

Full Length Research Paper

Nutritional status, lifestyle and knowledge of predisposing factors on hyperlipidemia among out-patients in Enugu State University Teaching Hospital (ESUTH), Nigeria

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The growing trend of hyperlipidemia in most developing countries has resulted largely from changes in lifestyle, diet and lack of adequate exercise which have led to decreased life expectancy and burden of cardiovascular diseases. A purposive sample size of 206 out-patients was selected for this study after obtaining their due consents. Out of these, 108 (52.84%) were female and 98 (47.6%) males. Validated structured questionnaires were administered to collect basic socio-economic data from the respondents. Information obtained include drinking habits, medical history, and dietary habits. Data were presented by using descriptive statistics: frequencies and percentages. The anthropometric variables (weight and height) were analysed by using mean and standard deviation tools. Body mass index (BMI) was determined using the weight and height measurements. About 39.8% of respondents were within the age bracket (29-39 years), 25.7% had family history of diabetes mellitus, 25.2% hypertension and 11.7% had hypercholesterolemia. More than half (66.5%) of the respondents consumed alcoholic drinks. About 65.1% of the alcoholics, drink 1-3 times weekly and 46.1% took alcohol 4-6 times weekly while 14.5% drink daily. Some respondents who consumed groundnut, banana with groundnut, biscuit, buns, bread, meat pies, cakes or chicken pies with malt, juice or soft drink were 63.5%. Less than half (40.2%) of the respondents were overweight and about 37.4% of them were obese. About 45.6% of the respondents had a fair knowledge of hyperlipidemia, 40.3% had poor knowledge while 14.1% had a good knowledge. This study showed a strong evidence of poor knowledge of hyperlipidemia among out-patients attending Enugu State University Teaching Hospital (ESUTH), which may have influenced their lifestyle, dietary habit and subsequently their nutritional/health status.

Key words: Hyperlipidemia, nutritional status, diet, diabetes, cardiovascular diseases.

INTRODUCTION

Overweight and obesity are increasing at an alarming rate globally. World Health Organization projected that by 2020, at least 50% of all death will occur due to coronary heart disease (CHD) in most countries (Ahaneku et al.,

2014; Lopez, 2004; Lopez et al., 2006). Hyperlipidemia is considered as a major risk factor in CHD all over the world. The epidemic of hyperlipidemia in developing countries has resulted in large part, from the economic

Table 1. BMI classification.

WHO popular (kg/m ²)	BMI Co-morbidities	Risk of classification	Description of classification
Class weight	Thin	Less than 18.5	Low (but risk of other clinical problems)
Normal	Normal	18.5 – 24.9	-----
Underweight	-----	Greater than 25	-----
Pre-obese	Overweight	25 – 29.9	Increased
Obese class I	Obese	30.0 – 34.9	Moderate
Obese class II	Obese	35.0 – 39.9	Severe
Obese class III	Moderate	Greater than 40	Very severe

growth and associated socio demographic changes that have occurred over recent decades. During this period, changes in lifestyle and diet have led to an increase in life expectancy and a greatly increased burden of cardiovascular disease and other chronic diseases (Reddy and Yusuf, 1998).

Hyperlipidemia is a well-known and major risk factor for ischemic heart disease, as elevated levels of triglycerides, total cholesterol, low density lipoprotein cholesterol (HDL-C) are documented risk factors for atherogenesis (Osuji et al., 2010). It has also been shown that serum total cholesterol levels are continuously correlated with CHD risk over a broad range of cholesterol values in various populations throughout the world (Osuji et al., 2010). It is also strongly associated with hypertension and plays a crucial role in the development of cardiovascular disease, which has become a leading cause of death in most developing countries such as Nigeria (Ahaneku et al., 2014).

There is low awareness programme on cardiovascular diseases among people in the developing communities. Most people are not well informed on the causes and mode of prevention of these diseases. Similarly, the increasing level of consumption of junk foods in many households might have predisposed them to this ailment. The objective of this study was to examine the nutritional status, lifestyle and knowledge of predisposing factors on hyperlipidemia among adults in Enugu State University Teaching Hospital (ESUTH) out-patients department.

