PHARMACOECONOMIC EVALUATION OF ANTIDIABETIC THERAPY IN A TERITARY CARE HOSPITAL

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ABSTRACT

Diabetes mellitus describes a metabolic disorder of multiple etiology characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both. The effects of diabetes mellitus include long-term damage, dysfunction and failure of various organs. Physician's plays a vital role to prescribe suitable anti-diabetic medicines and the scenario of a pharmacist is to play a keen job to evaluate and monitor the prescription pattern of medications in order to optimize the dose of medication for a successful therapy. **Objectives:** To assess the direct cost of medication in all diabetic patients. **Materials and Methods:** A prospective observational study which were carried out for a period of six months at General Medicine Department of Basaveshwara Medical College Hospital and Research Centre (BMCH), Chitradurga. **Results:** A total of 90 patients aged $\geq$61 years data were collected in medicine department in which 46 were males and 44 were females. Hypertension is more prevalent in 46-60 age group people. Commonly prescribed antidiabetic medicine was Insulin. Diabetes with co morbidities were occuring more as compared to complications. **Conclusion:** We conclude this study as a successful treatment will come true when a pharmacist maintain a successful relationship with the physician which would result in safe and effective therapy. Still some studies yet to be done to educate the population and bring awareness in the health care professionals for a successful treatment.

1. INTRODUCTION

Diabetes mellitus (DM) is a metabolic disorder resulting from a defect in insulin secretion and/or insulin action, which results in hyperglycemia with disturbances of carbohydrate, fat and protein metabolism. It is a chronic disorder that poses huge health and economic burden on society. The International Diabetes Federation (IDF) estimates the total number of diabetic subjects to be around 40.9 million in India and this is further set to rise to 69.9, by the year 2025.[4,5] Selection of oral antidiabetic agents, as first-line monodrug therapy or combined therapy should be based on both, the pharmacological properties of the compounds (efficacy and safety profile) and the clinical characteristics of the patient (stage of disease, body weight etc). According to World Health Organisation (WHO), 346 million people worldwide have diabetes. In 2004, an estimated 3.4 million people died because of high blood sugar. More than 80% of deaths occur in middle and lower income counties. It is estimated that prevalence of diabetes will rise from 6.4% in 2010 to 7.7% in 2030 with an estimated 69% rise in the number of adults with diabetes in developing countries.[3] Diabetes is a debilitating illness. It can damage the heart, nerves, blood vessels, eyes and kidneys.[3] Type 2 Diabetes Mellitus is a group of metabolic disorders which develops when insulin secretion can no longer compensate for insulin resistance Type 2 diabetes is a very common disease, characterized by an asymptomatic phase between the actual onset of diabetic hyperglycemia and clinical diagnosis. This phase has been estimated to last at least 4–7 years, and 30–50% cases of type 2 diabetic patients remained undiagnosed. This leads to the development of chronic complications of diabetes.[1]

The aim of the study is to analyse the pharmacoeconomic evaluation of anti diabetic therapy observed in hospitalised patients from the general medicine ward of the study hospital.[6]

2. MATERIALS AND METHODS

A prospective observational study was conducted at General Medicine in patient ward of Baseveshwara Medical College Hospital & Research Center, Chitradurga. All diabetes patients who had visited to the General Medicine in-patient department of the hospital during six months of the study period were eligible for enrolment. Patient who meets the following criteria were enrolled.

- Medical records of patients

- Cost of Drugs

- Communication with patients

- Cost of lab

❖ Patients were enrolled into the study based on the study criteria.

❖ Patients with co-morbid conditions and complications were selected for the study.

❖ Full details of the cases including cost for personal, drugs, transportation and diagnostic tests were collected through the patient data collection form.

2.1 STATISTICAL ANALYSIS

Whole raw data were entered in Microsoft excel and analyzed by IBM SPSS version 19 software. Categorical data were presented as frequency and percentage. Quantitative data was analyzed by central tendency distribution. Alpha level less than 0.05 was considered. Mean (SD) direct cost for patients was compared by using student t test.

RESULTS

1. Average Direct Cost of Prescription

For females

- The mean (SD) cost for consultation fee is, 20(0.00).

- Diagnostic cost is 620.63(216.887),

- Average admission charge is 2154.17(2447.0).

- Average cost for medication is 116.10(8.50)

- Total direct cost for female was 2910.9.

For males

- The average cost of consultation fee was 20(0.00).

- Diagnostic cost 796.05(244.14).

