

Non-medical management practices for type 2 diabetes in a teaching hospital in southern Nigeria

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Abstract

The aim of this study was to assess the practices of non-medical management of diabetes mellitus by type 2 diabetes patients attending the diabetic clinic of the University of Benin Teaching Hospital, Benin City, Nigeria. A descriptive cross-sectional study was carried out among type 2 diabetes outpatients. The respondents were recruited consecutively from the consultant outpatient clinic of the hospital. Data were collected using a structured questionnaire and 216 were investigated (44% male, mean (\pm SD) age 60 \pm 9 years). A high proportion (41%) had secondary education, 45% were skilled workers, and 35% earned 31 000–60 000 Naira (US\$150-\$350) monthly. All respondents admitted receiving regular education on self-care management during clinic visits. Blood glucose checks were done weekly by 16% and monthly by 81%. However, only 47% possessed their own glucose meter. The majority (76%) adhered to a planned diet regimen, 60% exercised regularly, 93% checked their weight monthly, and 71% checked their blood pressure monthly. The type 2 diabetes patients were generally aware of the non-medical management of diabetes and their practice of it was fair. Statistically significant correlations were found between dietary adherence and increased diabetes duration ($p=0.011$). Regular exercise was more common in older ($p=0.003$) and better educated ($p=0.007$) patients. Possession of a glucose meter was, as expected, associated with higher education ($p=0.00002$) and monthly income ($p=0.0001$). There is a need for continuous promotion of these non-medical management practices and healthy lifestyles among type 2 diabetic patients whenever they come in contact with healthcare delivery systems.

Introduction

Diabetes mellitus contributes significantly to medical morbidity and mortality worldwide, especially in developing countries like Nigeria. It is estimated that 347 million people worldwide have diabetes.¹ In 2004, an estimated 3.4 million people died from the consequences of high fasting blood glucose,^{2,3} with more than 80% of these deaths occurring in the low- and medium-income countries of the world.⁴ A similar number of deaths were estimated for 2010.³ In the World Health Organization (WHO) African region in 2011, an estimated 14.7 million adults were suffering from diabetes which resulted in 344 000 deaths and nearly 2.8 billion dollars was spent on the disease by countries in the region.⁵

Studies in Nigeria have reported that the prevalence of diabetes varies across different zones of the country but ranges from 2.2 to 9.8%.⁶⁻⁹ The diabetes statistics of the International Diabetic Federation (IDF) showed that Nigeria has the highest number of people living with diabetes and impaired fasting glycaemia (IFG) in Africa.¹⁰ The huge burden of diabetes has serious economic implications for the individuals, families, communities, and the nation at large. The health system is also insufficient in terms of manpower and facilities needed to care for the large number of diabetes patients who access care in the health facilities.

The management of diabetes involves both medical and non-medical modalities. Medical management involves the use of oral medications and/or insulin while non-medical management involves lifestyle modifications such as appropriate diet, physical activity (moderate regular exercise), and home glucose testing.¹⁰ If diabetes patients are adequately educated on non-medical management modalities, it gives them the opportunity to actively participate in their care. A study in Ethiopia showed that patients who received information less frequently were less likely to adopt diabetes self-care.¹¹ It is unfortunate that little emphasis has been given to health education for diabetes patients in many healthcare facilities in Nigeria. This was demonstrated by Okolie et al in their study in south-eastern Nigeria.¹² The result of this lack of education is that many diabetes patients lack basic knowledge of the disease and its management,

