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CLINICAL PHARMACIST'S SERVICESIN A TERTIARY CARE TEACHING HOSPITAL

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Abstract:

Objective: To elevate the clinical pharmacist role in the health care team, to justify the liaison between health care professionals and to promote better quality of life in chronic disease patients a prospective observational and interventional study was carried out.

Setting: Rajiv Gandhi Institute of Medical Sciences, an 800 bedded tertiary care teaching hospital, Kadapa, India.

Results:200 patients were recruited belonging to age ≥40 years; they were divided in to Observational Group (100) and Interventional Group (100). Each group consist of 25 patients for Hypertension (25), Stoke (25), Diabetes Mellitus (25) and Asthma (25). Major risk factors identified as age, obesity, cigarette smoking, hypercholesterolemia, alcohol, diet, hereditary, allergens, cigarette smoking, seasons. Laboratory levels compared between groups with p = 0.0049 (Observational Group), p = 0.0081 (Interventional Group). Significant results obtained for medication adherence in Interventional Group (p = 0.0003).

Conclusion: Clinical pharmacist role will be elevated in health care team by promoting intrinsic services to doctors, by maintaining the diplomatic liaison between health care professionals and a decent patient-pharmacist relation improves the patient's knowledge on disease and which makes their better Quality of Life.

Key Words: Clinical Pharmacist, Health Care Team, Chronic Diseases, Pharm. D.

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INTRODUCTION

Clinical pharmacy is defined as that area of pharmacy concerned with the science and practice of rational medication use [1].Clinical pharmacy should be considered as an integral element of a health care system. Physicians can get assistance in optimizing patients' pharmacotherapy with the presence of clinical pharmacists in medical rounds. Furthermore, clinical pharmacists could condense medication errors and adverse effects insofar as they contribute meaningfully in the detection then management of drug related problems [2].Clinical pharmacy practice in the hospital settings, as seen in other countrieslike United States, Australia etc, can improve the drug use process by promoting the quality and safe use of medicines there by improving overall health care of the patients in India. Involvement of clinical pharmacists in patient care in the inpatient hospital settings results in safer and more effective medication use [3]. As the chronic disease makes the patient to prone for more morbid and sometimes mortal conditions, so patients should be always empowered with the updating knowledge of his/her disease condition, medication and the proper life style modifications required to optimize their diseased condition and thereby improve their Quality of life, here comes the role of clinical pharmacist after the physician to educate the patients regarding their disease, medication and lifestyle modifications as a part of patient counselling.

AIM OF THE STUDY:

To Evaluate the Clinical Pharmacist Role in a Health Care Team by providing precise services to physicians, patients, nurses and other health care professionals in a tertiary care teaching hospital.

METHOD

Study design: Prospective Observational and Interventional Study

Study period: December 2013 to June 2014 (6 months)

Study population:200 Patients belonging to HTN, DM, Stroke & Asthma/COPD.

Study place: RIMS,an 800 bedded tertiary care teaching hospital, Kadapa.

Department: Department of General Medicine,male and female units (Inpatient)

Study Materials: Specially designed Patient data collection proforma, Clinical Pharmacist intervention forms, Patient information leaflets

Inclusion criteria: Patients suffering fromHTN, DM, Stroke & Asthma/COPD without any comorbid conditions/diseaseswith past history of 1 yearbelonging to age ≥40 years.

Exclusion criteria: Acute diseased patients, immunosuppressive patients, chronic kidney diseases, cardiovascular diseases, pediatrics, pregnancy.

RESULTS

A total of 200 subjects were recruited in to the study based on the inclusion criteria, they were divided in to two groups namely observational group and interventional group. Out of 120 subjects, each disease (i.e. HTN, Stroke, DM II and Asthma/COPD) consists of 50 subjects of which 25 belong to observational and 25 to interventional groups. (Table No. 1)

Table 1: Distribution of subjects into observational and interventional groups

Disease	Observation Group (n-100)	Intervention Group (n-100)	Total N = 200
HTN	25	25	50
STROKE	25	25	50
DM (II)	25	25	50
ASTHMA/COPD	25	25	50

Table No. 2 furnishes the details of subjects' distribution based on the gender. More number of male patients were observed in the HTN (60%) whereas female patients seen more in the Asthma/COPD (56%).