MATERIALS AND METHODS

This study was carried out in Enugu State Nigeria, at the Enugu State University Teaching Hospital (ESUTH). The study design was a cross-sectional survey. The study population consisted of men and women who attended Enugu State University Teaching Hospital Out-Patients Ward in the year 2014. A purposive sample size of 206 out-patients was selected for this study after obtaining their due consents. Out of these, 108 (52.84%) were female and

98(47.6%) males. The sample size was calculated using the modified formula by Aloysius (1998):

$$N_s = (Z/E)^2 \times P(1-P)$$

Where N_s = Sample size; Z = standard Z score (1.96 using a confidence level of 95%); E = proportion of sample error in a given population (5% prevalence); P = estimated prevalence of hyperlipidemia 15% in Zaria (Akuyam et al., 2010).

The sample size calculated using the formula is 195.9, the sample size was increased to 206 samples to make room for dropouts or incorrectly filled questionnaire.

Data collection

Questionnaire was designed to provide information on the socioeconomic status, family and medical history and drinking habits among these out-patients. Knowledge questions were drafted in the questionnaire. Information was collected on diet history (food frequency) by interview. Five experts of the Department of Home Science, Nutrition and Dietetics validated the questionnaire for data collection.

Anthropometric assessment

Height and weight measurements were taken using standard procedures.

Classification of body mass index (BMI)

The respondents' body mass indexes were collated by measuring their weights and heights; thereafter BMI values were computed and compared (WHO, 2002) as shown in Table 1. Respective body mass indices (BMI) were calculated with the following formula: $BMI = \text{weight (kg)} / \text{height}^2 (\text{m}^2)$.

Data analysis

This was expressed using descriptive statistics: frequencies and percentages. Anthropometric variables (weight and height) were analysed by using mean and standard deviation.

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Table 2. Demography and socio-economic status of out-patients of Enugu State University Teaching Hospital (ESUTH), Nigeria.

Variable	Frequency	Percentage
Age(years)		
18-28	35	17.0
29-39	82	39.8
40-50	41	19.9
51-60	32	15.5
Above 60	16	7.8
Total	206	100.0
Sex		
Female	108	52.4
Male	98	47.6
Total	206	100.0
Marital status		
Single	61	29.6
Married	140	68.0
Widowed	05	2.4
Total	206	100.0
Educational attainment		
No formal education	08	3.9
Primary	12	5.8
Secondary	36	27.8
Tertiary	150	72.8
Total	206	100.0
Occupation		
Civil servant	104	50.5
Business	29	14.1
Student	30	14.6
Trading	08	3.9
Tailor	04	1.9
Other	31	15.0
Total	206	100.0

RESULTS

The results of the socio-economic status of the respondents are shown in Table 2. The result showed that less than half (39.8%) of the respondents were in the age range of 29-39 years, 19.9% were within 40-50years, 17.0% were within the 18-28years, 15.5% were within 51-60 years and 7.8% were above 60 years. However, 52.4% of the respondents were females. More than half (68.0%) of the respondents were married, 29.6% were single and 2.4% were widowed. Majority of the respondents (72.8%) had tertiary education, 17.5% had only secondary school education, 5.8% had only primary school education while 3.9% had no formal education.

Table 3 shows the consumption pattern of alcohol among ESUTH out-patients. The result shows that 66.5% of the respondents take alcoholic drinks while 33.5% claimed not to directly consume alcoholic drink. Table 4 shows the number of times the respondents consumed alcohol. Daily palm wine and stout consumers were 6.8 and 5.8%, respectively. While 17.0 and 12.1% palm wine drinkers, consumed it 1-3 and 4-6 times weekly, respectively. Spirit (gin) was consumed by 11.7% of the respondents, 4-6 times weekly. Beer was consumed by 14.6 and 2.96%, 1-3 and 4-6 times weekly, respectively.