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1. Age group	2. Gender	
31–40 years	7 (3%)	Male 94 (43%)
41–50 years	27 (13%)	Female 122 (57%)
51–60 years	74 (34%)	
61–70 years	84 (39%)	
>70 years	24 (11%)	
3. Diagnosis duration	4. Marital status	
1–5 years	102 (47%)	Married 175 (81%)
6–10 years	88 (41%)	Widowed 38 (18%)
11–15 years	18 (8%)	Single 4 (1%)
16–20 years	8 (4%)	
5. Education	6. Occupation	
None	14 (6%)	Professional 23 (11%)
Primary	53 (25%)	Managerial 30 (14%)
Secondary	88 (41%)	Skilled level I 22 (10%)
Tertiary	61 (28%)	Skilled level II 76 (35%)
7. Monthly income (Naira)	Table 1 Socio-demographic characteristics of study patients (n=216)	
<10 000	35 (10%)	Semi-skilled 6 (3%)
10 000 – 30 000	50 (23%)	Unskilled 59 (27%)
31 000 – 60 000	75 (35%)	
61 000 – 100 000	40 (19%)	
>100 000	16 (7%)	

especially self-care practices of weight control, appropriate diet, smoking cessation, and self blood glucose monitoring.^{13–15}

The objective of this study was to assess the knowledge and practice of non-medical management of diabetes among type 2 diabetes patients attending an outpatient clinic in the University of Benin Teaching Hospital (UBTH), Benin City, Nigeria.

Patients and methods

This descriptive cross-sectional study was carried out among type 2 diabetes patients attending the consultant outpatient clinic of UBTH, Benin City, Nigeria. The patients were recruited consecutively from the clinic from May to June 2013. The minimum sample size required for this study was calculated using the Cochrane formula for descriptive studies.¹⁶

A structured interviewer-administered questionnaire was used for data collection. The questionnaire was used to assess the patients' knowledge and practice of the non-medical management of diabetes. Data collected were screened for completeness and analysed using the Statistical Package for Social Sciences (SPSS) version 20.

The ten questions used to assess the knowledge of non-medical management of diabetes were assigned a score of '1' for a correct response and a score of '0' for an incorrect response. According to their total composite score, each patient was classified as follows: good knowledge

was a composite score of 7–10; fair knowledge was a composite score of 5 or 6; poor knowledge was a composite score of 0–4. The questions used to assess the practice of non-medical management of diabetes addressed the following issues: engaging in regular exercise, blood pressure and blood glucose checks, compliance with a controlled and planned dietary regimen, weight measurements, and smoking habits. The occupations of the respondents were classified according to the UK Registrar Generals' classification of occupation.¹⁷

The Chi-square test was used to test the association between the socio-demographic variables of the patients and their knowledge. The study was approved by the Ethics and Research Committee of UBTH. Verbal informed consent was obtained from the respondents before they participated in the study.

Results

A total of 216 type 2 diabetes mellitus patients participated in the study. Table 1 shows the socio-demographic characteristics of the patients. The mean age (+SD) of the patients was 60+9 years with a high proportion in the 61–70 year age group. Most (81%) were married while more than two-thirds had attained at least secondary level education. A high proportion of the patients were engaged in a skilled level II occupation (35%) and had a monthly income of N31 000–N60 000 (35%). Almost half (47%) of the patients had been diagnosed with diabetes in the 1–5 years preceding the study, but 26 (12%) of them had lived with the condition for 11–20 years.

The majority (72%) of the patients had good knowledge of the non-medical management of diabetes, while only 2% demonstrated poor knowledge (Figure 1). The practice of the non-medical management of diabetes is shown in Table 2. A high proportion of the patients engaged in regular exercise and followed a controlled and planned dietary regimen (60% and 76% respectively). Most (93%) patients checked their weight monthly while weekly

