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Prevalence of obesity among type 2 diabetics in Nigeria a case study of patients in Ibadan, Oyo State, Nigeria

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Summary

A cross-sectional study of anthropometric parameters (weight and height) and body mass index (BMI) of 212 type 2 diabetic patients was conducted in Ibadan, Oyo State, South-Western Nigeria between January and March 2002. Pretested Interviewer-administered questionnaires were used to obtain information on the socio-economic and medical profiles of the patients who had been attending the dietetic clinics of a teaching hospital and a state hospital respectively for medical treatment and dietary counseling for at least 6 months. The mean (SD) age of the patients was 55 (13.7) years. Fifty-seven percent of them were women and forty-three percent men. The mean (SD) weights of the male and female patients were 67.4 (11.7) kg and 64.1 (4.6) kg respectively. Majority (83%) of the patients were either overweight or obese. The female patients were significantly more obese than the males ($P < 0.001$). This study concludes that certain dietary measures and regular moderate exercise which could enhance the achievement and maintenance of ideal body weight should be given emphasis in the management of type 2 diabetic patients.

Keywords: *Obesity, diet, exercise, education.*

Résumé

Une étude croisée des paramètres anthropométriques sur 212 type 2 des patients diabétiques était conduite à Ibadan, Oyo state, Sud Ouest du Nigéria entre janvier à Mars 2002. Des questionnaires pré-testés étaient utilisés pour obtenir d information socio-économique et des profils médicales des patients qui atteignaient des cliniques diététiques du Centre Hospitalier Universitaire d'Ibadan et l'hôpital provinciale pour les soins médicaux et les conseils diététiques pour au moins 6 mois. La moyenne d'âge des patients était 55(13.7) ans, le genre était de 57% femelles et 43 % males. La moyenne de poids corporel étaient de 67.4 (11.4) Kg et 64.1(4.6)Kg pour les males et femelles respectivement. La majorité des patients (83%) étaient obèse de poids. Les patients femelles étaient

significativement plus obèse que les hommes ($P < 0.001$). cette étude conclue que certain régime alimentaire et des exercices régulier et modérés pourraient améliorer et maintenir le poids corporel et le management des patients diabétiques de type II.

Introduction

The treatment of almost all chronic diseases requires that patients learn the appropriate skills for daily self management of their disease. Thus, education of diabetic patients is accepted as an essential tool of management of the disease [1-3]. The therapeutic techniques involved in trying to normalize glycaemia in diabetes mellitus vary in different patients depending on age, body weight and prevalence of complications [4].

Obesity and type 2 diabetes mellitus are common metabolic disorders that frequently co-exist and both are reversible by weight reduction. Evidence indicates a strong association of obesity with type 2 diabetes mellitus and increased insulin resistance, which may also carry the risks of hypertension, hyperlipidemia, cardiovascular complications and renal disease [5-6]. Hence weight reduction has been strongly recommended for obese diabetic patients [3].

The American Society for Clinical Nutrition, Expert Panel on Identification, Evaluation, and Treatment of overweight in adults, highlighted that BMI, which describes relative weight for height [weight (kg)]/height (m^2), significantly correlates with total body fat content. The panel approved BMI for assessing overweight and obesity and for monitoring changes in body weight. The panel also provided a clinical classification and guidelines on evaluation and monitoring of overweight and obesity in adults for clinical investigation [4].

Regular assessment and monitoring of diabetic patients to identify obesity for appropriate weight reduction therapy in order to achieve ideal body weight and glycemic control has been emphasized in the management of diabetic patients [3,7]. This study assesses the anthropometric parameters and the BMI profile of type 2 diabetic patients receiving treatment at the diabetic clinics of the University College Hospital and the Ring Road State Hospital in Ibadan, Nigeria.

Materials and methods

A cross-sectional study involving weight and height of two hundred and twelve adult diabetic patients attending the diabetic clinics of the University College Hospital and Ring Road State Hospital, Ibadan, Nigeria was conducted from January to March 2002. The University College Hospital is the biggest and best-equipped tertiary hospital in Nigeria to which patients from every part of the country, particularly the south-western part are referred; while the Ring Road State Hospital (Adeoyo), is the biggest State hospital in Oyo State.

Structured interviewer-administered questionnaires were used by trained and experienced investigators to collect information on the age, sex, ethnicity and the type of treatment of patients selected from the Diabetic Association Meetings and the Diabetic Clinics.