Table 5 shows the family medical history of the respondents. Less than half (42.0%) of the respondents' family members had diabetes mellitus, 30.1% had

Table 3. Alcohol consumption pattern among ESUTH out-patients.

Variables	Frequency	Percentage
Do you take alcohol?		
Yes	137	66.5
No	69	33.5
Total	206	100.0
*If yes which ones?		
Beer	40	19.4
Stout	81	39.3
Wine	26	12.6
Spirit/gin	24	11.7
Palm wine	74	35.9
Local gin	14	6.8

*n = multiple responses.

Table 4. Frequency of alcohol consumption among ESUTH out-patient respondents.

*Alcoholic drinks	Daily frequency (%)	4-6 times/week frequency (%)	1-3 times/week frequency (%)
Beer	4(1.9)	6(2.9)	30(14.6)
Stout	12 (5.8)	18(8.7)	51(24.8)
Wine	-----	8(3.9)	18(8.7)
Spirit	-----	24(11.7)	-----
Palm wine	14(6.8)	25(12.1)	35(17.0)
Local gin		14(6.8)	-----
	(14.5)	(46.1)	(65.1)

*n = Multiple responses.

Table 5. Family medical history of ESUTH out-patient respondents.

Variables	Frequency	Percentage
*Disease suffered by family members		
Diabetes mellitus	92	42.0
Hypertension	66	30.1
Hypercholesterolemia	37	16.9
Obesity	24	11.0
*If yes who?		
Father	78	37.5
Mother	58	27.9
Relatives	72	34.6
*Age when disease developed		
≤35years	23	8.8
36-44years	57	21.8
45-54years	43	29.5
55-65years	41	21.2
>65years	33	12.6

Table 5. Contd.

*Diseases the Respondents had		
Diabetes mellitus	57	25.7
Hypertension	56	25.2
Hypercholesterolemia	26	11.7
Obesity	83	37.4

*n = Multiple responses.

Table 6. Meal consumption pattern of the out-patient respondents.

Variable	Frequency	Percentage
No of times respondents eat/day		
Twice	27	13.2
3times	167	81.0
>3times	12	5.8
Total	206	100.0
Do skip meals		
Yes	27	13.2
No	179	86.8
Total	206	100.0
Snack consumption		
Yes	198	96.1
No	8	3.9
Total	206	100.0
*Types of snacks		
Biscuits	83	40.3
Groundnuts	63	30.6
Banana with groundnuts	120	58.3
Combinations of meat pies or cakes or chicken pies with malt or soft drinks	64	31.1
Buns	53	25.7
Breads	57	27.7
Fruits	50	24.3
African salad (<i>abacha</i>)	39	18.9
Bambara groundnut (<i>okpa</i>)	74	35.9
Corn meal	39	18.9

*n = Multiple responses

hypertension, 16.9% had hypercholesterolemia and 11.0% had obesity. A greater percentage of respondents' family member (37.5%) that suffered these diseases was their fathers, 34.6% were their relatives and 27.9% were mothers. About 39.8% were within the age range of 29-39 years while only 8.8% was \leq 35years. A greater percentage of the respondents (37.4%) were obese, 25.7% had diabetes mellitus and 25.2% had hypertension while 11.7% had hypercholesterolemia.

Table 6 shows the food consumption pattern of the

respondents. Majority of them (81.0%) ate thrice daily, 13.1% ate twice, while 5.8% ate >3 times daily. More than three quarter (86.8%) of respondents did not skip meals while only 13.2% did skip meals. Nearly all the respondents (96.1%) took snacks with soft drinks.

Table 7 reveals the dietary pattern of the respondents. Majority (86.4%) make use of salad dressing as well as 67.4% as salad cream. Types of spread mainly by respondents were butter (34.5%) and margarine (29.0%). Types of oil used in cooking are mainly pure groundnut

Table 7. Dietary pattern of the respondents.

