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INFLUENCE OF AWARENESS OF DIETARY CHOLESTEROL ON CONSUMPTION OF CHICKEN EGGS IN ZARIA

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ABSTRACT
Structured questionnaires were administered on 228 respondents within Zaria and its environs to evaluate the acceptability of chicken egg as food despite its cholesterol content. The study was conducted between May and June, 2009. The questionnaires were retrieved; collated and data analyzed using Statistical Package for Social Sciences (SPSS). The data were analyzed for frequencies and correlated relationships between the measured attributes. The results indicate equal distribution between male (49.6%) and female (50.4%) respondents. The highest percentage of the respondents was between the active age group of 20 to 50 years of age. Most of the individuals interviewed were either single (59.2%) or married (33.3%). About 70% of the respondents had tertiary education while the rest had secondary (27.2%) and primary (3.1) education. The respondents were mainly students, civil servants, academics and private business people and their corresponding respective frequencies were 98, 60, 19 and 51, respectively. Almost all (93.4%) the respondents liked chicken egg as food. 63.2% of the respondents ate an egg per meal while 7% of them did not eat egg at all. Age and profession of respondents significantly ($P<0.05$) affected respondents' likeness for chicken egg. This study therefore, shows that the higher the level of education the more the fear of the cholesterol in chicken eggs.

KEYWORDS: cholesterol, chicken eggs, egg consumption, Zaria.

INTRODUCTION

Cholesterol is the major steroid in animals and is both a structural component of membranes and precursor to a wide variety of steroids (Nelson and Cox, 2005). Chicken eggs contain ovalbumin, which is often used as the gold standard for comparison of proteins from other sources. The ovalbumin of egg white is highly digestible and has a good balance of amino acids to promote health. The yolk contains primarily lipids as both triacylglycerols and phospholipids. The lipids contain mostly heart friendly mono- and polyunsaturated fatty acids (Gunstone *et al*., 1994).

The type of cholesterol that is found in egg is called dietary cholesterol. It is of note that the cholesterol obtained from eggs and other food source (liver, kidneys, prawns, etc.) has much less effect on the level of cholesterol in human blood. Many research results have been able to establish that saturated fats and trans-fats have a greater impact than dietary cholesterol in raising blood cholesterol (Behrenbeck, 2007). The idea that cholesterol causes arteriosclerosis has been touted, researched, and publicized for so many years that, until recently, only few people questioned it. The studies that set out to show a connection between dietary cholesterol and heart disease have failed (McCully and McCully, 1999). There has been a lot of media attention against egg in Nigeria and many other countries of the world because of its cholesterol content. This study was therefore conducted to evaluate the acceptability of chicken egg as food in Zaria, Nigeria despite its cholesterol content.

MATERIALS AND METHODS

The study was conducted in Zaria and its environs between May and June 2009. Zaria is a cosmopolitan city with all the tribal and ethnic nationalities from all parts of Nigeria and other West African countries co-existing (Akpan, 2007). Structured questionnaire was used to obtain information from respondents. A total of 228 respondents were interviewed. Most of the questions asked were closely related to the acceptability of chicken egg as food despite its cholesterol content. Data were collected on the sociological status of the respondents; frequency at which eggs is consumed; protein preference of the respondents; impression of respondents on the influence of egg cholesterol in causing heart diseases and other source of protein in the diet of the respondents. The questionnaires were assembled

and the information gathered was analyzed for frequencies and correlated relationships using Statistical Package for Social Sciences Version 17 (SPSS, 2008).

RESULTS AND DISCUSSION

The social status of respondents is shown in Table 1. The result showed equal distribution of respondents between males (49.6%) and females (50.4%). The highest percentage of the respondents was between the active age group of 20 to 50 years of age. Most of the respondents were either single (59.2%) or married (33.3%). About 70% of them had tertiary education while the rest had secondary (27.2%) and primary (3.1%) education. The respondents were mainly students, civil servants, academics and private business people with their respective frequencies as 98, 60, 19 and 51.

Almost all (93.4%) the respondents liked chicken egg as food (Table 2). More than half (64.5%) of them included plant and animal protein sources in their diet; and 51.3% of them respondents preferred fried egg to boiled egg (36.4%) while the rest (12.3%) consumed egg either fried or boiled. 32.9% of the respondents ate egg at least once a week while 37% of them do not eat egg regularly, possibly due to their ignorance that eggs are the best protein money can buy. One hundred and forty-four respondents (63.2%) indicated that they ate one egg in a meal while 7% did not eat egg at all.

Seventy-five percent of the people interviewed were aware of the presence of cholesterol in egg and 31.1% of them had the impression that egg cholesterol is bad for their health. Fifty-three percent of the people interviewed thought that there is correlation between egg consumption and heart diseases (Table 2). This is contrary to the work of Lea and Griffin (2006). They were able to establish that egg consumption did not have a significant impact on the risk of coronary heart disease through their studies which showed that saturated fat had a much greater effect on blood cholesterol levels than dietary cholesterol from foods such as eggs.

