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Assessment of the sources of funding for management of diabetes mellitus in patients attending Enugu State University teaching hospital South East Nigeria

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Article Info

Abstract
Aim: To assess the sources of funding for management of Diabetes Mellitus in patients attending the Enugu State University Teaching Hospital, South East Nigeria.

Method: A total of 422 patients with type-2 diabetes mellitus attending the diabetic clinic at the Enugu State University Teaching Hospital were studied within a six months period in the year 2021. A questionnaire was used to collect their demographic data and data on their sources of fund for managing their type-2 diabetes mellitus.

Results: The study population was well matched for gender ie 50.9% were males while 49.1% were females. The greatest percentage of patients was above 60years of age and majority of them (63.5%) were married. About 14.9% of them have an annual income of <20,000naira. The greatest percentage (38.2%) had an average monthly income of 21-50,000naira. (32.7%) has an annual income of >N50,000 while 14.2% has no means of income at all. (53.5%) were either government or private sector employees while the rest (46.5%) were either unemployed or into businesses in the private sector. Out of the (53.5%) who are into gainful employment, 28.4% receive benefits eg health insurance from employers while the rest 25.1% do not receive any form of health insurance. This means that 71.6% of the patients finance their treatment through out of pocket expenses (OPE). About 20.4% of those who receive financial assistance for their treatment claim the annual value is <20,000 naira.

Conclusion: Diabetes Mellitus (type-2) is a very chronic illness requiring regular adherence to lifetime treatment which in most cases is very expensive and therefore a situation where about 71.6% of patients fund their treatment through OPE is very unacceptable. To worsen the situation the greatest percentage of the patients were above 60years which means they have passed their retirement age and it is expected that they would be living at the mercy of their children or previously-dependent relatives. This therefore means that the morbidity and mortality rate due to this disease will be very high due to non-affordability of the treatment by the patients.

1. Introduction

Diabetes is known to increase the risk of ocular, renal, neurologic, cardiovascular, peripheral vascular and metabolic conditions; these conditions increase the risk of premature mortality and medical expenditures, while they reduce employment, productivity, and quality of life [1-4]. The American diabetes association describes diabetes as a group of metabolic disorders characterized by increase level of glucose in the blood as a result of defect in insulin secretion or improper insulin action often due to autoimmune reactions. These disorders are characterized by a defect in the metabolism of various food constituents, most especially carbohydrate which are the major source of energy when oxidized. When this sugar is not metabolised they reach abnormally high level in the blood – hyperglycaemia (200mg/dl and above). In this state the body cannot utilize the blood sugar and thus as an alternative fat and protein are oxidized as sources of energy leading to a disturbance in the body's acid/base balance and the accumulation of ketones in the blood.

The three classical clinical manifestations of diabetes are polyphagia, polydipsia, and polyuria. The pathophysiology of these can be easily explained as the polyphagia results from increased metabolic process occurring in the body as a result of insulin action on fats and protein. The normal renal threshold for glucose is about 180mg/dl and when these is exceeded as is seen in diabetes mellitus the body tries to excrete the excess and this pools fluid which lead to excessive urination-polyuria. The polydipsia could result from dehydration which could be as a result of the polyuria. Other symptoms like fatigue and weight loss are commonly seen. Diabetes mellitus is one of the most common non-communicable diseases globally and a leading cause of death in many countries. In contradiction with long standing conventional wisdom that it is a rich country's disease, diabetes mellitus is increasingly becoming a major concern in developing countries, especially in sub-Saharan Africa [5]. The WHO estimates show that globally the number of people with diabetes has risen from 180 million in 1980 to 422 million in 2014 [6] with the prevalence apparently rising more rapidly in middle and low income countries. In 2012, an estimated 1.5 million death were directly caused by diabetes and another 2.2 million deaths were attributable to high blood glucose with almost all deaths occurring before the age of 70 years. The WHO projects that diabetes will be the 7th leading cause of death in 2030 [6]. In 2011 it was shown that Nigeria has the greatest regional prevalence (20.8 million or 7% of the population) of DM in Africa [7, 8]. Care facilities and economic situation of these countries have not kept pace with the sharp increase in diabetes mellitus. Studies revealed a number of factors such as sedentary lifestyle, aging, population, obesity etc. as major factors [5]. Patients living with diabetes incur lots of costs which are not easily perceived in the course of their treatment. This poses a great challenge to their management. The impact of uncontrolled diabetes mellitus is manifold. Patients with diabetes mellitus cannot work in their full capacity or might not work at all, and this leads to a reduced productivity and early retirement; they are usually absent from work, and may be unable to work during certain episodes like hypoglycaemic episodes. Parents and caregivers taking care of their loved ones or others taking care of the elderly patients are equally affected. In the long run these patients are affected with all the potential mobility issues like amputations and blindness, premature mortality, early retirement among other effects [9]. A study done to determine the cost implications of treatment of diabetes mellitus in a secondary healthcare facility in Ibadan showed the annual cost of diabetes mellitus was $20,827.37 for 52 patients while the average annual cost of diabetes per patient was $400.52 with majority of these patients (73%) earning less than $125 per month [10] Every year more than 150 million individuals in the world face problems and a little less, about 100 million become poor as a result of direct payment for health care [11, 12]. This number would further increase if certain hidden / indirect costs are taken into due consideration and thus places a huge economic burden on these individuals and the society at large. This becomes even worse when considered for patients living in Nigeria who often do not have any form of health insurance makes most health services delivery payments from their pockets. Furthermore it has been estimated that a majority of Nigerians about (70%) live on less than $1 per day. This

