

Non-Drug Expenditure Incurred in the Management of Diabetes Mellitus by Patients Attending the Enugu State University Teaching Hospital, South East Nigeria

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DOI: 10.56201/ijmepr.v8.no6.2024.pg89.94

Abstract

Aim: To assess the non-drug expenditure incurred by patients who are being managed for diabetes mellitus at the Enugu State University Teaching Hospital, Enugu South East Nigeria.

Method; A cross-sectional study was applied to assess the non-drug expenditure incurred by a total of 422 patients diagnosed with type-2 diabetes mellitus who are receiving treatment at the Enugu State University Teaching Hospital in the year 2021. A structured questionnaire was used to obtain information on the number of days and hours of their work lost due to the illness, the amount of money they spend on hiring house-helpers who assist in taking care of their illness, the amount of money they spend on transportation to secure treatment and in taking care of the complications due to their illness. Lastly the costs incurred in providing for the special diets that they take and the physiotherapy (where applicable). The data was analysed using an appropriate statistical package and the results were presented in the form of tables and graphs. **Results;** As a result of the illness, about 60.4% missed work for at least 10 days in a year while 40.8% spend 2-4 hours in each visit to the hospital. 35.3% needed an extra household help with majority paying <N5,000 as stipend. About 32.7% spend less than N2,000 on transportation to the hospital to attend clinics. Out of the 38.6% who had developed complications 14% claimed they spend between N5000 – N10000 annually on managing those complications. **Conclusion;** The findings indicate that diabetic patients incur a lot of expenditure which are not usually very obvious in the management of their condition. Assessment of the cost of managing diabetes mellitus based on the drugs and other accessories like test kits could be very misleading because the non-drug costs could far outweigh the drug costs as can be seen in this study.

Key words: Non-drug expenditure, management of Diabetes Mellitus, Enugu State University Teaching Hospital, South East Nigeria

Introduction

Type-2 diabetes mellitus also known as non-insulin dependent diabetes mellitus was formerly called adult onset diabetes mellitus but with the epidemic of obese and overweight children, more teenagers are now developing type 2 diabetes. This is by far the most common form of diabetes accounting for over 95% of diabetic cases in adults. Here the pancreas still produces insulin but either the amount produced is not enough or there is lack of sensitivity to insulin, which happens primarily in adipose tissue, liver, and muscles. An individual who has diabetes

mellitus is expected to maintain a healthy lifestyle, restricted to various food products, and being involved in regular aerobic exercises especially for type 2 DM in addition to being able to afford the regular cost of insulin¹ They spend lots of time and money seeking medical attention and long hours of waiting in a clinic for their regular checkups. They also spend lots of time on blood sugar checks, and the myriads of other health services and tasks they perform daily¹ The non-drug expenditure on diabetes management addresses those hidden costs (or indirect costs) that are incurred in the management of diabetes mellitus. It includes income lost as a result of the disease, productivity losses, time absent from work, the decrease in work output when present, the disability adjusted life years etc. According to WHO, estimate of indirect cost incurred in the management of diabetes mellitus in many countries shows that the cost of lost production may be as great as or even sometime greater than the direct health costs.² Studies done by Bahia LR et al “To determine the cost of Type 2 diabetes mellitus” Outpatient care in the Brazilian Public Health System showed that of the total annual cost for outpatient care US\$2108 per patient the total indirect cost was \$773 per patient which corresponds to 36.7% of total diabetes costs. Also the study showed that the lost workdays corresponded to a loss of productivity of \$437 per patient/year. A total of 32 (3.2%) and 74 (7.4%) subjects reported diabetes-related sick leave and early retirement, respectively, associated with \$103,680 and \$410,720 expenses paid by the government. Job loss due to the illness was reported by 127 subjects (12.7%).³ The study by Marcellusi A et al “To determine the direct and indirect cost in Italy” showed that the indirect cost of diabetes is greater than the direct cost of diabetes mellitus. From the 2.6 million patients who have been managed for diabetes using drug therapy, the study revealed that the total economic burden of diabetic patients amounted to E20.3 billion/year 54% of which are associated with indirect costs and 46% with direct costs only⁴ A similar study by Lesniowska J et al “To determine the cost of diabetes and its complications in Poland” showed that most of the total costs of diabetes are indirect costs caused by productivity losses. Of the total indirect costs, 89% were associated with productivity losses due to incapacity for work, while only 11% was associated with capacity lost because of sickness absence days. The study also showed that the indirect costs of DM-related complications were higher by 41% compared with the indirect cost related to non-complicated DM itself.⁵ The work done by Chatterjee S et al “To determine the cost of diabetes and its implications in Thailand” revealed that indirect cost formed a lesser proportion (37.5%) of the health expenditure due to diabetes mellitus though an appreciable amount. The study also showed that productivity losses due to permanent disability formed about 30% of the total indirect costs incurred whilst work absenteeism formed 3.3%.⁶ In the study done by Kirigia et al “To determine the economic burden of disease in the W.H.O African region, it was shown that of the 7.02 million cases of diabetes recorded by the countries of the African region in 2000 with total economic loss of \$25.51 billion, indirect cost accounted for \$8.1 billion (32%).⁷ The work done by Boutayeb W et al “To estimate the direct and indirect cost of diabetes in Morocco” showed that indirect cost accounted for a greater percentage of the total diabetes mellitus management cost. The study showed that the indirect cost of diabetes estimate to be \$2 billion accounted for 57%-81% of the total cost. Also the average per capita indirect cost estimate to be \$1113 was relatively higher than the direct cost of diabetes which was seen to vary from \$259 to \$830⁸

RESULTS

Table 1. Socio-demographic status of patients

Variables	Frequency	Percentage
Gender		
Male	215	50.9
Female	207	49.1
Total	422	100.0
Age		
<30 years	11	2.6
31 - 40 years	40	9.5
41 - 50 years	82	19.4
51 - 60 years	110	26.1
>61 years	179	42.4
Total	422	100.0

About 50.9% are males while 49.1% are females.