Variables	Frequency	Percentage
Use of salad dressing		
Yes	178	86.4
No	28	13.6
Total	206	100.0
If yes, which one?		
Salad cream	120	67.4
Mayonnaise	58	32.6
Total	178	100.0
Type of spread		
Butter	69	34.5
Honey	14	7.0
Margarine	58	29.0
Peanut butter	28	14.0
Mayonnaise	15	7.5
Others	22	8.0
Total	200	100.0
Types of oil used in cooking		
Pure groundnut oil	123	68.7
Olive oil	4	2.2
Bleached palm oil	6	3.4
Unbleached palm oil	24	13.4
Pure soybean oil	22	12.3
Total	179	100.0
Form of vegetable oil used in cooking		
Congeaed on cold weather	81	39.3
Uncongealed on cold weather	51	24.8
Both above	74	35.0
Total	206	100.0
Number of times one consumed fried foods		
Not at all	11	5.3
Once daily	30	14.6
2-3 times daily	9	4.4
Once per week	39	18.9
2-3times weekly	117	56.8
Total	206	100.0
Do you reuse the same oil to fry again?		
Yes	125	60.7
No	81	39.3
Total	206	100.0
Snack consumption		
Yes	198	96.1
No	8	3.9
Total	206	100
Types of snacks		
Biscuit	83	13.8
Groundnut	63	10.4
Banana with Groundnut	120	19.9
Meat pies, cake, chicken pie with malt, juices or soft drinks	64	10.6
Buns	53	8.8

Table 7. Contd.

Breads	57	9.5
Fruits	50	8.3
African salad (Abacha)	39	6.5
Corn meal (Agidi).	74	12.3

*n = Multiple responses.

Table 8. Body mass index (BMI) of the respondents.

Body mass index (BMI)	Frequency	Percentage
Underweight	8	3.9
Normal	85	41.3
Overweight	83	40.2
Obesity I	11	5.3
Obesity II	16	7.8
Obesity III	3	1.5
Total	206	100.0

Table 9. Knowledge level on hyperlipidemia of respondents.

Knowledge level	Frequency	Percentage
Poor (0-39%)	83	40.3
Fair (40-69%)	94	45.6
Good (>69%)	29	14.1
Total	206	100.0

oil (68.7%) and unbleached palm oil (13.4%). Mostly (39.3%) used vegetable oil that congeals under cold weather while 35.0% used both congealed and uncongealed vegetable oil in cooking. Fried foods were consumed 2-3 times weekly by 56.8% while 5.3% only do not consume same. The reuse of same oil used for frying were by majority (60.7%). Snack consumption was by 96.1% respondents. Banana and groundnut were the snacks mostly (19.9%) consumed by respondents while 6.5% consumed African salad (abacha).

Table 8 shows the BMI of the respondents. Less than half (41.3%) were normal, 40.2% were overweight, 7.8% were obese (class II), 5.3% were obese (class I), 3.9% were underweight, while 1.5% were obese (class III). Figure 1 shows that females had higher prevalence (34.73 and 31.13%) for overweight and obesity, respectively.

In Table 9, the knowledge levels of the respondents on hyperlipidemia were examined. About 46% of respondents had a fair knowledge, 40.3% had poor knowledge and 14.1% had good knowledge of hyperlipidemia. Figure 1 revealed prevalence of 34.73% overweight and 31.13% obesity amongst the female than the male respondents. Figure 2 also shows the knowledge levels of the

respondents according to their education attainment. More (19.53%) of the respondents that completed tertiary school had good knowledge while none of the respondents that had no formal education had good knowledge. The trend was similar for those who had poor knowledge.

DISCUSSION

Recent rise in the epidemiology of obesity and overweight among the black population gives a lot of concern for nutritionist and health care managers (de Onis et al., 2010; Adeboye et al., 2012). Although lots of factors including environmental and nutritional factors have been adduced to contribute to this prevalence (Adeboye et al., 2012; Steyn and McHiza, 2014), this study examined alcoholic intake and how it contributed to many health challenges among the general Nigeria population.