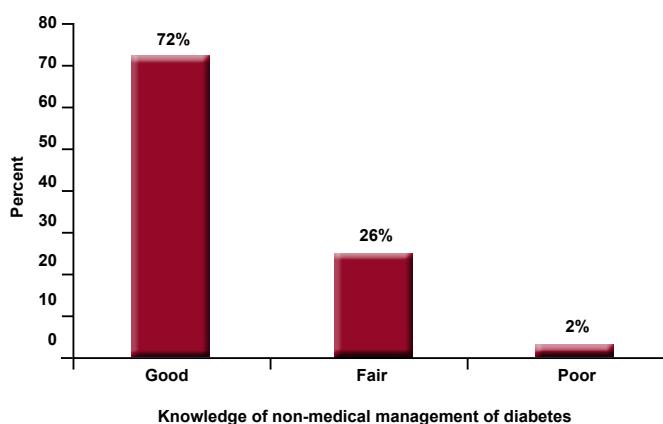


Figure 1 Patients' knowledge of the non-medical management of diabetes

Engaging in regular exercise	
Yes	130 (60%)
No	86 (40%)
Weight check	
Weekly	10 (5%)
Monthly	201 (93%)
Yearly	5 (2%)
Blood glucose check	
Nil	4 (2%)
Daily	3 (1%)
Weekly	35 (16%)
Monthly	174 (81%)
Possession of glucose meter	
Yes	102 (47%)
No	114 (53%)
Controlled and planned dietary regimen	
Yes	165 (76%)
No	51 (24%)
Blood pressure check	
Nil	3 (1%)
Weekly	59 (27%)
Monthly	154 (72%)
Smoking	
Yes	4 (2%)
No	212 (98%)

Table 2 The practice of non-medical management of diabetes by patients (n=216)

with the dietary regimen decreased with increasing duration of diagnosis. Both age and level of education of the patients were statistically associated with patients' engagement in regular exercise. The proportion of patients who engaged in regular exercise increased with both age and higher levels of education. The proportion of patients who possessed a meter increased with increasing level of education and increasing monthly income (this association was statistically significant).

Discussion

Non-medical management practices, often referred to as self-care, are ways in which diabetes patients actively participate in the management and control of their condition. These practices should be adequately communicated and reinforced to diabetes patients whenever they come in contact with healthcare systems. This study revealed that most patients were knowledgeable about the non-medical management of diabetes. This commendable finding could be due to the education given to diabetes

weight checks were done by 5%. Blood pressure checks were carried out monthly by most (72%), and weekly by 27%. Less than half (47%) possessed their own glucose meter for home glucose monitoring. Most patients (81%) checked their blood glucose monthly, 16% checked blood glucose weekly, while a daily check was done by only 1% of patients. As at the time of the study, almost all (98%) the patients were non-smokers.

The cross-tabulation of the socio-demographic characteristics of the patients and their practice of non-medical management of diabetes is shown in Table 3. There was a statistically significant association between the duration of diagnosis and compliance with a controlled and planned dietary regimen by the patients. The proportion of patients who complied

patients during their routine visits to the outpatient clinic in UBTH coupled with the high literacy level of the patients, as most had attained at least a primary level of education.

The higher proportion of female patients seen in this study is consistent with previous studies in Nigeria^{12,14,18} and in other parts of the world like Ethiopia¹¹ and Bangladesh.¹⁹ It has however also been documented that diabetes prevalence is higher in men, but there are more women with diabetes than men. Wild et al suggested that 'the combined effect of a greater number of elderly women than men in most populations and the increasing prevalence of diabetes with age is the most likely explanation for this observation'.²⁰ This explanation is also applicable to our study results. This finding may also suggest the fact that women generally use health services better than their male counterparts, since this is a hospital-based study.

Regarding the non-medical management practices, most patients engaged in regular exercise and also adhered to a controlled and planned dietary regimen. This is encouraging because a healthy diet combined with regular exercise improves glycaemia. In addition, it was reported that the risk of diabetes in patients with impaired glucose tolerance (IGT) decreased after a combined programme of nutrition and exercise when compared with a control group.²¹ It was not surprising that we found a significant negative association between duration of diagnosis and adherence to diet. Those who have been diagnosed for longer may experience monotony in their dietary habits, thus increasing their chances of default as compared with the newly diagnosed. This effect can be minimised by continuously educating patients on a wide variety of healthy diets. Age and level of education showed a significant association with regular exercise by the patients. It was surprising that a higher proportion of patients aged 41 years and above engaged in regular exercise when compared with those aged 31–40 years. This suggests that younger patients may place a lesser premium on the education given to them in the clinics than older patients. Concerning level of education, this study agrees with Ayele et al in their study in Ethiopia which found that individuals with elementary educational status were four times more likely to perform self-care than those unable to read and write.¹¹ The more educated a patient is, the more likely it is that he or she will be able to comprehend and understand their condition, including health education given in the clinics, and this may eventually translate to better self-care practices.

