

A STUDY ON ASSESSMENT OF CLINICAL PHARMACY SERVICES TO CARDIOLOGY DEPARTMENT IN TERTIARY CARE TEACHING HOSPITAL

RAGESH G. *, SINDHUBHARATHI A, USHASRI M, SRINIVASULU A.

Department of Pharmacy Practice, SRM College of Pharmacy, SRM University, Kattankulathur, Kancheepuram District 603203, Tamil Nadu, India. Email: gsvragesh@gmail.com

Received: 06 Jan 2014, Revised and Accepted: 21 Feb 2014

ABSTRACT

Objective: This study is to identify, assess and evaluate the actual and potential drug related problems of drugs prescribed in cardiac inpatients. Clinical pharmacy is a health science discipline in which pharmacists provide patient care that optimizes medication therapy and promotes health, wellness, and disease prevention.

Methods: It's a prospective and observational study includes patients who are undergoing treatment on the cardiology inpatient wards of the hospital performed structured medication reviews based on the patient drug profile and patient interviews. The identified drug related problems were subsequently categorised.

Results: Total of 53 patients, 48 (90.56%) drugs related problems are identified, no statistical correlations were observed between age and gender with developing DRPs. Over all the drug related problems are markedly reduce the patient care and also increase the patient mortality ratio. So that clinical pharmacy service is one of main elective mountain service in hospital to improve the quality of patient care.

Keywords: Clinical pharmacy, Cardiology, Drug related problems, Observational, Prospective.

INTRODUCTION

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 (i.e., they don't just provide clinical services), 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. By stating that clinical pharmacists assume responsibility and accountability for achieving therapeutic goals, the definition makes it clear that they are called upon to be more than consultants [1]. Further, the mention of managing therapy in direct patient care settings is particularly important because it reinforces existing definitions of the term "clinical." For example, the American Heritage College Dictionary defines clinical as "involving or based on direct observation of the patient" [2]; Dorland's Medical Dictionary defines clinical medicine as "the study of disease by direct examination of the living patient" [3]. Clinical pharmacy services focus on patient-centered care and create both the opportunity and challenge of continuous professional development and greater professional satisfaction [4]. In the cardiovascular ICU alone, clinical pharmacy services and related interventions have been associated with significant economic benefit [5]. Pharmacists specializing in cardiology have also demonstrated a tremendous value to healthcare by optimizing patient safety. In one report, clinical pharmacists identified 24 medication errors per 100 admissions in patients hospitalized for cardiovascular disease [6]. Because pharmacists are uniquely adept at identifying and resolving medication errors and have been shown to improve the quality of care in hospitalized patients with cardiovascular disease, proper care of these patients requires a pharmacist as part of the healthcare team [7]. The presence of clinical pharmacists in rounds in tandem with other health care professionals is an effective strategy for reducing the number of preventable adverse events [8-11]. Improvements in patients' safety and level of care in addition to better control of cardiovascular risk factors and reduction in health care costs justify the need for active collaboration between clinical pharmacists and physicians in the management of patients with cardiovascular diseases [12].

Clinical pharmacists address areas requiring improvement as well as unmet DRPs responsively and preventatively. By doing so, clinical pharmacists positively contribute to the care of patients with impaired renal function and reduce the gaps in current patient care [13].

Impact on practice

- ✓ Minimising the expenditures for pharmacological treatments born by the national health systems and by the patients, i.e., trying to provide the best treatment alternative for the greatest number of patients
- ✓ Preventing actual and potential medication related problems, for example adverse drug reactions, treatment failures, over-use, under-use, incorrect doses and non-formulary medicine use
- ✓ Clinical pharmacy services concerned with the science and practice of promoting rational medication use between the health care practitioners

Aim and objectives

The aim of the study is to identify, assess and evaluate the actual and potential drug related problems in cardiac inpatients.

MATERIALS AND METHODS

Study design

It's a prospective and observational study.

Sample selection

Inclusion

All the inpatients of either sex of age 10-80 undergoing treatment on the cardiology inpatient wards of the hospital will be taken for the study. Patients who are have past medical and medications histories were included in this study. Pregnant women, lactating mothers and co-morbid conditioned patients are eligible for the inclusion.

Exclusion

Patients undergoing treatment less than one day of hospital stay excluded from the study. Patients who are posted for surgery and who are not have major cardiac problems were not eligible for the inclusion. Patients transferred directly from other hospitals in the region and unable to understand the previous medication history of the same patients are excluded from this study.

Source of data: The data were collected from patient case note, treatment chart, laboratory reports, patient/caretaker interview, interviewing healthcare professionals and other relevant data sources.

