ORIGINAL ARTICLE

Out of Pocket Cost Born by Patients of Type 2 Diabetes Mellitus in Private Diabetic Clinics of Islamabad

Sidra Malik[1], Danish Nadeem[2], Saima Hamid[3], Jamal Zafar[4], Shahzad Ali Khan[5], Waheed Iqbal[6], Tabinda Zaman[7]

ABSTRACT

Objective: To estimate the direct cost and its determinants in type2 diabetic patients visiting outpatient department of private tertiary care hospitals.

Study Design: A descriptive cross sectional study.

Place and Duration of Study: This research was carried out in the diabetic outpatient department of Shifa international hospital and Ali medical Centre from 15 November 2014 to 15 February 2014.

Materials and Methods: The descriptive cross sectional study was conducted on 108 diabetic patients (male 52%, female 54 %). By employing simple random sampling technique the data was collected from patients having diabetes from at least 5 years, with age limit between 30 to 80 years, with or without having complications through pretested interview administered questionnaire. The structured questionnaire was used for collecting data. SPSS 20.0 was used for data analysis. The percentages and frequencies were drawn in order to draw the results.

Results: The results showed that the average direct cost spent by a patient was 7704 PKR per month. More than half (66.7%) of the study subjects have suffered from diabetes since 5-10years. A larger group of respondents (50%) was treating diabetes with oral hypoglycemic.

Medication, consultation, and lab investigation charges were the main determinants of diabetic cost. Per month medication charges were 3997 PKR, followed by lab investigation charges of 2441PKR per visit and consultation cost was 1298 PKR. Most of the patients (86.1%) were having one complication due to diabetes. The cost of treatment increased with the increasing age and morbidities.

Conclusion: Diabetes is very expensive disease to manage. The affluent charges of managing diabetes and its day by day increased cases will put tremendous burden on the society.

Keywords: *Diabetes Mellitus, Direct Medical Cost, Determinants.*

Introduction

The diabetic prevalence and its effects on health status have grown rapidly in south Asian region as compared to any other part of the world.[1] Diabetes shares a major chunk to the burden of disease that can be prevented and that leads to economic burden and loss of productive life years.[2] The resource deficit region like south Asia where most of the people having lack of access to even basic necessities of life with no health care insurance system or nationwide welfare system, the patients cannot tackle the burden of such expensive disease like diabetes that resulted in the form of different even more damaging complications.[3] DM is related to variety of micro and macro vascular complications with the greater risk of atherosclerosis manifestations.[4]

Diabetes Mellitus (DM) is requires a lot of monetary and other resources for its management due to its chronicity and severity of different types of complications.[5] Almost one third of the total cost of managing diabetes is attributed for the macro-vascular disease that resulted from the poor management of diabetes.[3] The Ramacchandran and colleagues reported in one of their study that the complications related to diabetes were more prevalent among low socio economic class as compared to higher socio economic class while the prevalence scenario of DM was vise verse among these two groups.[6] When the complications due to diabetes affect the breadwinner member of the family the whole family gets shock of poverty and bad health status.[7] High prevalence and rate of complications engender substantial negative implications on the economies of patient & their families.[8]

Internationally, the direct cost for patients suffering from diabetes among age group of 20 to 79 years was

[1]*Department of MNCH/Health System*[2,3,5]
Health Services Academy, Islamabad
[4]*Department of Medicine*
Pakistan Institute of Medical Sciences
Islamabad
[6]*Department of Medicine*
Mohtarma Benazir Bhutto Shaheed
Medical College, Mirpur

Correspondence:
Danish Nadeem
Department of Health System
Health Services Academy, Islamabad
E-mail: dnadeem55@yahoo.com

Received: June 29, 2015; Accepted: September 21, 2015

approximately $153 billion annually.[9] This is one of the most expensive disease to manage as it alone utilize approximately 8% of total health care budget in the developed countries like America, china and Canada.[10] The economic burden due to this disease is area of concern for many countries in the world including both developed and developing nations as the economic burden is two to five folds greater among diabetics as compared to non-diabetics.[11,12] The studies that calculated the estimated direct cost of diabetic are very few in the south Asian region especially in Pakistan. It is very important to have base line data regarding diabetes costing in order to make and implement prevention and treatment policies.

The objective of this study was to estimate the direct cost and its determinants in type 2 diabetic patients visiting outpatient department of private tertiary care hospitals.

Materials and Methods

This was a descriptive cross sectional research that was conducted in the outpatient department of Shifa International Hospital and Ali Medical Center Islamabad. The data collection was completed within 4 months from 15 November 2014 to 15 February 2015. Study participants included in the study were; patients suffering from diabetes from at least 5 years, with age limit between 30 years to 80 years, with or without having complications. While, pregnant women who were having diabetes were excluded from the study as due to pregnancy the no of visits and cost can vary as compared to other participants. The total sample size that was taken for conducting this study was 130 inclusive of 20% non-response. The simple random sampling technique was adopted for selecting the sample. Sampling frame that included the patient's details who visited the diabetic OPD was obtained from hospital management. The sample was drawn randomly from the OPDs with the name list of the patients. All the patients' names were written and then randomly selected for the study purpose. A questionnaire was designed and pilot tested to collect the data from the participants.