Table No. 3 furnishes the details of subjects' distribution based on the age group. In HTN patients' highest number (28%) was seen in the 51-60 years of age group. In Stroke patients' highest number (30%) was seen in the 61-70 years of age group. In DM patients' highest number (30%) was seen in the 61-70 years of age group. In Asthma/COPD patients' least number (16%) was seen in the 71-80 years of age group and all other age groups consists of equal population (28%).

Table 2: Distribution of Subjects Based On the Gender

Disease	Gender	Observation Group	Intervention Group	Weighted Total (50)	
				(n)	{%}
HTN	Male	15	15	30	**60**
	Female	10	10	20	40
STROKE	Male	17	10	27	54
	Female	8	15	23	46
DM (II)	Male	11	12	23	46
	Female	14	13	27	54
ASTHMA/COPD	Male	12	10	22	44
	Female	13	15	28	**56**

Table 3: Distribution of Subjects Based on the Age Group

Disease	Age Group (Years)	Observation Group	Intervention Group	Weighted Total (50)		
		M/F	M/F	M/F	(n)	{%}
HTN	40-50	3/3	3/4	6/7	13	26
	51-60	3/3	4/4	7/7	14	**28**
	61-70	3/3	3/4	6/7	13	26
	71-80	2/3	2/3	4/5	10	20
STROKE	40-50	3/4	3/3	6/7	13	26
	51-60	3/3	3/4	6/7	13	26
	61-70	6/2	5/2	11/4	15	**30**
	71-80	3/2	2/2	5/4	9	18
DM (II)	40-50	3/2	3/3	6/5	11	22
	51-60	3/3	4/3	7/6	13	26
	61-70	5/2	5/3	10/5	15	**30**
	71-80	3/2	3/3	6/5	11	22
ASTHMA/COPD	40-50	3/3	4/4	7/7	14	28
	51-60	3/3	4/4	7/7	14	28
	61-70	3/3	4/4	7/7	14	28
	71-80	2/2	2/2	4/4	8	**16**

Table No. 4 furnishes the details of subjects' distribution based on the duration of disease. In HTN patients' highest number (48%) was seen in the 2-3 years of duration. In Stroke patients' highest number (40%) was seen in the 2-3 years of duration. In DM patients' highest number (40%) was seen in the 2-3 years of duration. In Asthma/COPD patients' highest number (44%) was seen in the 1-2 years of duration.

Table No. 5 describes the details of the risk factors contributing to the respective diseases. Age, hypercholesterolemia, obesity were recorded as the major risk factors for HTN. Age, hypercholesterolemia, obesity, alcohol were recorded as the major risk factors for Stroke. Age, hypercholesterolemia, obesity, diet, lifestyle were recorded as the major risk

Table No. 6 describes the details of effect of clinical pharmacist interventions, all the parameters mentioned in the table were affected by the clinical pharmacist counselling to the respective patients, general increase in HDL, FVC, FEV1 levels and decrease in all other parameters in the interventional group was observed. Contrasting results were seen in the observational group. All the results shown in the table are the standard deviation values of the laboratory parameters belonging to the respective patients. Significant result (P = 0.0081**) was obtained for the interventional group.

Table 4: Distribution of Subjects Based On the Duration of Disease

Disease	Duration (Years)	Observation Group	Intervention Group	Weighted Total (50)	
		n	n	n	{%}
HTN	1-2	6	6	12	24
	2-3	12	12	24	**48**
	>3	7	7	14	28
STROKE	1-2	9	9	18	36
	2-3	10	10	20	**40**
	>3	6	6	12	24
DM (II)	1-2	9	7	17	34
	2-3	10	10	20	**40**
	>3	7	6	13	26
ASTHMA/COPD	1-2	11	11	22	**44**
	2-3	8	8	16	32
	>3	6	6	12	24

Table 5: Risk Factors

Disease	HTN	Stroke	DM (II)	Asthma/ COPD
Risk Factors	Age Obesity Cigarette smoking Hypercholesterolemia Alcohol Diet Hereditary Life style	Age ≥60 Obesity Cigarette smoking Hypercholesterolemia Alcohol Diet Uncontrolled HTN Trauma Life style	Age Obesity Hypercholesterolemia Hereditary Diet Life style	Age Smoke/fog Cigarette smoking Occupation Diet Hereditary Allergens Seasons Viral

factors for DM., smoke, occupation, allergens, season were recorded as the major risk factors for Asthma/COPD.

