
19.	General medicine	20.	Drug Information services	21.	Poison information services
22.	Geriatrics and long -term care	23.	Internal medicine	24.	Cardiology

Basic components of Clinical Pharmacy practice:

 Prescribing of drugs 	 Administering of Drugs 	 Documentation of drugs
Review of the drugs	Communication	Counselling
Consultations	 Prevention of . Medications errors 	Counselling
 Prescribing of drugs 	 Administering of Drugs 	Documentation of drugs
Review of the drugs	Communication	Pharmacovigilence

- Clinical Pharmacy Services in Hospital:
- Adverse Drug Reaction Monitoring

- Drug And Poison Information Services
- Identification Of Drug Interactions.
- Patient Counselling.

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Adverse Drug Reaction:

According to World Healthcare Organization (WHO) adverse drug reaction (ADR) can be defined as "any response to a drug which is noxious and unintended, and which occurs at doses

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normally used in man for prophylaxis, diagnosis, or therapy of disease, or for the modification of physiological function.

Classification of Adverse Drug Reactions:

• The classification has gradually been extended to Type A-F. Type A: Augmented pharmacologic effects, Type B: Bizarre effects (or idiosyncratic), Type C: Chemical effects, Type D: Delayed effects, Type E: End-of-treatment effects, and Type F: Failure of therapy.

Drug Information Center and its maintainance:

 The center is equipped with computer terminals, printed materials (current, periodicals, bound journal volumes, reference texts) and has access to Medline, the Internet and various other online drug and medical references. The center maintains subscriptions to nationally recognized journals and texts of Pharmacy and Medicine.

Books, journals,	Computer databases	Wo	ld wide web	
formularies				Poison center
	in Provide a second			
L L	rug intormation servic	ce		
/				
			*	
/				
Access		Disse	mination	
Callers		Inform	ation	
 Physicians 		٠	Reprint	
 Pharmacists 		•	Answer to tele	ephone call
Nurses		•	Computer ret	rieval system
 Researchers 		•	Internet search	ah 🥈
 Students 		•	Publication &	education
Pharmacy & thera	apeutics committee	•	Drug policy d	ecision
 Legal aides 		•	Cost benefit a	analysis
Drug industries			Sharing or de	bating
 Marketing firms 			Information to	natients

Fig. 1: The working model of drug information service

List of Drug Information Centers Run at State Pharmacy Councils in India:

Jss college of Pharmacy.mysore,ooty.	Maharashtra State Pharmacy Council, Maharashtra	Andhra Pradesh state pharmacy council, Andhra Pradesh	
Drug information center, Jaipur, Rajasthan	Drug information center, Raipur, Chhattisgarh	Karnataka state pharmacy council (Kspc), Bangalore, Karnataka	
Drug information center, Jaipur, Rajasthan	Drug information center, Raipur, Chhattisgarh	Drug information center, Panaji, Goa	
Drug information center, Dibrugarh, Assam	Other Drug, Poison or Alcohol Information Centers in India	Alcohol and drug information center (ADIC), Trivandrum, Kerala	
Bowring and Lady Curzon hospital, Bangalore	Bulletin on drug and health information (BIDI), Kolkata	CDMU documentation center, Calcutta	
Christian medical college hospital Vellore, Tamilnadu	Department of pharmacy practice, Chidambaram, Tamilnadu	Department of pharmacy practice, national institute of pharmaceutical education and research (NIPER), Chandigarh	

Capabilities of drug information services

Drug Information Services has expertise and is available to assist in a variety of situations such as:

- Pharmacy and Therapeutic Committee support
- Medication Use Evaluation development and support
- Drug therapy guideline development

Drug interactions:

A drug interaction is a situation in which a substance (usually another drug) affects the activity of a drug when both are administered together. This action can be synergistic (when the drug's effect is increased) or antagonistic (when the drug's effect is decreased) or a new effect can be produced that neither produces on its own.

Seriousness and Severity of Drug Interaction:

The American Food and Drug Administration define a serious adverse event as one when the patient outcome is one of the following:

- Death
- Life-threatening
- Hospitalization (initial or prolonged)
- Disability—significant, persistent, or permanent change, impairment, damage or disruption in the patient's body function/structure, physical activities, or quality of life.
- Congenital anomaly
- Requires intervention to prevent permanent impairment or damage

Patient Counselling:

Patient counseling is a broad term which describes the process through which health care professionals attempt to increase patient knowledge of health care issues. Patient counseling may be verbal or written performed on an individual basis or in groups, & provide directly to the patient or caregiver. The process provides for the exchange of information between the patient & health practitioner. The information gathered is needed to assess the patient's medical condition to further design, select, implement, evaluate & modify health interventions.