- Admission charges were 3059(2958.5).

- Average cost for medication was 106.20(29.66).

- Total direct cost incurred by male patients 3981.25.

Table 1: Average direct cost for male and female.

Cost	Cost incurred by male patients mean±SD	Cost incurred by female patients mean±SD
Consultation fee	20.00±0.00	20.00 ±0.0
Diagnostic cost	796.05±244.14	620.63±216.887
Admission charge	3059±2958.5	2154.17±2447.0
Medication cost	106.20±29.66	116.10±8.50
Total direct cost	3981.25	2910.9

1) **Average direct cost as per SES class**

➢ For SES-I the average direct cost is 3511.11 INR.

➢ For SES-II the mean direct cost is 4073.96 INR.

➢ For SES-III the average direct cost is 3693.04 INR.

➢ For SES-IV the average direct cost is 5968.42 INR.

Table 12: Average direct cost as per SES class.

SES CLASS	Direct Cost	Average cost	Total cost
SES-I	Diagnostic cost	749.46 INR	3511.11INR
	Consultation fee	20.00 INR	
	Admission charges	2632.20 INR	
	Drug therapy cost	109.45 INR	
SES-II	Diagnostic cost	716.06 INR	4073.96INR
	Consultation fee	20.00 INR	
	Admission charges	3236.11INR	
	Drug therapy cost	101.79 INR	
SES-III	Diagnostic cost	730 INR	3693.04
	Consultation fee	20.00 INR	
	Admission charges	2827.78 INR	
	Drug therapy cost	115.26 INR	
SES-IV	Diagnostic cost	862.50 INR	5968.42
	Consultation fee	20 INR	
	Admission charges	5000 INR	
	Drug therapy cost	85.92 INR	

DISCUSSION

In our study we have analyzed the prescriptions of 90 subjects. Study subjects were classified in to various age groups. The majority were belongs to 61-70 years 38(42.22%) followed by 51-60 years 23(25.55%), 41-50 years 17(18.88%), and 31-40 years 12(13.33%). The mean age of subject was found to be of 56.07(10.53) years.a similar study conducted by clark et al., show the same proportions of age groups. In this study majority were male 46(51.1%) followed by female 44 (48.9%). The study conducted by clark et al reveal similar result with a p value of 0.000. In our study we have classified patients SES on basis of Prasad modified

scale. 34 patients belongs to SES class-II, followed by 21 belongs to SES-IV. SHETTY S et al., conducted a study that reveal more number of patients belong to SES-II class.In our study out of 90 (n=90) patients 40 had no social history, 25 were smokers, 15 had history of alcohol and smoking both, and 10 were alcoholic.choudhry tariq conducted a study which show similar results.

90 diabetic patients 36(40%) had co morbidities like HTN, 22(24.4%) IHD, 18 (20%) Respiratory diseases. 4 patients had Gastritis, and 2 had blood related co morbidities. P value of 0.000 suggests that there was a significant difference of co morbidities in male and female. Choudhary Tariq Masood *et al.,* conducted a study on long term complications of diabetes and co-morbidities that show HTN was frequently occurring Co-morbidities. Among 90 patients total 148 oral hypoglycemic agents were prescribed. Among which 50 (33.78%) Insulin, 34(22.97%) Glimepride and Metformin 29(19.59%), Glimiperide 22(14.86%), and Glibenclamide and Metformin 13(8.78%). For females: The mean (SD) cost for consultation fee was 20(0.00), diagnostic cost 620.63(216.887), average admission charge was 2154.17(2447.0) and average cost for medication was 116.10(8.50). Sachin et al., conducted a similar study that reveals average cost forv drug was 100 Rs. Total direct cost for female was 2910.9. For males The average cost of consultation fee was 20(0.00)., followed by Diagnostic cost 796.05(244.14).Admission charges were 3059(2958.5). Average cost for medication was 106.20(29.66). Total direct cost incurred by male patients 3981.25.

CONCLUSION
- More number of patients were elderly.
- Male were more than female.
- More number of subjects belong to SES-II class.
- Among 90 diabetic patients 36(40%) had co morbidities like HTN, 22(24.4%) IHD, 18 (20%) Respiratory diseases. 4 patients had Gastritis, and 2 had blood related co morbidities.
- Insulin, glimiperide, and metformin were highly prescribed drugs.
- Total direct cost for female was 2910.9.
- Total direct cost incurred by male patients 3981.25.

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