PJN
ISSN 1680-5194

PAKISTAN JOURNAL OF NUTRITION

ANSInet
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan
Mob: +92 300 3008585, Fax: +92 41 8815544
E-mail: editorpjn@gmail.com

Pakistan Journal of Nutrition 6 (5): 502-505, 2007
ISSN 1680-5194

Awareness of Obesity and its Health Hazard among Women in a University Community

E.O. Ojofeitimi[1], A.O. Adeyeye[2], A.O. Fadiora[4], A.O. Kuteyi[2], T.G. Faborode[1],
C.A. Adegbenro[2], O.E. Bakare[1], K. Setiloane[3] and K.S. Towobola[5]
[1]Institute of Public Health, College of Health Sciences, Obafemi Awolowo University, Ile-Ife, Nigeria
[2]Department of Community Health, Faculty of Clinical Sciences, OAU, Ile-Ife, Nigeria
[3]Department of Health, Nutrition and Exercise Sciences, University of Delware, Neward, USA
[4]Department of Surgery, Ladoke Akintola University of Technology, Osogbo, Osun State, Nigeria
[5]Department of Human Nutrition and Dietetics, University of Agriculture, Abeokuta, Ogun State, Nigeria

Abstract: Two hundred and thirty six women between the ages of 25 and 59 were contacted within Obafemi Awolowo University Community Ile-Ife, to assess their levels of awareness on the benefits and hazards of obesity. The study also attempted to classify the degree of obesity among the respondents by employing Body Mass Index (BMI) and Waist-Hip-Ratio (WHR) techniques. Of the 236 respondents, 76.7% were grouped under low level of awareness on the health hazards of obesity. The levels of awareness on obesity by educational background and occupation of respondents were significantly related at P-value = 0.0003, and P-value = 0.0004 respectively. WHR technique significantly identified more respondents to be overweight and severely obese than BMI technique, P-value = 0.0000. As the age increased, the degree of obesity increased, P-value = 0.001. Respect and evidence of good living were two major reasons advanced as some of the perception of being obese. Health workers should receive training in the simple techniques of identifying, monitoring the degree of obesity and mounting intensive mass campaign on health hazards of obesity. The impact of primary health care services on the prevention of non communicable chronic diseases in the new millennium may continue to be unsatisfactory. Particularly in the developing countries where excess body weight is culturally accepted. There is a dire need to establish a health nutritional program for the control and prevention of obesity focusing on limitation of excessive energy intake from any source.

Key words: Obesity, body mass index, waist-hip-ratio, chronic diseases, culture, education

Introduction

Epidemiological data have convincingly substantiated that obesity is a major predisposing factor for developing hypertension, ischemic heart disease, stroke, non-insulin dependent diabetes mellitus (NIDDM), breast, colonic, endometria and prostate cancers (Heymsfield and Hoy, 1995 and CFNI, 2001). Contrary to earlier belief that Africans including Nigerians are protected from these chronic diseases, studies are now reporting that these diseases are steadily increasing in developing countries (Akinkugbe and Oladipo, 1990 and Ojofeitimi *et al*., 1996). In fact, previous workers have demonstrated that the incidence of these chronic diseases increased as the degree and duration of obesity heightened (Beebe *et al*., 1987; Kannel, 1983; Anate *et al*., 1998 and CFNI, 2002). Excessive body weight has also been documented to exacerbate other medical conditions such as knee osteoarthritis, back pain, sleep apnea, gout and related health complications (Cooper *et al*., 1998, Cole *et al*., 2000; Oner *et al*., 2004 and Bener, 2006).

In spite of the numerous chronic diseases that have been linked to obesity, studies focusing on prevalence obesity, level of community awareness, health hazards and strategies to prevent and control obesity are very sparse in the literature, especially, in developing countries where obesity is culturally accepted and nurtured. The objectives of this study therefore, were to assess the level of awareness of health hazards of obesity among the respondents and to classify the respondents according to degree of obesity using body mass index (BMI) and waist-hip-ratio (WHR).

Materials and Methods

A descriptive study was carried out among the females at Obafemi Awolowo University (OAU) and Teaching Hospital complex (OAUTHC) Ile-Ife, Nigeria. The two Institutions are located at Ife Central Local Government with an estimated population of 313,000. The criteria for selection of subjects were that:

(i) Age of respondents should not be less than 25 years and should not be greater than 60 years.
(ii) Educational status should not be less than Secondary School level.
(iii) Subjects should have not been bed ridden at least three months prior to time of interview
(iv) Subjects should not be pregnant or to have missed her two consecutive last menstrual period.