Outcomes of patient counseling:

- Patient recognizes the importance of their well being.
- It encourages the patient to establish a working relationship with a pharmacist & foundation for continual interaction and consultation.
- Improves the coping strategies to deal with medication side effects and drug interactions.
- Motivates the patient to take medicine for improvement of his/her health status.
- The patient becomes an informed, efficient and active participant in disease treatment and self care management.
- Develops the ability in patient to take appropriate medication related decision concerning the compliance or adherence to their medication regimen.

Patient counseling methods:

The structure of the counseling session is divided into four groups: y Introduction of the session.

- Content of the session.
- Process followed.
- Conclusion of the session
- Review the patient record prior to counselling.

AIM AND OBJECTIVE

Aim: The study aims at Prospective study on implementation of clinical Pharmacy services to General Medicine department in a tertiary care hospital.

Objectives:

- The key objectives of the study include:
 - Reduce the drug cost for the pharmacological therapies.Providing better therapy to the large number of patients.
 - Preventing the medication related problems (ADRs, Drug interactions, over dose).
 - Providing various services in the department like
 - Providing drug information.
 - Patient counselling.
 - Monitoring ADRs and drug interactions
 - Improving the Patient health related outcomes.

RESULTS

Age wise Distribution of Study Patients: Age wise distribution male patients:

In this study total of 100 patients were enrolled in the study. The males population is 60.The age wise male Patients population ranges from the 2 Patients were in the age group of 10-20 years (3.33%) 7 Patients were in the age group of 20-30 years (11.66%), 10 patients were in the age group of 30-40 years (16.66%), 16patients were in the age group of 40-50 years (26.66%), 9 Patients were in the age group of 50-60 years (15%), 10 patients were in the age group of 60-70 years (16.66%), 4patients were in the age group of 70-80 years (6.66%), 2 patients were in the age group of 80-90 years (3.33%).

Table No. 1: Age wise distribution of male patients

Age in years	Total number of Patients	Percentage (%)
10-20	2	3.33
20-30	7	11.66
30-40	10	16.66
40-50	16	26.66
50-60	9	15
60-70	10	16.66
70-80	4	6.66
80-90	2	3.33
Total	60	100
Mean ±sd	53.75±26.69	P value < 0.0001



Fig. 2: Age wise distribution of male patients

Age wise distribution of Female patients:

In this study total of 100 patients were enrolled in the study. The Females population is 40. the age wise Female patients population ranges from the 3 Patients were in the age group of 10-20 years (7.5%), 6 Patients were in the age group of 20-30 years (7.5%), 6 Patients were in the age group of 30-40 years (15%), 15 patients were in the age group of 40-50 years (37.5%), 3 patients were in the age group of 50-60 years (7.5%), 7 patients were in the age group of 60-70 years (17.5%), 3 patients were in the age group of 70-80 years (7.5%).

Gender Wise Distribution of Study Patients:

A total of 100 patients were selected for the study, in which 60 patients were males remaining 40 patients were females.

literacy wise distribution of study patients:

A total of 100 patients were selected for the study, in which 41 (41%) patients were Literates and 59 (59%) patients were llleterates.

Personnel Behaviour Wise Distribution of Study Population:

A total of 100 patients were selected for the study, in which 56 patients were alcoholic and 44 patients were having behaviour of smoking.

Categories of Drug Information Queries Received:

Total 97 drug queries were received during the study period from different enquirers, in which queries from physicians 20 (20.61 %), queries from pharmacist includes 17 (17.52%), queries from pharmacy teaching staff includes 30 (30.92%), queries from nurses includes 17 (17.52%), queries from post graduate doctors includes13 (13.40 %).

Distribution of Quieries Received Month wise:

Total 97 drug queries were received during the study period from different months in which 7 (7.21%) queries received in october month, 12 (12.37%) queries received in November month,14 (14.43%)queries received in december month, 11 (11.34%) queries received in january month,16 (16.49%) queries received inFebruary month, 15 (15.46%) queries received in march month,15 (15.46%)queries received in April month, 7 (7.21%) queries received in may month.