Majority of the respondents were below 51 years. This by implication explains that most of the subjects were in their middle age. This is similar to a work done by Skylar (2004) where it was shown that most of the respondents were within similar age group. Slightly more than half of the subjects were civil servants. Sedentary work has a predisposing factor on hyperlipidemia.

The study also revealed that a greater percentage (42.0%) of the respondents had family history of diabetes followed by hypertension. This is in agreement with earlier study by Njeleka et al. (2009) among adults in an urban east African setting where it was reported that cardiovascular disease risk factors, including hypertension, hyperlipidemia and diabetes mellitus were prevalent among family members. Gordon and Margaret (2002) in their work also reported that diabetes mellitus runs in certain families and it sometimes co-exist with other cardiovascular related diseases.

Alcohol abuse can certainly lead to obesity. It has been reported that alcohol intake may give an additional 1000 to 3000 calories per day apart from the calories gained from the diet (Traversy and Chapu, 2015). In this study, 66.5% of the respondents consumed alcoholic drink (stout and palm wine) and a few others took other brand of alcoholic drinks. Detailed breakdown showed that 11.6% of the respondents took alcohol daily and 36.7% took alcohol 4-6 times while 51.6% consumed alcohol 1-3

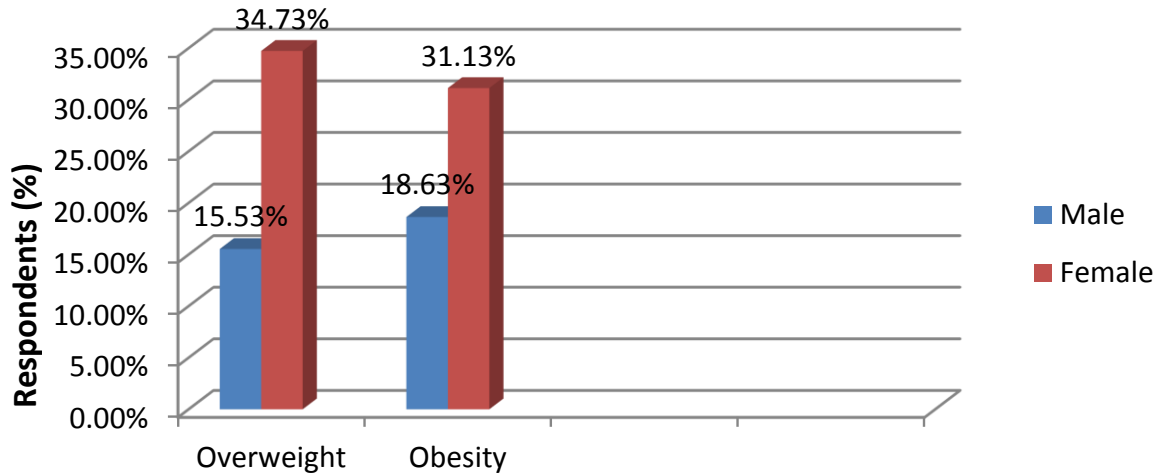


Figure 1. Prevalence of overweight and obesity according to sex.