shows the estimated burden these patients are made to bear while seeking health services. In a study done by Okoronkwo *et al* "To determine the socioeconomic inequities and payment coping strategies in diabetic patients in Nigeria" showed that the mean monthly expenditure for the treatment of diabetes was NGN56,245.11 ($356) with most of these expenditures incurred through out-of-pocket payments.[13] In the work done by Ipingbemi AE *et al* "To determine the cost of complications of treatment of diabetes mellitus in a secondary healthcare facility in Ibadan" showed that there was a significant correlations between age (at onset of diabetes and at registration at the healthcare facility) and the total cost of drugs used. For the 52 patients studied, the average annual cost of diabetes per patient was $400.52 but higher in age groups 60-69 years [10].

Results

Table 1: Socio Demographic Characteristic of Diabetic Patients Presenting at the Medical Clinic, ESUT Teaching Hospital Parklane, Enugu

Variables	Frequency	Percentage
Gender		
Male	215	50.9
Female	207	49.1
Total	422	100.0

Table 2

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

Table 3

Marital status		
Single	78	18.5
Married	268	63.5
Divorced/separated	30	7.1
Widowed	46	10.9
Total	422	100.0
Total	422	100.0

Table 4

Occupation		
Unemployed	49	11.6
Government employed	149	35.3
Private sector employed	77	18.2
Self employed	60	14.2
Retired	53	12.6
Farming	23	5.5
House wife	11	2.6
Total	422	100.0

The respondents were mostly males (50.9%), above the age of 61 (42%). Most are married (63%), government employed (35.3%), with tertiary level of education (34%).

Table 5: The sources of funds used by the diabetic patients attending the medical clinic in ESUTH for the treatment of their diabetes mellitus

Variable	Frequency	Percentage
What is your monthly income		
<N20,000	63	14.9
N21 - N50,000	161	38.2
N51 - N100,00	97	23.0
>N100,000	41	9.7
Not applicable	60	14.2
Total	422	100.0
Do you receive any benefit from your employers		
Yes	120	28.4
No	106	25.1
Not applicable	196	46.4
Total	422	100.0
How much do these benefits amount to yearly		
<N20,000	86	20.4
N21 - N50,000	25	5.9
N51 - 100,000	5	1.2
>N100,000	4	.9
Not applicable	302	71.6
Total	422	100.0

Table 6

Educational level		
None	37	8.8
Primary school	66	15.6
Secondary school	88	20.9
OND/HND	87	20.6
Tertiary	144	34.1
Total	422	100.0

Most of the respondents earned between N21, 000 – N 50,000 (38.2%). About 28.4% receive benefits from the employers. 20.4% of those receiving benefits get <N20,000 yearly.

Discussion
Our study shows that about 68.5% of the patients were above the age of 51years with over 42.4% of the patients above the age of 60years. At that age, most of the patients must have been retired from active service with little or no means of income. This means that they would be living at the mercy of their children or previously-dependent relatives. This explains why the greatest percentage (14.9%) of them have an income of <20,000 per month. The result of our study agrees with the work done by Ipingbemi A E *et al*, which found that out of the 52 patients studied, the average annual cost of diabetes per patient was $400.52 but higher in age groups 60-69 years [10]. Their work was carried out in a secondary health facility in Ibadan, South West Nigeria. To further compound issues, over 71.6% of our patients were funding their treatment through out-of-pocket expenses (OPE) with no form of health insurance. This finding also agrees with the work of Okoronkwo *et al* which showed that the mean monthly expenditure for the treatment of diabetes was NGN56,245.11 ($356) with most of these expenditures incurred through out-of-pocket payments [13]. Again Okoronkwo's work was carried out in a similar environment to ours.

Conclusion
The findings from our work shofw that prevalence of diabetes mellitus in our study environment is highest in the elderly who have a very little income to finance their treatment. Most of these patients fund their treatment through out of pocket expenses which is extremely meager. This leads to a situation where most of the patients cannot afford the cost of their treatment thus increasing the mortality rate due to the disease. There is then a need for a government policy to either subsidize their treatment or make the treatment free.

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