

Role of pharmacist to subside the substantial cost of diabetic patients spent on their disease management at tertiary care hospital of Hyderabad, Sindh, Pakistan

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Objective: To assess the role of pharmacist to improve the patient economy in regards to treatment of diabetes mellitus (DM).

Methodology: Total 150 Questionnaire were distributed among diabetic patients and 83 were male (55.4%) and 67(44.6%) female. Out of 150, 27(18%) patients had type 1 and 123(82%) had type 2 DM.

Results: Glimperide (1mg) revealed maximum price variation of 655.38% while glipizide (10mg) showed difference of 38.88%. Metformin (500mg)

and pioglitazone (15mg) showed profound price variation of 308.33% & 542%, respectively.

Conclusion: The study has shown that the pharmacist can be very helpful in decreasing the substantial cost incurred by patients. The beneficiary is not only the patient, his family but the whole society and the whole country is beneficiary of pharmacist intervention. (Rawal Med J 201;42:400-403)

Keywords: Intervention, pharmacist, diabetes mellitus, cost.

INTRODUCTION

Diabetes Mellitus (DM) is a common metabolic disorder of glucose homeostasis.^{1,2} Hyperglycemia leads to micro-vascular complication like retinopathy, nephropathy and neuropathy.^{3,4} Coronary artery disease is the main source of death.⁵ Diabetes can influence all parts of the body.⁶ It has affected near about 5 million people of Pakistan and this number is expected to rise in the days to come.⁷ Diabetes mellitus cannot be countered only with single approach but lot of different levels are required for its management.⁸ Diabetes Mellitus is considered as sixth leading cause of the death and in Pakistan generates annual cost of about 120 million rupees, where 70(58.3%) million is spent for diabetes associated complications.^{9,10}

Studies from USA have shown that pharmacist interventional role can subside the long-term cost by enhancing the glycemic control.^{11,12} Pakistan is one of the poor country in the world and the average annual cost per person for diabetic is about \$4,025 but with complications this can go much higher.¹³ The biggest contributor to the direct health care cost are medication and cost of the inpatient care; the

medication of the diabetes is responsible 7% cost.¹⁴ In this whole scenario, the pharmacist is very nicely placed. His education to the diabetic patients and imparting the manual of comparative drug price annotated with the prescribing advice to physician by Pharmacist can really decrease the expense incurred by the patient.¹⁵ The aim of this study was to assess the role of pharmacist to improve the patient economy in regard to treatment of DM.

METHODOLOGY

The cross sectional study was carried out at Liaquat Hospital, Hyderabad, Pakistan which is one of the major Hospital that delivers medical and various additional assistance to about 2.5 million people of the country. The study duration was 3 months and included 150 patients with DM, both inpatient and out patients. A Questionnaire was developed and contained the general information of the patients like the gender, age, current medical history, locality, prescribed medications detail, concerned laboratory details, and various questions about the expenses and total cost spent on the disease before and after the intervention of the pharmacist.

Approval of ethics committee and consent of the participants was obtained. Data were analyzed in SPSS version 19.

RESULTS

Out of 150 patients, 83(55.3%) were males and 67(44.6%) were the females. Disease duration was 4-7 years in most patients (Table 1). Table 2 shows that how many patients improved their cost and by which way pharmacist intervention saved their therapy cost. It is obvious that the presence of various diabetes related complexities are adding to the overall cost (Table 3).

Table 1. Gender distribution of patients and disease duration.

Gender	Number	Percentage
Male	83	55.4%
Female	67	44.6%
Duration of the disease		
1-3 years	34	22.6%
4-7 years	77	51.3%
> 10 years	39	26%

Table 2. Patients' saving with pharmacist intervention.

Areas improved	Number	Percentage
Cost saved by reduced macro complication after pharmacist intervention	130	86.6%
Cost saved by reduced micro complication after pharmacist intervention	123	82%
Patients lab cost reduced after intervention	141	94%
Patients saved cost with cheap & effective therapeutic alternative medicine	128	85.3%
Less units of Insulin used after Pharmacist intervention ultimately it saved the cost	121	80.6%

Table 3. The associated complication added to the overall cost.