A structured questionnaire to assess the knowledge of participants on hazards and perceptions of obesity and

Table 1: Graphic Data of Respondents N = 236

Age	Number	Percentage
25-29	111	47.0
30-34	33	14.0
35-39	24	10.2
40-44	23	9.7
45-49	19	8.1
50-54	20	8.5
55-59	6	2.5
Level of Education		
Secondary	85	36.0
Post-Secondary	79	33.5
Tertiary	72	30.5
Occupation		
Teaching	50	21.2
Trading	31	13.1
Undergraduate	57	24.2
Health Providers	63	26.7
Office clerks	35	14.8

how it can be prevented was designed, pre-tested and administered to subjects. A nineteen question protocol was used in achieving this goal. Based on pretest of 20 respondents and review of literature in the causes, effects and solutions to obesity, the responses were scored from 1 to 3 points. Subjects scoring above 26 were rated as high level of awareness; score of 19-25 were rated as medium level of awareness; while score less than 19 were regarded as low level of awareness of obesity. The maximum attainable score was 39. The questionnaire was divided into three parts: section A sought information on the socio-demographic factors, section B contained anthropometric indices of the participants and section C was made up of questions to assess the level of awareness of obesity and its health hazards.

Anthropometric measurements: Height was measured without shoes, with feet together and heels and back against a vertical board with a steel attachment. It was measured to nearest centimeter. The subjects were weighed to the nearest kilogram with light clothing and no shoes. Each subject was classified into different degree of obesity based on the body mass index (BMI) = weight (kg) / Height^2 (m^2).Thus, the degree of obesity based on BMI was classified as follows:

18.5-24.9- normal weight
25-29.9 overweight;
30-39.9 moderate obesity and
More than 40- morbid obesity

Hip and waist circumference were measured while the subjects were relaxed, standing and with their arms at their sides and feet together. A non-elastic measuring tape was used to take all the measurements. Waist circumference was measured at the level of the umbilicus, while hip circumference was measured at the largest circumference around the buttocks. The waist hip ration (WHR) was calculated to the nearest 0.05. Each subject was classified into degree of central obesity as follows: WHR less than 0.73 as normal weight; 0.73-0.79 as overweight; 0.80-0.86 as moderate obesity and greater than 0.86 as severe obesity.

Statistical analysis: After the levels of awareness among the respondents were scored, coded, and grouped, the null hypothesis was used to arrive at the following conclusions; that there was no significant difference between:

(i) The subject's educational status and level of awareness on central obesity;
(ii) The subject's occupational status and level of awareness on central obesity;
(iii) The subject's age and degree of central obesity;
(iv) The subject's occupational status and listing of advantages of obesity;
(v) The subject's educational status and listing of advantages of obesity.

The null hypothesis was tested using SPSS version 5.2. A probability, P-value = 0.05 was accepted indicative of significant difference.

Results

Respondent's profiles: Of the 400 respondents who met the criteria, 236 (59%) agreed to participate in the study. Almost half of the respondents were within the age group 25-29, while less than 3% of the respondents were within the age group 55-59 and all of them were literate. Out of the 236 respondents, about 27% were health providers and a large proportion of 24% were undergraduates. The observed proportions of about 13.1% among the respondents were traders, while almost 15.0% were office clerks (Table 1).

Respondent's perception: The results show that 30.5% of the respondents perceived being obese as a sign of respect, while about 11.4% regarded that "it makes one look mature". An equal proportion of the respondents 18.6% regarded that "it makes clothes to fit better and makes one attractive". About 21% of the respondents regarded "it shows evidence of good living". Further analysis show that more than half of the respondents listed respect and evidence of good living as some of the advantages of obesity. Out of the five advantages listed for obesity, "respect" was significantly related to educational level P-value = 0.0008, while "It makes clothes fit better", was significantly associated with occupation, P-value = 0.004 (Table 2).

Respondent's level of awareness: Table 3 shows the percentage of women with their highest level of education. About 36.0 % had secondary school education, while one in every three women had post secondary school education. About 86% of those with secondary school education had low level of awareness of the health hazards of obesity, while almost 14% had

Table 2: Awareness of begin obese as perceived by the respondents (N = 236)

Perception	Number	Percentage
It gives respect	72	30.5
It shows evidence of good living	49	20.8
It makes clothes to fit better	44	18.6
It makes one attractive	44	18.6
It makes one look mature	27	11.4
Total	236	99.9

Table 3: Participants level of awareness on health hazards of obesity according to educational status N = 236

Educational Status	Level of Awareness			
	Low	Medium	High	Total
Secondary	85.9	14.1	-	36.0
Post-Secondary	77.2	13.9	8.9	33.5
Tertiary	65.3	30.6	4.1	30.5