RESULTS AND DISCUSSION

Table 1: Demographical detail

S. No.	Age groups	Sex		No. of patients	Percentage (%) (n=53)
		Male	Female		
1.	1-10	-	-	-	-
2.	11-20	-	-	-	-
3.	21-30	01	-	01	01.88
4.	31-40	01	02	03	05.65
5.	41-50	06	06	12	22.64
6.	51-60	12	03	15	28.30
7.	61-70	11	05	16	30.19
8.	71-80	04	-	04	07.54
9.	81-90	01	01	02	03.77

Table 2: Duration of the Hospital Stay

S. No.	Length of the stay	No. of patients	Percentage (%) (n=53)
1.	1-3 days	17	32.07
2.	4-6 days	23	43.90
3.	7-9 days	08	15.09
4.	More than 10 days	05	09.43

Table 3: Major Medical Diagnosis in Cardiology

S.no	Categories of Medical diagnosis	No. of patients	Percentage (%) (n=53)
1.	Hypertension	06	11.32
2.	Congestive cardiac failure	01	01.88
3.	Myocardial infraction	10	18.86
4.	Angina pectoris	05	09.43
5.	Coronary artery disease	07	13.20
6.	Supra ventricular tachycardia	14	26.41
7.	LV dysfunction	07	13.20
8.	Others	03	05.66

Table 5: Number of Medications received on Admission

S. No.	No. of medications	No. of patients	Percentage (%) (n=53)
1.	1-4	-	-
2.	5-8	06	11.32
3.	9-12	25	47.16
4.	13-16	07	13.20
5.	17-20	11	20.75
6.	Above 20	04	07.54

Table 6: Pharmacological classifications of prescribed drugs

S. No.	Anatomical classification	No. of patients	Percentage (%) (n=53)
1.	ADP induced aggregation inhibitor	49	92.45
2.	Proton pump inhibitor	48	90.56
3.	Vasodilators	48	90.56
4.	ACE inhibitor	46	86.79
5.	Loop diuretics	46	86.79
6.	HMG-co-A reductase inhibitor	43	81.13
7.	NSAID's	43	81.13
8.	Nitrates	41	77.35
9.	Coronary vasodilators	34	64.15
10.	Benzodiazepine	27	50.94
11.	Insulin	23	43.39
12.	Opioid agonist	22	41.50
13.	Low molecular weight heparin	19	35.85
14.	Aldosterone antagonist	17	32.07
15.	5HT3 receptor blocker	13	24.52
16.	Heparin	13	24.52
17.	Bronchodilators	13	24.53
18.	Glucocorticoids	11	20.75
19.	Cardiac glycosides	11	20.75
20.	III generation cephalosporin	11	20.75
21.	Osmotic laxatives	08	15.09
22.	Beta-blockers	08	15.09
23.	Angiotensin receptor blocker	07	13.20
24.	Biguanides	07	13.20

25.	Calcium channel blocker	06	11.32
26.	Cumarine derivatives	05	09.43
27.	Sulfonyl ureas	05	09.43
28.	Xanthine derivatives	05	09.43
29.	Alpha-adrenergic blocking agent	05	09.43
30.	Expectorant	04	07.54
31.	Vasoconstrictor	04	07.54
32.	Beat-lactimase inhibitor	03	05.66
33.	Stimulant laxatives	03	05.66
34.	Opioid antagonist	02	03.77
35.	P-aminophenol derivatives	02	03.77
36.	Catecholamine	01	01.88
37.	Macrolide	01	01.88
38.	Miscellaneous	22	41.50

Table 8: Categories of drug information queries received

S. No.	Category	No. of queries	Percentage (%) (n=352)
1.	Status of enquirer		
	Clinicians	84	15.78
	Pharmacists	67	19.03
	Postgraduate students	153	43.46
	Others (Nurses, physiotherapist etc...)	48	13.63
2.	Mode of request		
	Direct	38	10.79
	Ward rounds	231	65.62
	Phone	83	23.57
3.	Type of query		
	Drug therapy	42	11.93
	Indications	19	05.39
	Pharmacokinetics/pharmacodynamics	12	03.40
	Dosage/administration	48	13.63
	ADR	78	22.15
	Poisoning	03	00.85
	Contraindications	16	04.54
	Efficacy	39	11.07
	Cost/availability	32	09.09
	Interactions	46	13.06
	Others	17	04.82
4.	Purpose of query		
	Patient care	286	81.25
	Update knowledge	66	18.75
5.	Mode of reply		
	Printed literature	183	51.98
	Written	98	27.84
	Verbal	24	06.81
	Both verbal and written	47	13.35

Table 9: Patient counseling for diseases

S. No.	Disease counseled	No. of patients	Percentage (%)
1.	Hypertension	06	11.32
2.	Congestive cardiac failure	01	01.88
3.	Myocardial diagnosis	10	18.86
4.	Angina pectoris	05	09.43
5.	Coronary artery disease	07	13.20

Table 10: Identified medication related problems in Cardiology

S. No.	Categories	No. of MRP'S	Percentage (%) (n=53)
1.	Sub therapeutic dose	08	15.09
2.	Overdose	13	24.52
3.	ADR's	0	0
4.	Drug interaction	03	05.66
5.	Improper drug selection	08	15.09
6.	Untreated indications	04	07.54
7.	Failure to take medication	02	03.77
8.	Drug use without indication	09	24.52
9.	Treatment failures	01	01.88