Age and profession of respondents significantly affected respondents' likeness for chicken eggs (Table 3). Educational status of the respondents is a negative factor in their equating egg consumption to the risk of heart diseases. Consumers often lose sight of the fact that eggs are a nutrient rich, affordable contributor to a healthy diet. Despite the presence of 213mg (Watkins, 1995) of cholesterol; egg was discovered to have a high biological value of 93.7% (Carnagey and Beitz, 2005).

Plasma cholesterol is attached to protein to form lipoprotein. Two main kinds of lipoproteins carry cholesterol in the blood. These are: low density lipoprotein (LDL) and high density lipoprotein (HDL). LDL cholesterol or 'bad' cholesterol transports cholesterol from the liver to other tissues in the body. HDL cholesterol is termed 'good' cholesterol because it transports cholesterol from all tissues of the body to the liver for digestion and absorption. McNamara (2000) stated that dietary cholesterol increases both LDL and HDL cholesterol with little change in the LDL:HDL ratio. He concluded that an addition of 100 mg cholesterol per day to the diet increases total cholesterol with a 1.9 mg/dL increase in LDL cholesterol and a 0.4 mg/dL increase in HDL cholesterol. He further explained that dietary cholesterol is not related to coronary heart disease incidence. Sixty-eight percent of the people interviewed in this study thought that it is not necessary to avoid consumption of chicken eggs.

CONCLUSION

This study shows that the higher the level of education the more the fear of the cholesterol in chicken eggs.

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Table 1: Social status of respondents

	Frequency (N)	Percent (%)	Cumulative percent (%)
Sex of respondents			
Male	113	49.6	49.6
Female	115	50.4	100.0
Age of respondents (years)			
Less than 20	33	14.5	14.5
20-30	90	39.5	53.9
31-40	61	26.8	80.7
41-50	35	15.4	96.1
51-60	7	3.1	99.1
61 and above	2	0.9	100.0
Marital Status			
Single	135	59.2	59.2
Married	76	33.3	92.5
Divorced	17	7.5	100.0
Educational status			
Primary	7	3.1	3.1
Secondary	62	27.2	30.3
Tertiary	159	69.7	100.0
Profession			
Student	98	43.0	43.0
Civil servant	60	29.3	69.3
Academics	19	8.3	77.6
Private business people	51	22.4	100.0

Table 2: Preference of respondents

	Frequency (percentage)				
Do you like eggs as a protein source?	Yes	No			
	213 (93.4)	15 (6.6)			
Other source(s) of protein included in meals	Animal protein	Plant protein	Plant and animal protein		
	36 (15.8)	45 (19.7)	147 (64.5)		
Form in which egg is preferred	Boiled	Fried	Boiled or fried		
	83 (36.4)	117 (51.3)	28 (12.3)		
How often do you eat eggs in a week?	Once	Twice	Thrice	Daily	None
	75 (32.9)	42 (18.4)	22 (9.6)	5 (2.2)	84 (36.8)
How many eggs do you eat in a meal?	One	Two	Three	More	None
	144 (63.2)	62 (27.2)	5 (2.2)	1 (0.4)	16 (7.0)
Do you know that eggs have cholesterol?	Yes	No			
	171 (75.0)	57 (25.0)			
Impression about egg cholesterol	Bad	Not bad	I don't know		
	71 (31.1)	28 (12.3)	129 (56.6)		
Influence of egg consumption on the onset of heart disease	Yes	No	I don't know		
	122 (53.5)	16 (7.0)	90 (39.5)		
Other factors can influence blood fat, cholesterol levels and heart disease risk?	Yes	No	I don't know		
	165 (72.4)	11 (4.8)	52 (22.8)		
Do you think it is necessary to avoid consumption of eggs?	Yes	No	I don't know		
	46 (20.2)	155 (68.0)	27 (11.0)		

Table 3: Correlation between social status of respondents and acceptability of chicken eggs

	Do you like eggs as a protein source?	How many eggs do you eat in a meal?	Do you know that egg have cholesterol?	Correlation between egg consumption and the risk of heart disease
Age	0.13*	0.07 ^{NS}	-0.02 ^{NS}	0.02 ^{NS}
Educational status	-0.03 ^{NS}	0.04 ^{NS}	-0.07 ^{NS}	-0.14*
Profession	0.13*	0.1 ^{NS}	-0.04 ^{NS}	-0.08 ^{NS}
Marital status	0.08 ^{NS}	0.13 ^{NS}	-0.06 ^{NS}	0.01 ^{NS}

* Correlation is significant at the 0.05 level; ^{NS} Correlation is not significant.

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