X^2 =15.57; P-value =0.00; 4df

Table 4: Participants level of awareness on health hazards of obesity according to occupation N = 236

Occupation	Level of Awareness			
	Low	Medium	High	Total
Trading	96.8	3.2	-	13.1
Clerks	88.6	11.4	-	14.8
Undergraduates	68.4	19.3	12.3	24.2
Health Providers	76.2	19.0	4.8	26.7
Teaching	66.0	34.0	-	21.2

X^2 =25.87; P-value = 0.003; 8df

medium level of awareness of the health hazards of obesity. Among respondents with tertiary education, a greater proportion had low level of awareness of health hazards of obesity, while about one in every three women with tertiary education had medium level of awareness of the health hazards of obesity. About 4% of women with tertiary education had high level of awareness on the health hazards of obesity.

Table 4 shows the percentage of women with their occupational status. Among the respondents, higher proportion of Traders (96.8%) and clerks (88.6) reported having low level of awareness of the health hazards of obesity. At least three out of every five in each of the occupation reported having low level of awareness. The undergraduate women had high level of awareness much more than the health providers (4.8%). A higher proportion of Female teachers had medium level of awareness of the health hazards of obesity, while about 19.3% and 19% were undergraduates and health providers. Almost 77% among the respondents were grouped under low level of awareness on health hazards of obesity. Distribution of level of awareness according to educational status and occupation were significantly related, P-value = 0.003, and P-value = 0.0004 respectively (Tables 3 and 4).

Classification of obesity by techniques: Table 5a and 5b show the classification of obesity among the respondents after employing two different techniques (WHR and BMI). BMI technique identified 58.5% of the respondents to be normal, while WHR classified about 14% of the respondents to be normal. WHR classified higher percentage of respondents to manifest excess body weight than BMI, P-value = 0.000 (Table 5a and 5b). About 23% of the women measured using WHR were overweight, while a relatively proportion of 20% were overweight using BMI. A higher proportion of respondents 20.3% were classified as severe obese through the WHR technique, while only 5.1% of the respondents were classified as severe obese by the BMI method. More than two out of every five women were classified as moderate obsess by the WHR technique, while about one out of every six women was classified as moderate obese by the BMI technique. Table 6 shows that as age increases among women, there is high likelihood of being obese as measured by the WHR technique. Women within the age group greater than 44 recorded almost 42% to be severely obese compared to other age groups, while about 22% of women in this age group were classified moderately obese. Women within the age bracket 25-29 (40.6%) were classified to be moderately obese and about 62% within the group were classified to be overweight.

Table 5A: Classification of obesity among respondent employing waist-hip-ratio (whr) technique N = 236

Classification (WHR)	Number	Percentage
Normal (<0.73)	32	13.6
Overweight (0.73-0.79)	55	23.3
Moderate obesity (0.80-0.86)	101	42.8
Severe obesity (>0.86)	48	20.3
Total	236	100.0

Table 5B: Classification of obesity among respondent employing body mass index (w/h^2) technique N = 236

Classification (BMI)	Number	Percentage
Normal (18.5-24.9)	138	58.5
Overweight (25-29.9)	48	20.3
Moderate obesity (30-39.9)	38	16.1
Severe obesity (>40)	12	5.1
Total	236	100.0

Discussion

In developed nations extraordinary emphasis is placed on thinness, the contrary is the case in developing countries where obesity is culturally accepted and admires. The present study is an eye opener. Approximately 77% of the respondents were poorly informed about the health hazards of excessive body weight (Table 2). However, the higher the level of education of the respondents, the higher the level of awareness (P-value = 0.0003). It is also pertinent to observe that level of awareness of health hazards of obesity is significantly related to occupation of respondents (P-value = 0.0004). This significant inference is due to the effect of educational backgrounds

Table 6: Classification of obesity using WHR Technique in relation to age of respondents N = 236

	Classification of obesity Using WHR				
Age in Years	Normal	Overweight	Moderate	Severe	Total
25-29	68.8	61.8	40.6	8.3	111
30-34	21.9	21.8	8.9	10.4	33
35-39	6.3	5.5	15.8	6.3	24
40-44	3.0	7.3	12.9	12.5	24
>44	-	3.6	21.8	41.7	44
Total	32	55	101	48	236

X^2 =49.11; P-value= 0.005; 12df

of the respondents. It should be noted that BMI measures generalized body obesity, while WHR measures abdominal or central obesity. The central obesity has been reported to be the most dangerous type of obesity that predisposes men and women to chronic diseases as earlier listed (Cooper, 1998; Eng-Hen and Chem-Yang, 1997; Kannel, 1983; McLaren, 1988; and Ojofeitimi *et al.*, 1991; Uauy, 2006). Although, the population for this study may not be large enough to make a generalized statement, one of the inferences, however, to be drawn from this result is that the android obesity may be common among Nigerian women. A large population from different ethnic groups will definitely reveal the type of obesity that is common among Nigerian men and women.