Table 6: Effect of Clinical Pharmacist Intervention

Disease	Parameter	Observational			Interventional			
		Base-line	End	*p*	Base-line	3 M	6 M	*p*
HTN	**BP**(mmHg)	160±9	162±11	**0.0049**	168±7	160±4	158±3	**0.0081**
STROKE	**BP** (mmHg)	170±7	182±8		181±4	174±5	162±7	
	HDL(mg/dl)	37±2	36±2		35±2	38±1	39±3	
	LDL (mg/dl)	95±5	105±6		97±5	82±3	79±2	
	TC(mg/dl)	145±7	152±9		148±9	140±5	136±2	
DM (II)	**RBS** (mg/dl)	224±8	231±5		235±6	198±8	164±2	
	FBS(mg/dl)	146±6	151±4		153±4	146±4	140±2	
	HDL(mg/dl)	35±2	36±2		35±1	38±3	42±2	
	LDL(mg/dl)	105±4	108±4		104±7	98±5	82±2	
	TC(mg/dl)	135±7	142±5		152±4	144±2	131±2	
ASTHMA/COPD	**RR (**c/m)	24±2	24±4		25±4	22±2	20±2	
	FVC (L)	2.6±1.2	2.4±1.1		2.1±1.4	2.9±1.0	3.5±1.3	
	FEV_1 (L)	2.2±0.3	2±1.1		2±1.3	2.6±2.1	2.9±1.9	
	TLC (L)	6.9±1.7	7.2±1.1		6.9±1.5	6.9±0.4	6.5±1.0	
	VC (L)	1.8±1.1	2.1±1.4		1.9±1.2	1.8±0.5	1.7±0.6	

Observational Group Significance - Student paired t-test**;** p = 0.0049 (s)
Interventional Group Significance - one way ANOVA; p = 0.0081** (s)

Table No. 7 describes the details of subjects' distribution based on the adherence towards the medication. The values in the table represent the number of patients adhered towards medication in both the observational and interventional groups. Significance (p) values were calculated for the yes answersthat were adhered to medication.Significant result (P = 0.0003) was obtained for the interventional group.

Table 7: Distribution of Subjects Based On the Medication Adherence

Disease	Observational				*P*-Value	Interventional						*P*-Value
	Adherence					Adherence						
	Baseline		End			Baseline		3M		6M		
	Yes	No	Yes	No		Y	N	Y	N	Y	N	
HTN	12	13	11	14	**0.4444**	12	13	14	11	19	6	**0.0003**
STROKE	13	12	13	12		11	14	11	14	15	10	
DM (II)	14	11	11	14		11	14	11	14	19	6	
ASTHMA/COPD	13	12	14	11		13	12	15	10	20	5	

Observational Group Significance - Student paired t-test**;** p = 0.4444 (ns)
Interventional Group Significance - one way ANOVA; p = 0.0003*** (s)

DISCUSSION

Highest number of male population was found in HTN which coincide with the results of Biradar S S. et al[3],In the interventional group in HTN patients BP (mmHg) decreased from 168±7 to 158±3, in Stroke patients BP decreased from 181±4 to 162±7, in Stroke patients HDL (mg/dl) levels increased from 35±2 to 39±3, LDL (mg/dl) levels decreased from 97±5 to 79±2,TC (mg/dl) levels decreased from 148±9 to 136±2.These results coincide with the results of Autumn Bagwell, Pharm D et.al[4].In DM patients RBS levels decreased from 235±6 to 164±2, FBS levels decreased from 153±4 to 140±2, HDL levels increased from 35±1 to 38±3, LDL levels decreased from 104±7 to 82±2, TC levels decreased from 152±4 to 131±2.These results coincide with the results of Taha O. Mahwiet al[5].

Significant results were obtained in the medication adherence behaviour of the patients in the interventional group with significance value ***p-0.0001****** compared to the observational group ***p - 0.4444.***

CONCLUSION

Study mentions the importance of clinical pharmacists in improving the adherence of the medicines in the chronic disease patients thereby achieving the noble therapeutic levels of the medicines which lead to the well improvement of patient.Our study revealed that the intrinsic services provided by the clinical pharmacist in the hospital settings are the mediums for a clinical pharmacist to take part in the health care team. These types of studies are carried out in the future in all types of morbid conditions so that better relations will be established between health care professionals, overall leads to patient care.

Conflict of Interests: No potential conflicts were reported regarding the manuscript.

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