The participants were interviewed by using the questionnaire that took about 10 to 15 minutes about direct medical and non-medical cost due to diabetes mellitus. Informed consent was taken from every study participant before taking the interview. Consent form in English with Urdu translation was used. The interviews were conducted by trained health professionals (pharmacist and nurses). They were given two days training prior the data collection process. Prior to the research initiation the study was approved by the Ethical Review Committe (ERC) of the hospitals.

Data was validated after double entry and then analysis was carried out using SPSS version 20 and Excel 2010. Cost of per dose of medicine was calculated for each patient through which per day cost and per month cost had been estimated. The frequencies and percentages were compiled for the demographic variables. While, mean and standard deviations were calculated for all the cost variables.

Results

Out of total 108 Participants who participated in the study 52% were male while 48% were females. The mean age was 53.35 years. Almost half of the participants 43.5% were belonged to a group of age 41-50 years. The patients were having good educational background with 41% of the study subjects were graduate or having a high level of education. By occupation, 41% were employed in office, 19% were having their own business while others were unemployed. Most of the participant belonged 62.6% had a household income between 50,000 to 100,000 PKR one quarter of the subjects 24% had income between 100,000 to 200,000 PKR, 3.5% had greater than 200,000 PKR and only very small proportion (8%) had a household income less than 50,000 rupees. The details are given in the following table I.

Majority of the participants 66.7% were suffering from diabetes since 5-10 years while 30.6% had the disease from last 11-20 years and only 3.8% were found with disease age greater than 20 years.

A larger group of respondents (50%) was treating diabetes with oral hypoglycemic, 13% were using insulin, 26.9% were using a combination (insulin + oral hypoglycemic) and only 11% were treated diabetes with lifestyle modification (diet plan / exercise).

On average every patient visits to clinic after 10 weeks approximately. Median and standard deviation between visits were calculated as 3 and 1.35 respectively. Half of the patients 46.3% visited

Table I: Socio-demographic characteristics of the Study Participants of Type2 Diabetes Mellitus (n= 108)

Characteristics	Number of patients	Percent (%)
Age		
30-40 years	12	11.1
41-50 years	31	28.7
51-60 years	47	43.5
61-80 years	18	16.5
Marital status		
Single	4	3.7
Married	104	96.3
Education		
Un-Educated	10	9
Secondary	20	18
Intermediate	35	33
Graduation & above	43	40
Occupation		
Office job	44	41
Businessman	21	19
Unemployed		40
Household Income (PKR)		
< 50,000	8	7.4
51000 – 100000	72	66
100000 – 200000	24	22.2
> 200,000	4	3.7

doctor after 3 months. In taking medication approximately 99.1% of respondents follow doctor's advice followed by dietary intake 96.3% and consultation for treatment 95.4%.

More than two third, 86.1% of the study participants were suffering from Co-morbidities due to diabetes i.e. hypertension, liver problems, dyslipidemia, heart diseases, retinopathy, neuropathy, nephropathy etc. When respondents were asked about the per visit consultation cost with the physician, the mean cost was calculated as 1298.61 in Pakistani rupees. Minimum cost paid by a patient was 600 rupees and maximum cost was 1500. The average cost on lab investigation was 2441.40 rupees with standard deviation 1834.96. Overall cost paid by diabetic patients for medicines was 431780 rupees. The mean cost for medication was calculated as 3997.96 rupees ranging from 705 PKR to 15812 PKR. The deviation between medication costs was calculated as 3036.47.Fig 1.

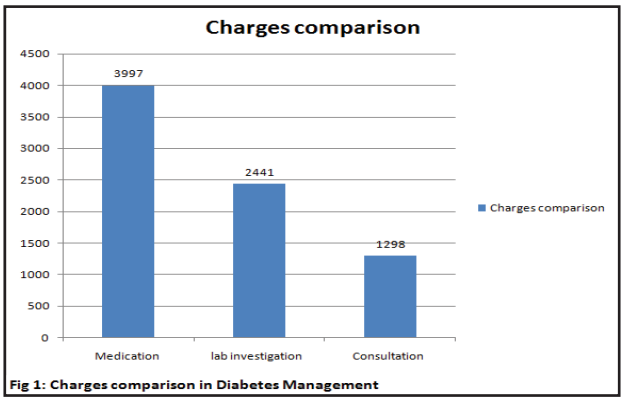

Fig 1: Charges comparison in Diabetes Management

The total direct medical costs (consultation cost+ lab investigation cost+ medication cost) borne by a diabetic patient were calculated as 832060 rupees and the average cost calculated was 7704.25 rupees. The three main determinants identified during the study were medication cost, lab investigation and consultation fee respectively that were contributing mainly in the diabetes care cost. Total direct non-medical cost for all study subjects was 1081.48 rupees.