DISCUSSION

From our results, Male race groups are more prompt for cardiac problem compare with female race and it requires minimum 1 week hospital admission. Seven major categories of medical diagnosis in cardiology were identified and from this medical diagnosis Supra ventricular tachycardia is more common diagnosis in all other cardiologic condition 14 (26.41%) patients, followed by myocardial infarction in 10 (18.86%) patients, CAD in 7 (13.20%) patients and 6 (11.32%) are diagnosed as HTN (Table-3). Of 22 (42.30%) patients are prescribed polypharmacy, definitely, the use of polypharmacy in patients is sometimes necessary to control or manage medical conditions. However, a patient may often be taking a multitude of medications because medications were used as substitutes for careful diagnostic manoeuvres or effective non-pharmacologic therapies. Therefore, before prescribing a medication, it is important to determine if the patient's condition is caused by a current medication [14]. Sub therapeutic dose, over dose and drug use without indications are major contributing drug related problems in this study. Out of 352 queries from cardiology department, 286 (81.25%) queries are proposed for better patient care. Likewise 231 (65.62%) queries received during ward rounds, 83 (23.57%) queries are through phone and 38 (10.79%) queries are from direct contact. Post graduate students are finitely requires 153 (43.46%) clinical pharmacist services for better knowing of therapeutical values for newly marketed drugs. Out of 352 queries 78 queries are adverse drug reaction related queries and also clinicians are more conscious about the adverse drug reaction of a particular drug which was practicing in the specializing wards. Rest of the queries are from drug therapy 42 (11.93%), indications 19 (05.39%), pharmacokinetics/pharmacodynamics 12 (3.40%), dosage and administration 48 (13.63%), contraindication 16 (4.54%), efficacy 39 (11.07%), cost/availability 32 (9.09%), interaction 46 (13.06%) and others queries are 17 (4.82%). In cardiology department we selected major medical diagnosis and starts giving general patient counseling's. In that 83 patients are well respond to the counseling and we find the well improvement in those patients. Accordingly, a total of 53 patients, 48 (90.56%) drugs related problems are identified, no statistical correlations were observed between age and gender with developing DRP's. (Table: 10). Over all the drug related problems are markedly reduce the patient care and also increase the patient mortality ratio.

CONCLUSION

Overall the study reveals that, Provide highly specialized advice and information to doctors and nursing staff on a daily basis in order to contribute to the care and well being of patients. Provide education and training for a wide spectrum of medical staff working in a health care organization. The clinical pharmacist should review and clinically check all prescriptions presented at the wards i.e. checking for appropriate doses; drug interactions; transcription errors on TTOs; lengths of courses

e.g. antibiotics. It also involves counseling the patients who come to the department about their medication. The clinical pharmacist compulsory should monitor the patients regarding how they have respond to that treatment, so that the best choice of drug can be made for the future. Cumulatively clinical pharmacy service is one of main elective mountain service in hospital to improve the quality of patient care.

REFERENCES

1. American College of Clinical Pharmacy. Pharmacotherapy 2008-28 (6), 816-817.
2. Houghton Mifflin. American heritage dictionary of the English language. 2007 (4).
3. Dorland's illustrated medical dictionary. 2007 (31).
4. Clinical pharmacy services, British Columbia pharmacy association, March: 2013.
5. White C, Chow M. Cost impact and clinical benefits of focused rounding in the cardiovascular intensive care unit. Hosp Pharm, 1998 (33), 419-423.
6. La Pointe NM, Jollis JG. Medication errors in hospitalized cardiovascular patients. Arch Intern Med, 2003 (163), 1461-1466.
7. Peterson ED, Albert NM, Amin A, Patterson JH, Fonarow GC. Implementing critical pathways and a multidisciplinary team approach to cardiovascular disease management. Am J Cardiol. 2008(102), 47G-56G.
8. Kucukarslan SN, Peters M, Mlynarek M, Nafziger DA. Pharmacists on rounding teams reduce preventable adverse drug events in hospital general medicine units. Arch Intern Med. 2003(163), 2014-2018.
9. Leape LL, Cullen DJ, Clapp MD, Burdick E, Demonaco HJ, Erickson JI, Bates DW. Pharmacist participation on physician rounds and adverse drug events in the intensive care unit. JAMA, 1999(282), 267-270.
10. Sanghera N, Chan PY, Khaki ZF, Planner C, Lee KK, Cranswick NE, Wong IC. Interventions of hospital pharmacists in improving drug therapy in children: a systematic literature review. Drug Saf, 2006(29), 1031-1047.
11. Kaboli PJ, Hoth AB, McClimon BJ, Schnipper JL. Clinical pharmacists and inpatient medical care: a systematic review. Arch Intern Med, 2006(166), 955-964.
12. Azita Hajhossein Talasaz. The potential role of clinical pharmacy services in patients with cardiovascular diseases. J Tehran Heart Cent, 2012-7(2), 41-46.
13. Gunar, Stemer, Rosa. Lemmens-Gruber, Clinical pharmacy activities in chronic kidney diseases: a systematic literature review. BMC Nephrol, 2011(12), 35.
14. Gurwitz JH, Soumerai SB, Avorn J. Improving medications prescribing and utilization in the nursing home. J Am Geriatr Soc, 1990(38), 542-52