Complications added cost (Rs)	Type 1	Type 2
No complication of Diabetes	37,000	80000
Microvascular Complications only	51,000	123000
Macrovascular complications only	62,000	138000
Micro and macro both complications	90,000	153000

Table 4. The cost difference amidst sulfonylurea group of drugs (Rs).

Drug	Formulations	Doses (mg)	Number of Manufacturers	Min price	Max price	% Price variations
Glibenclamide	2	2.5	8	2.6	6.05	132.69
		5	9	3.6	9.15	154.16
Gliclazide	4	30	12	19	64.9	241.57
		40	17	14	27.5	96.43
		60	10	35	99.6	184.57
		80	39	19.5	70.5	261.54
Glimperide	4	1	53	8.36	63.15	655.38
		2	53	12.54	117.4	836.2
		3	12	45	125	177.7
		4	20	18.8	103.4	450
Glipizide	3	2.5	6	2.93	9.35	219.11
		5	14	4.74	13.03	174.89
		10	5	18	2.5	38.88

Table 5. The cost variation of the bigunaides (Metformin) & thiazolidinediones (Rs).

Drug	Formulations	Doses (mg)	Number of Manufacturers	Min Price	Max Price	% price Variation
Metformin	4	250	7	4.6	9	95.65
		500	48	6	24.5	308.33
		850	18	10	36	260
		1000	20	14	41.1	195.71
Pioglitazone	2	15	20	10	64.20	542
		30	20	18	98.20	445.55

Table 6. Price difference between meglitinides group of drugs (Rs).

Drug	Formulations	Doses mg	Number of Manufacturers	Min price	Max price	% Price variation
Nateglinide	2	60	25	30	45	50
		120	21	50	70	40
Repaglinide	3	0.5	6	19.90	38	90.95
		1	4	39	62	58.97
		2	4	75	98	30.66

With respect to sulphonylureas, glimperide (1mg) revealed maximum price variation of 655.38% while Glipizide (10mg) showed difference of 38.88% (Table 4). In Pioglitazones group, metformin (500mg) and pioglitazone (15mg) showed profound price variation of 308.33% & 542%, respectively (Table 5). In meglitinides group, (0.5mg) represented maximum cost difference of 90.95% (Table 6).

DISCUSSION

Health economics is the science which involves

different technique and the methods of economic analysis in the area of healthcare. It has been seen that pharmacist could cater better services and can cut the cost of the drugs if information regarding the drugs price is imparted to the patient and the physician. Studies have revealed that imparting the comparative drug price to physician by pharmacist can really decrease the cost incurred by the patient.⁵ A large number of chronic ill patients fail to go with the medication and follow up because of the high prescription cost. Unsuitable prescription coverage and out of limit expenditures is one of the very strong predictors of their medication adherence complications.

Due to the lack of information on comparative drug price & quality, it is hard for physicians to recommend the economical prescription. Hence there is dire need of the pharmacist to play the interventional role to ensure the cost effectiveness and in turn adherence of the therapy. Wherever possible, the pharmacist can independently substitute the cheaper brand. The Pakistani market has more than 100000 formulations but unfortunately there is no proper mechanism of the registration of the drugs. The drugs are commonly sold with the brand names. Hence, the cost of the patient living with the diabetes becomes a challenge.

We observed upto 863.20% variation in drug prices manufactured by dissimilar pharmaceutical industries. The reasons for the cost variation could be present structure of the pharmaceutical industry, asymmetry of the information or improper information, industry costs and Government regulations and price fixing policies.

From this study, it was very understandable that the price variations were directly proportional to the number of the pharmaceutical companies manufacturing the particular drugs. Hence, the price difference could be because of the increasing competition among the pharmaceutical companies. Pharmacist does not dispense the same brand as recommended by the physician and he substitutes with the other alternative and the reasons for this is obvious; the cost to the patient.

Due to the lack of information on the comparative drug prices and the quality it is very tough for the

doctors to prescribe the very economical prescription. So the pharmacist is well equipped with this knowledge and can work for the patient economy that will ultimately enhance the quality of diabetic patients' life in turn that the patient will adhere to the drug regimen and the complications can greatly be reduced.

CONCLUSION

The role of pharmacist is very imperative to enhance the overall economy of the patients suffering from diabetes mellitus. The beneficiary is not only the patient, his family but the whole society and the whole country.

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