Discussion

Our research depicted three main reasons of diabetic care cost was medication cost, lab investigation and consultation fee. These results were comparable to the previous study that was held in Karachi, Pakistan. The study highlighted that patients on insulin were bearing 1.8 times more cost as compared to oral hypoglycemic. On average a patient was spending 7704 PKR per month on diabetic care and this cost was 7.9 times greater when compared to previous Pakistani study conducted by Liaqzat A. khawaja.

More than two third 93% of the patients were having at least one comorbidity that also increases the treatment cost. The overall treatment cost was greater in patient having more than two co-morbidities as compared to one or no co-morbidity which can be due to greater number of medications, lab tests, consultation, and hospitalization.[13] These results were in lined with other studies conducted din developing and developed countries.[14,15] The average health care cost was also increasing with

increased age; highest in age group of 61-80years followed by 51-60 years which might be due to increase in number of comorbidities. The treatment cost was also directly related with years of diabetes history.[14] Increased duration of diabetes among patients requires consultation not only from a medical specialist but also from other health care experts like cardiologist, urologist, and ophthalmologist and in worst cases from surgeons as well. Results in this study revealed that the largest component of cost was medication. Groover and colleagues reported that 95% of treatment cost is paid by patients in India.[16]

The limitation of this study was the smaller sample size and limited only to private patients, the studies like this should be conducted on larger samples on the patients visiting government facilities as well. This can give the share of health care cost bear by the government health facilities on every diabetic patient.

Conclusion

It is concluded that diabetes is a very expensive disease to tackle. It requires lot of monetary resources for management. The major determinants of direct diabetes care cost are medication, lab, and consultation charges. The affluent charges of managing diabetes and its day by day increased cases will put tremendous burden on to health policy planners and society.

REFERENCES

1. Ghaffar A, Reddy KS, Singhi M. Burden of non-communicable diseases in South Asia. BMJ 2004; 328: 807-10.
2. Nishtar S. National Action Plan for Prevention and Control of Non-Communicable Diseases and Health Promotion in Pakistan. Islamabad, Pakistan: tripartite collaboration of the Ministry of Health, Government of Pakistan; WHO, Pakistan office, and Heart file; 2004.
3. Caro JJ, Ward AJ, O'Brien JA: Lifetime costs of complications resulting from type 2 diabetes in the U.S. Diabetes Care 2002; 25: 476- 81.
4. Khuwaja AK, Rafique G, White F, Azam SI: Macrovascular complications and their associated factors among persons with type 2 diabetes in Karachi, Pakistan--a multi-center study. J Pak Med Assoc 2004; 54: 60- 6.
5. Khuwaja AK: Evidence-based Care of Type 2 Diabetes Mellitus: Epidemiology, Screening, Diagnosis and Initial Evaluation. JLUMHS 2003; 02: 63- 7.
6. Ramachandran A, Snehalatha C, Vijay V, King H: Impact of poverty on the prevalence of diabetes and its complications in urban southern India. Diabet Med 2002, 19: 130- 5.
7. International Diabetes Federation. Diabetes kills without distinction. In Press Release: Karachi Pakistan IDF Karachi, Pakistan; 2006.
8. Barceló A, Aedo C, Rajpathak S, Robles S. The cost of diabetes in Latin America and the Caribbean. Bull World Health Organ 2003; 81: 19-27.
9. International Diabetic Federation. Costs of Diabetes [http://www.eatlas.idf.org/Costs_of_diabetes/ (assessed January 26, 2015)].
10. World Health Organization. Press Release on Global Burden of Diabetes [http: //www.who.int/inf-pr-1998/en/pr98-63. Html (assessed January 14, 2015)].
11. Barcelo A, Aedo C, Rajpathak S, Robles S: The cost of diabetes in Latin America and the Caribbean. Bull World Health Organ 2003, 81: 19-27.
12. American Diabetes Association. Economic Costs of Diabetes in the U.S. in 2002. Report from the ADA. Diabetes Care 2003, 26: 917- 32.
13. Maskari FA. Assessment of the direct medical costs of diabetes mellitus and its complications in the United Arab Emirates. BMC Public health, (2010).
14. AkariS.Health care cost of diabetes in South India. Pub med, 2013; 2: 114- 7.
15. Barceló A, Aedo C, Rajpathak S, Robles S. The cost of diabetes in Latin America and the Caribbean. Bull World Health Organ 2003; 81: 19-27.
16. Grover S, Avasthi A, Bhansali A, Chakrabarti S, Kulhara P. Cost of ambulatory care of diabetes mellitus: a study from north India. Post grad Med J 2005; 81: 391-5.