That obesity is culturally accepted and admired is apparent from the responses of the participants on the advantages of obesity. In spite of their educational background, the majority perceived that being overweight or obese gives respect and it was an evidence of good living (Table 2). This is rather sad; more so, when some of the professional health providers also believed that obesity had an advantage. It is obvious from this preliminary study the usefulness of anthropometric indices as predictors of chronic diseases. After all, men and women with higher WHR have been reported to be at high risk of hypertension, ischemic heart disease, stroke, "diabesity" (diabetes and obesity) and rising rate of endometria, breast and prostate cancers (Heymsfield and Hoy, 1995; Mclaren, 1988; Kannel, 1983; Wahnerfried *et al.*, 1997 and Uauy, 2006). Professional health providers are privileged to inform the Community on the health hazards of obesity and various means of maintaining an ideal weight. It can be inferred from this study that there is an urgent need for in - training courses for community health providers on simple techniques to classify obesity and strategies to combat this disease which is imbibed in the culture. In addition, there should also be mass campaign on obesity and its health complications.

It is time we confront the epidemic rise of obesity, one of the major root causes of chronic disease in developed and developing countries.

References

Akinkugbe, O. and O. Oladipo, 1990. Epidemilogy of cardiovascular disease in developing countries J. Hypert., 8: 5233-5238.

Anate, M. Olatinwo Awo and A.P. Omesina, 1998. Obesity-an overview WAJM., 248-254.

Bener, Abdulbari, 2006. "Prevalence of obesity, overweight, and underweight in Qatari adolescents". United Nations University Press., 27: 39-45.

Beebe, 1987. Ca. obesity. As a Risk Factor in Diabetes, In; Hand Book of Diabetes Nutritional Management. Power M.A., ed Aspen Publ. Inc. Rockville Md., 366-377.

Caribbean Food and Nutrition Institute, 2001. Cancer and Nutrition: A critical link. October Nos. 1 and 2: 1 in Eating and Living Well with Diabetes.

Caribbean Food and Nutrition Institute, 2002, January, Nos. 1 and 2 : 4.

Cole, T.J, M.C. Bellizzi, K.M. Flegal and W.H. Dietz, 2000. Establishing a standard definition for child overweight and obesity worldwide: international survey. BMJ., 320: 1240-3.

Cooper, C., H. Inskip and P. Croft, 1998. Individual risks factors for hip osteoarthritis, obesity, hip injury and physical activity. Am. J. Epidem., 14: 516-22.

Eng-Hen, N.G. and J.I. Chem-Yang, 1997. Risk factors for Breast Carionoma in Singaporean Chinese women. Cancer, 725-731.

Heymsfield, S.B. and K. Hoy, 1995. Obesity: In Conn's current Therapy. Rakel R.E., ed. WB Saunder's Company Philadelphia, 510-515.

Kannel, W.B., 1983. Health and obesity: an overview., 1983. In Conn HL, Defelrece EA, KAOPT, eds. Health and obesity. New York, Raven press, 1-19.

McLaren, D.s., 1988. The Obes.. Med. Digest., 14: 3-8.

Ojofeitimi, E.O. A.O. Kuteyi, A.O. Fasanu S.A. Olaoye and M.A. Smith., 1991. Abdominal obesity and chronic diseases risk Nutr. and Health, (In Press; 1999).

Ojofeitimi, E.O., I.A. Olukoga and M.K. Jinadu, 1996. Community Health Nurses' perceptions of nutritional interventions in preventing degenerative diseases. Afr. J. Med. Pract., 3: 56-61.

Oner, N., U. Vatansever, A. Sari, E. Ekuklu, A. Guzel, S. Karasalihoglu and N.W. Boris, 2004. Prevalence of underweight, overweight and obesity in Turkish adolescents. Swiss. Med. Wkly., 134: 529-33.

Wahnerfried, W.D., M.R. Conaway, C.N. Robertson and B.J. Mathias, 1997. Anthropometric Risk Factors for Prostate Cancer. Nutr. and Cancer., 28: 302-307.

Uauy, R., 2006. The 2005 Abrahim Hortwity Award for Leadership in Inter-American Health Address: Dr. Ricaro Uauy Food and Nutr. Bulletin, 27: 76-79.