Distribution of Quieries Based on Purpose of Enquiry:

In this study Total 97 drug queries received during the study period. It is based on the purpose of enquiry, in which update of knowledge purpose we have received 50 (51.54%), queries, better patient care purpose we have received queries includes 47 (48.45%).

Severity of Drug Interactions:

Total 64 drug interactions were screened during the study period. In which 27 (42.48%) prescriptions having major drug interaction, 9 (14.06%) Prescriptions having minor drug interaction, 28 (43.75%) prescriptions having moderate drug interactions.

ADR'S Screened Month Wise:

Total 13 Adverse drug reactions was screened during study period.In which month wise screening of adverse drug reactions includes 2 (15.38%) ADR's were screened in october month, 1 (7.69%) ADR's were screened in in November month, 4 (30.76%) ADR's were screened in december month, 2 (15.38%) ADR's were screened in january month, 1 (7.69%) ADR's were screened in February month, 1 (7.69%) ADR's were screened in march month, 2 (15.38%) ADR's were screened in April month.

Infromation Regarding Patient Counselling And Diagnosis Cases In General Medicine Department:

In our study total 100 patients were enrolled.In which 100 cases was diagnosed in the general medicine deprtment hospital,we have counselled 100 Patients about various diseases.

Total Clinical Pharmacy Services In Tertiary Care Hospital:

In our study we have Provided 274 clinical pharmacy services in general medicine department of tertiary care hospital.It includes 97 drug information services,100 patient counseling services.we have screened 64 drug interactions and 13 adverse drug interactions in the individual prescriptions.

Table No. 2: Age	wise distribution of	Female Patients
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Age	Total	Percentage (%)
10-20	3	7.5
20-30	3	7.5
30-40	6	15
40-50	15	37.5
50-60	3	7.5
60-70	7	17.5
70-80	3	7.5
Total	40	100
Mean ±sd	48.57±24.10	P value <0.0001



Fig. 3: Age wise distribution of Female patients

Table No. 3: gender wise distribution of study patients

Status	total	Percentage
Number of male patients	60	60
Number of female patients	40	40
Total number of patients	100	100



Fig. 4 : Gender wise distribution of study patients

Table No. 4 : literacy wise distribution of study patients

Status	Total	Percentage
Number of literates	41	41
Number of illeterates	59	59
Total	100	100





Fig. 5: Gender wise distribution of study patients

Table No. 5: Personnel behaviour wise distribution of study population





Fig. 6: Gender wise distribution of study patients

Table No. 6: categories of drug information queries received month wise

Status of enquirer	Number of Queries	Percentage (%)
Physician	20	20.61
Pharmacist	17	17.52
Pharmacy teaching staff	30	30.92
Nurses	17	17.52
Post graduate doctors	13	13.40
Total	97	100

Categories of drug information queries received:



Fig. 7: categories of drug information queries received

Table No. 7: Distribution of queries received month wise

Month	Number of Queries received	Percentage (%)
October	7	7.21
November	12	12.37
December	14	14.43
January	11	11.34
February	16	16.49
march	15	15.46
April	15	15.46
may	7	7.21
Total	97	100
Mean±Sd	4.342±1.535	P value < 0.0001



Fig. 8: Distribution of queries received queries received month wise

Table No. 9: Distribution of queries based on purpose of enquiry

Purpose	frequency	Percentage (%)
Update knowledge	50	51.54
Better Patient care	47	48.45
Total	97	100



Fig. 9: Distribution of Query's Based on Purpose of Enquiry:

Table No. 10: Severity of Drug interactions

Type of severity	Number of drug interactions	Percentage (%)
Major	27	42.18
Minor	9	14.06
Moderate	28	43.75
Total	64	100



Fig. 10: severity of drug interactions

Table No. 11: Adr's screened month wise

Month	Frequency	Percentage (%)
October	2	15.38
November	1	7.69
December	4	30.76
january	2	15.38
February	1	7.69
March	1	7.69
April	2	15.38
Total	13	100





Fig. 11: Adr's screened month wise

Table No. 12: Drugs showing Adverse drug reaction

S. No. Name of the drug	Adverse drug reaction	
1. Carbamazepine	vomotinga and diarrohea.	
2. Derriphylline	seivere headache and body painswith sleep distrurbances	
3. Amoxycillin	rashes and seivere itching on skin	
4. Nitroglycerine	seivere headache weakness and sweating	
5. Ondansetron	chest pain which radiates to the back.	
6. Derriphylline	nausea and vomitings 3 episodes with seivere pain at the site of injection.	
7. Ceftriaxone	thrombophelbitis.	
8. Norfloxacin	rashes with scaly skin appear.	
9. Streptomycin	vestibular disturbances and difficulty in hearing.	
10. Diazepam	Thrombophelbitis.	
11. Thrombophelbitis.	loose stools and stomach pain.	
12. Cetrizine	dryness of mouth and alteration in bowel movements.	
13. Salbutamol	sedation and dry mouth.	