The weights of the patients were measured to the nearest 0.1 kg using a portable Salter scale. The height was also measured to the nearest 0.01 meter using a wooden wall meter rule. The patient's BMI was determined as weight (kg) divided by height in meter squared (m^2) to detect underweight, normal weight, overweight and obesity among the patients. Male and female patients were categorized according to the guidelines of the Expert Panel on Identification, Evaluation and Treatment of Overweight in Adults as shown in Table 1. The compliance with diet and exercise was assessed through indepth interview and the through blood sugar level of the patients. The data were analysed as means one Standard Deviation (SD) and as percentages, with statistical package Epidemiology Information System Version 6. Soft Ware Package.

Table 1: Classification of overweight and obesity by BMI*

Classification	BMI
Underweight	<18.5
Normal	18.5 – 24.9
Overweight	25.0 – 29.9
Obesity	I 30.0 – 34.9
	II 35.0 – 39.9
Extreme obesity	III \geq 40

*Source: (American Society for Clinical Nutrition: Expert Panel on the Identification, Evaluation, and Treatment of Overweight in Adults 1998)

Results

The profile of male and female diabetic patients, their age, ethnic origin, and type of treatment are indicated in Table 2. Fifty seven percent of the patients were female while forty-three were males. The age of the patients ranged from 25 to 73 years with mean (SD) age of 54 (15.3) years. Most of the patients (89%) were over 45 years, with majority (81%) being between 56 and 70+ years. Ninety percent of the subjects were Yoruba, Igbo (7%) and Hausa (3%). 83% of the females were full-time house-wives or

traders while 67% of the males were either serving or retired civil servants. Most patients (63%) were on diet plus hypoglycemic drug while 35% and 2% were on diet plus insulin and diet alone for glycemic control respectively. All the patients had dietary counselling but their follow-up on diet and exercise was poor.

As shown in table 3, the mean (SD) weights of the male and female adult diabetic patients were 67.4 (11.7) kg and 64.1 (4.6) kg respectively. The mean (SD) height of the male and female patients were 1.68 (0.32) m and 1.59 (0.48)m respectively. The male patients were generally heavier and taller than the female ones. Only 3% of the patients were underweight (BMI < 18.5) (Table 4). Out of this percentage, 2.1% were males. Only 14% of the

Table 2: Profile of the patients

Sex	Male n(%)	Female n(%)	Total (%)
	91(43)	121(57)	212(100)
Age (years)			
25-35	4(40)	6(60)	10(5)
36-45	5(42)	7(58)	12(6)
46-55	8(40)	12(60)	20(9)
56-65	34(40)	52(60)	86(41)
70+	40(48)	44(52)	84(40)
Ethnic Distribution			
Yoruba	78(41)	112(59)	190(90)
Igbo	9(60)	6(40)	15(7)
Hausa	4(57)	3(43)	7(3)
Occupation			
House wife	-	67(55)	67(32)
Unskilled labourer	7(8)	2(2)	9(4)
Skilled labourer	9(10)	5(4)	14(7)
Trader	13(14)	34(28)	47(22)
Civil Servants	32(35)	9(8)	41(19)
Business men/women	2(2)	-	2(1)
Retired Public servants	28(31)	4(3)	32(15)
Type of treatment			
Diet alone	2(67)	1(33)	3(2)
Diet + hypoglycemic drugs	58(43)	76(57)	134(63)
Diet + Insulin	31(41)	44(59)	75(35)

Table 3: Mean weight and height of the subjects mean (SD)

	Male (n=%)	Female (n=%)
Weight (kg)	67.4 (11.7)	64 (4.6)
Height (m)	1.68 (0.32)	1.59 (0.48)

attention be paid towards reduction of weight and behavioural change among obese subjects to alleviate the risks of these complications[6]. These reports support an urgent need for a global awareness of food components that directly influence blood glucose levels and the need to adopt active and healthy life styles.

Education of diabetic patients is known to be an integral part of diabetic therapy[14-15], and instructions on weight reduction constitute the cornerstone of therapy in obese patients with type 2 diabetes mellitus. Unfortunately these principles are still neglected presently by many general medical or nutritional practitioners especially in developing countries. In these countries, very limited number of people including diabetic patients, receive adequate education on diet and exercise. It is disturbing that some health authorities do not readily appreciate diet as an obligatory and effective part of treatment of obese diabetic and non-obese diabetic patients⁽⁵⁰⁾. Weight reduction therapy will help to improve metabolic control significantly and enable patients to use less of oral anti-diabetic agents[13].

Health Departments should recognize and emphasize diet therapy, exercise, health education and compliance with physician recommendation as targets for improving the quality of health care especially among diabetic patients. It is important to employ adequate number of dietitians, who are trained on structured teaching and dietary counselling of patients in every hospital as this will help to improve overall quality of diabetes care.