About 68.5% are patients above 50years of age

Table 2; Sickness-work-absence due to diabetes mellitus

Variable	Frequency	Percentage
How many days have you been absent from work as a result of minor and major complications		
<10days	255	60.4
11 - 40days	121	28.7
41 - 80days	13	3.1
>80days	2	.5
Not applicable	31	7.3
Total	422	100.0
How many hours do you stay away from work in each visit to the hospital as a result of the diabetes	Frequency	Percentage
<1hr	58	14.0
2 - 4hrs	169	40.8
5 - 6hrs	146	35.3
>7hrs	35	8.5
Not applicable	6	1.4
Total	414	100.0
Mean ±Std. Deviation	2.43±0.885	
Variance	0.783	

Majority of the patients 60.4% missed work for at least 10 days in a year while 7.3% claimed they never missed going to work. About 40.8% spend 2-4 hours in each visit to the hospital, 35.3% spend 5-6 hours.

Table 3; Hiring of extra man-hours as a result of diabetes mellitus

Have you needed any extra household helper for diabetes care	Frequency	Percentage
Yes	149	35.3
No	273	64.7
Total	422	100.0
If yes, state the costs incurred per month		
<N5,000	72	17.1
N5,000 - N10,000	61	14.5
N10,00 - N20,000	10	2.4
>N20,000	6	1.4
Not applicable	273	64.7
Total	422	100.0

Majority 64.7% needed no extra household help, 35.3% needed extra household help with majority spending <N5,000 for such help.

Table 4; Transportation costs to secure treatment for diabetes mellitus

How much do you spend on transportation to the diabetic clinic yearly	Frequency	Percentage
<N2,000	138	32.7
N2,000 - N5,000	119	28.2
N6,000 - N10,000	136	32.2
>N10,000	29	6.9
Total	422	100.0
Mean ±Std. Deviation	2.13±0.953	
Variance	0.909	
Have you developed any complications as a result of diabetes mellitus		
Yes	163	38.6
No	259	61.4
Total	422	100.0
How much have you spent in the management of these complications yearly		
<N5,000	43	10.2
N5,000 - N10,000	59	14.0
N11,000 - N15,000	38	9.0
>N15,000	23	5.5
Not applicable	259	61.4
Total	422	100.0

Transportation fare spent by majority (32.7%) is <N2,000. About 61.4% of respondent have not

developed any complications as a result of diabetes mellitus while 38.6% have developed complications and many (14%) spend between N5000 – N10000 on the complications yearly.

Table 4: Special dietary costs as a result of diabetes mellitus

	Frequency	Percentage
Are you on any dietary modification		
Yes	260	61.6
No	162	38.4
Total	422	100.0
If yes, how much have you spend on it monthly		
N2,000	50	11.8
N2,000 - N5,000	114	27.0
N6,000 - N10,000	64	15.2
>N10,000	33	7.8
Not applicable	161	38.2
Total	422	100.0
Are you on physiotherapy or special exercise for your condition		
Yes	140	33.2
No	282	66.8
Total	422	100.0
If yes, how much do you pay monthly for this therapy		
<N2,000	41	9.7
N2,000 - N5,000	48	11.4
N6,000 - N10,000	40	9.5
>N10,000	11	2.6
Not applicable	282	66.8
Total	422	100.0

The respondents on dietary modifications are 260 (61.6%) with majority (27%) spending between N2000 – N5000 monthly on the diet. About 282 (66.8%) of the respondents are on physiotherapy or special exercise for their condition with majority spending between N2000 – N5000 for it.

Discussion; This study found out that an appreciable number 28.7% of patients reported 11 to 40 days per year and 40.8% reported 2-4 hours per clinic visiting day lost to work-absence due to illness caused by diabetes. This is in agreement with the work done by Chatterjee S and his colleagues whose study also showed that productivity losses due to permanent disability formed about 30% of the total indirect costs incurred whilst work absenteeism formed 3.3%.⁶ Although the figures do not quite coincide, the difference could be due to the fact that the studies were done in different environments. Our findings also agree with that of Kirigia and his colleagues who had to determine the economic burden of disease in the W.H.O African region, and found

that of the 7.02 million cases of diabetes recorded by the countries of the African region in 2000 with total economic loss of \$25.51 billion, indirect cost accounted for \$8.1 billion (32%).⁷

Conclusion; The often over-looked economic burden which is incurred as the non-drug expenditure by patients attending the diabetes clinic in Enugu State Teaching hospital is so enormous as can be seen in this study. It is therefore necessary that these hidden costs should be taken into consideration when planning for the management of patients with diabetes mellitus at the family, community and institutional levels.

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