In this study, most patients checked their weight, blood pressure, and blood glucose on a monthly basis. This may mean that most wait until their clinic visits to carry out these practices, since most patients attending the clinic have monthly appointments. This is similar to the previous findings of Eregie et al in UBTH in which only 8% of the patients studied practiced self-monitoring of blood glucose at home.¹⁴ This situation is not good for effective control of diabetes and underscores the need for

(a) Controlled and planned diet				
Variables	Yes	No	χ^2	p value
1. Diabetes duration				
1–5 years	88	14	11.151	p=0.011
6–10 years	61	27		
11–15 years	11	7		
16–20 years	5	3		
2. Age group			2.860	p=0.582
3. Gender			2.412	p=0.120
4. Education			0.453	p=0.629
(b) Regular exercise				
1. Age group				
31–40 years	2	5	15.890	p=0.003
41–50 years	17	10		
51–60 years	52	22		
61–70 years	52	32		
>70 years	7	17		
2. Education level				
None	5	9	17.110	p=0.007
Primary	22	31		
Secondary	58	30		
Tertiary	45	16		
3. Gender			0.540	p=0.470
4. Diabetes duration			1.410	p=0.704
(c) Possession of glucose meter				
1. Education level				
None	5	9	24.340	p=0.00002
Primary	18	35		
Secondary	34	54		
Tertiary	45	16		
2. Monthly income				
<10 000	14	21	33.269	p=0.0001
10 000 – 30 000	25	25		
31 000 – 60 000	20	55		
61 000 – 100 000	31	9		
>100 000	12	4		
3. Age group			3.890	p=0.421
4. Gender			0.515	p=0.473
5. Diabetes duration			1.855	p=0.615

Note: Patient numbers are given only for variables which showed a significant association.

diabetes patients to possess weight, blood pressure, and blood glucose monitoring devices at home so that they can monitor these parameters between clinic visits. Blood glucose checks at home may give patients a self-appraisal of their diabetes control. This will serve as a source of reinforcement for those doing well, and a challenge for those who are not doing well, thus enhancing modification of behaviour. This study revealed that less than half of the patients owned a glucose meter. The income of patients is a major factor here because the cost of purchasing a meter may deter most patients from owning one. Most patients were engaged in either unskilled or skill level I and II occupations with a corresponding monthly income of less than N60 000 (US\$350). In Nigeria, with about 60% of the population living on less than US\$2 per day, out-of-pocket payment is the major means of financing healthcare, and so it will be difficult for patients to afford a glucose meter after paying for their drugs and other commodities in the hospital. A possible solution to this challenge is for the government and other relevant agencies to drastically reduce the price of self-care devices such as glucose meters, to make them affordable to diabetes patients irrespective of their socio-economic status.

In conclusion, type 2 diabetes patients attending the outpatient clinic of UBTH demonstrated a high level of awareness about the non-medical management of diabetes. Although their engagement in regular exercise and adherence to controlled and planned dietary regimens was good, the practice of self-monitoring of body weight, blood pressure, and blood glucose was poor. We recommend that there should be continuous promotion of these self-care practices and healthy lifestyles among type 2 diabetes patients whenever they come in contact with healthcare systems. We also advocate for the reduction in price of self-monitoring devices to make them easily affordable and common to all diabetes patients.

Table 3 Socio-demographic characteristics and correlates with (a) planned dietary regimen, (b) regular exercise, and (c) possession of glucose meter

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