References

1. Maldonato A., Bloise D., Ceci M., Fratelli E., Faluca F. Diabetes mellitus. Lessons for patient education. Patient education and counselling 1996;26:57-66.
2. Kay, G.R., Robert, R.H. Nutritional management of obesity and diabetes. Nutrition Research 1994; 14(3): 465-483.
3. British Diabetic Association. Dietary recommendations for people with Diabetes. An update for the 1990s. Diabetic Medicine 1992; 9: 189-202.
4. American Society for Clinical Nutrition: Expert Panel on the Identification, Evaluation and Treatment of Overweight in Adults: Clinical Guidelines on the Identification, Evaluation, and Obesity in Adults. Am. J. Clin. Nutr. 1998; 68: 899-917
5. Prakash P., Shubber K.M. Obesity and hypertension among diabetics. Nutrition Unit, Ministry of Public Health, Kuwait, 1982.

9% of them were also males. 57% of the overweight patients were of normal weight (BMI = 18.5 - 24.9) and female than male patients were within the BMI range of 30.0 - 34.9 (grade I obesity), 34.9 - 39.9 (grade II obesity), and ≥ 40 (Grade III obesity). Majority (68%) of the patients were within the range of overweight and grade I obesity. Only 9% and 6% of the patients were within the range of BMI 35.0 - 39.9 (Grade II obesity) and BMI ≥ 40 (Grade III obesity) respectively. Majority of the patients (83%) were either overweight or obese. The total number of female patients that were either overweight or obese was significantly higher than the male ($P < 0.001$).

Discussion

This study supports other reports that obesity is a common problem among type 2 diabetic patients. However, the prevalence varies among population subgroups[2,4]

The age range of the type II patients was similar to

those reported in other studies, with majority of the subjects being above 45 years. In this study, overweight and obesity were found present, more in females than in males. This observation is also similar to that reported from other countries[8-9]. The high prevalence of obesity among the female patients could be linked with the fact that most of them were full-time house wives who were mostly engaged in sedentary work.

Reports have emphasized a strong link between unhealthy life styles and the development of overweight and obesity in diabetic and non-diabetic subjects in

developed and developing countries^(10,12). For example, The American Society for Clinical Nutrition Expert Panel on Identification, Evaluation and Treatment of overweight in adults states that all overweight and obese adults (18 years of age or older), with BMI ≥ 25 , run the risk of developing associated morbidities such as hypertension, high blood cholesterol, cardiovascular and renal problems

which are the major causes of death among this age group. The panel thus strongly emphasized that a strong

Table 4: Body mass index classification of the subjects

	BMI		male	female	Total
	<18.5(n=%)	18.5-24.9			
Underweight	7(3)	2(29)	5(71)	2(29)	7(3)
Normal	18.5 - 24.9	18(62)	11(38)	29(14)	29(14)
Overweight	25.0 - 29.9	35(57)	26(43)	61(29)	61(29)
Obesity	30.0 - 34.9	31(37)	52(63)	83(39)	83(39)
	35.0 - 39.9	8(40)	12(60)	20(9)	20(9)
Extreme obesity	III ≥ 40	3(25)	9(75)	12(6)	12(6)

- 6 Chan J.C., Cheung C.K., Swaminathan R., Nicolls M.G., Cockram C.O. Obesity, albuminuria and hypertension among Hong Kong Chinese with non-insulin dependent diabetes mellitus. *Postgrad. Med. J.* 1993; 69: 204-210.
- 7 ADA Nutritional Recommendations and Principles for Individuals with diabetes mellitus. *Diabetic Care* 1991; 41(2): 20-27.
- 8 Ramaiya K.L., Albert K.G.M. Diabetes in India Asian Immigrants in Africa. *Int. Diab. Dig.* 1993; 4: 69-74.
- 9 Famuyiwa O.O., Sulimani R.A., Laaijam M.A., Al-Jasser S.J., Mekki N.O., Diabetes mellitus in Saudi Arabia: The clinical pattern and complications in 1000 patients. *Ann. Saudi. Med.* 1992; 12: 140-51.
- 10 World Health Organisation. Obesity, preventing and managing global epidemic. Report of WHO consultation on obesity. WHO, Geneva. 1998.
- 11 Kriska A. Physical activity and the prevention of type 2 diabetes. *Research Digest.* 1997; 2: 1-8.
- 12 Lean M.E.J., Powrie J.K., Anderson A.S., Garthwaite P.H. Obesity, weight loss and prognosis in type 2 diabetes. *Diabetic Med.* 1990; 7: 228- 233.
- 13 Guilbert J.J. Educational handbook for health personnel. WHO, Geneva. 1985.
- 14 Gasgow R.G., Osteen V.I. Evaluating diabetes education: are we measuring the most important outcomes?. *Diabetes care* 1992; 15: 1423-1432.

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