Table No. 13: Information regarding diagnosis, Patient counselling activities

Status	Total	Percentage
Patient counselling for diseases	100	100
Diagnosis cases	100	100



Fig. 12: Information regarding patient counseling, diagnosis cases in tertiary care hospital

Table No. 13: Total clinical Pharmacy services in tertiary care hospital

	Status	Total	
	Drug information services	97	
	Patient counselling services	100	
	Drug interactions screened	64	
	ADR's Screened	13	
	Overall services	274	
			-
	clinical Pharmacy services in tertiary car	e	274
300 250 150 100 50 0	97 100 64	13	
Druginformati	Drug meredions. Altsscreen	rotal services	, D .,

Fig. 13: Total clinical Pharmacy services in tertiary care hospital

DISCUSSION

The clinical Pharmacy services plays vital role in hospitals. These services ignoring patient beneficial health care in the hospitals. These setups well established in the abroad, in india still its growth infant stage. But its development in our country it is high task. As a part of our profession Awareness about these services in the community is required. The study entitled "Prospective study on implementation of clinical pharmacy services to general medicine department in a tertiary care hospital " was conducted for a period of Nine months From october 2015 to june 2016. The total of 100 patients were enrolled in the study Based on inclusion and exclusion criteria.

The male population is more comparing with female Population .The males population is 60.The age wise male Patients population more in age group of 40-50 years 16 patients (26.66%) compraring with other age group.Females population is 40. The Female patients population were more in the age group of 40-50 years (37.5%) 15 patients, compraring with other age group. A total of 100 patients were selected for the study. In which 41 (41%) patients were Literates and 59 (59%) Patients were Illeterates. In our study the illeterates more comparing with literates.A total of 100 patients were selected for the study, in which 56 patients were alcoholic and 44 patients were having behaviour of smoking. The alcoholic population is more comparing with Smokers population. Present study Total 97 drug queries were received during the study period from different enquirers, in which we have received more queries from Pharmacy teaching staff includes 30 (30.92%) remaining percentage from Physicians, nurses, Pharmacist. Total 97 drug queries were received during the study period from different months in which more queries received during the month of February 16 (16.49%). remaining from March, april, November, December month.the lowest query received in October, may month.

In our study Total 97 drug queries received during the study period. It is based on the purpose of enquiry, in which update of knowledge purpose we have received 50 (51.54%). The highest population enquiry preferred for update of knowledge the remaining population preferred better patient care purpose.

Total 64 drug interactions were screened during the study period, in which 28 (43.75%) prescriptions having moderate drug interactions, 27 (42.48%) prescriptions having major drug interaction, 9 (14.06%) Prescriptions having minor drug interactions. In our study the moderate drug interactions is more comparing with major and minor.

In our study Total 13 Adverse drug reactions was screened during study period. The adverse drug reactions's more in December month comparing with remaining months.

In our study total 100 patients were enrolled. In which 100 cases was diagnosed in the general medicine department hospital and we have counselled 100 Patients about various diseases during the study period.

In our study we have Provided 274 clinical pharmacy services in general medicine department of tertiary care hospital. It includes 97 drug information services,100 patient counselling services. we have screened 64 drug interactions and 13 adverse drug interactions in the individual prescriptions.

CONCLUSION

The Present study concludes that clinical Pharmacist play a key role in patient safety. In Particlularly general medicine department important for educating guiding the health care professionals related to safety use of medications. Providing drug information to doctors and nurses on daily basis in order to improve better patient care services in hospital. The clinical Pharmacist should review all case sheets presented at wards due to any chance of drug related problems.But in india still these services in infant stage.As a part of our profession responsibility to creating awareness about these services in the community is required.we hope that these services will promote better patient services in the hospitals.

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