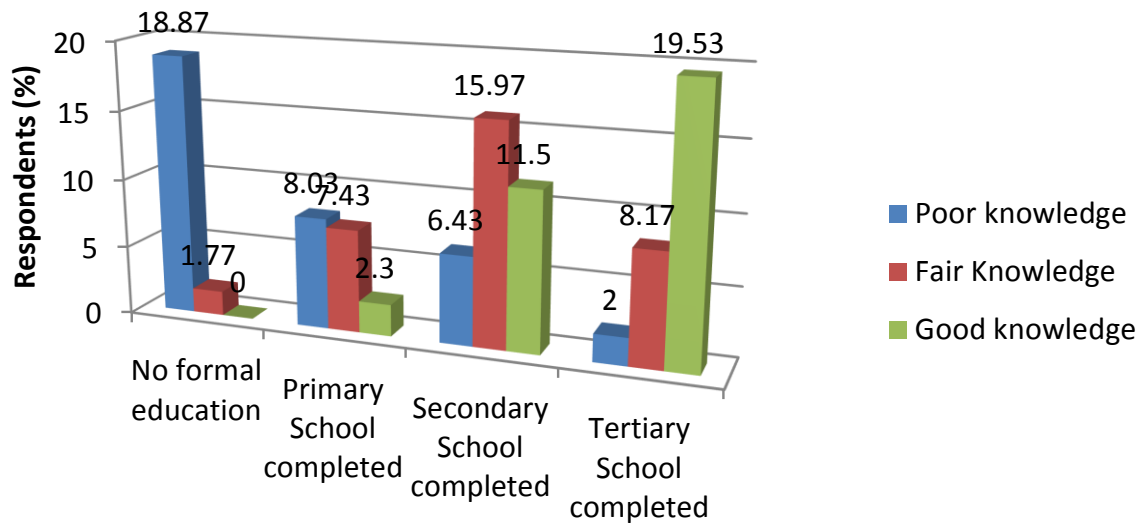


Figure 2. Knowledge level of respondents according to education attainment.

times weekly. This practice may lead to alcohol abuse which is a major risk factor of hyperlipidemia.

Nearly all the respondents (96.1%) consumed snacks. More than half (63.5%) of the respondents consumed biscuit, groundnut and banana, meat pies, cakes, chicken pies with malt juice or soft drink and buns. This practice should not be encouraged for it reflects the poor eating habits of the respondents. These foods are rich in saturated fat and trans fatty fats which may predispose them to hyperlipidemia in the near future. According to Fleming et al. (2013), there is a link between dietary pattern of the people and hyperlipidemia, they recommended from their work that reduction of saturated fat daily intake of 7% calories should be encouraged.

Less than half (40.2%) of the respondents were

overweight and about 14% of them were obese. This is lower than the findings of Daousi et al. (2006) which showed that 86% of the studied subjects were obese. It is also lower than the findings of the study done in Oyo State, Nigeria by Fadupin et al. (2004) where it was found that 83.0% of the out-patients were either overweight or obese.

Some studies have reported a positive association between measure of overweight and obesity and components of lipid profile (Perry et al., 1997). According to Walker et al. (2001), the high proportion of overweight and obesity among respondents in their study may be attributed to socio-cultural factors, namely patterns of work activities, sedentary lifestyle and cultural standard of physical attractiveness in African countries. The higher

overweight and obesity in females than in males gave credence to the findings of Fadupin et al. (2004) where they found out that overweight and obesity were higher in females than males. In developing countries, changes in occupation type and socio-cultural factors that affect physical activity, particularly among women, are related to why there are more overweight and obese women in these countries when compared with men (Kanter and Caballero, 2012).

Poor knowledge was observed in 40 while 46% had fair knowledge of hyperlipidemia, this implies that there is low awareness of the risk factors of hyperlipidemia among the respondents. The poor knowledge was higher (18.87%) among those who had no formal education, good knowledge of hyperlipidemia was higher (19.53%) among those that had tertiary education. This shows that education of the respondents may have had a strong link to the knowledge acquisition of the respondents.

Conclusion

Although, majority of the respondents had fair knowledge of the relationship between hyperlipidemia, diabetes and cardiovascular diseases, the study still showed strong evidence and high prevalence of the risk factors of hyperlipidemia in ESUTH out-patients. This is reflected in their poor drinking habits, that is, alcohol abuse by out-patients. Majority of respondents were either obese or overweight and it was higher in females than male patients. A good number of the respondents had chronic diseases which is also a predisposing factor caused by hyperlipidemia.

Conflict of interests

The authors have not declare any conflict of interest.

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