DIETARY SUPPLEMENT INTAKE ASSESSMENT AMONG STAFF OF OBAFEMI AWOLOWO UNIVERSITY, ILE IFE, OSUN STATE, NIGERIA

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ABSTRACT

Dietary supplement market is one of the world's fastest growing industries. It's poorly regulated and intake without prescription is high. The study focused on dietary supplement intake assessment among the staff of Obafemi Awolowo University, Ile – Ife, Osun state, Nigeria. One hundred and eighty civil servants took part in the study and were selected using multi stage random sampling. Food consumption score measuring scale was used to assess dietary pattern over 7 days with score profiles (Poor = 0 – 21, Borderline = 21.5 – 35 and Acceptable = greater than 35). A modified food frequency table was used to assess dietary supplement intake. Dietary supplements identified in this study were assigned scores of 1 = minimum and 25 = maximum. The scores were further categorised as low, medium and high using the mean and standard deviation. Reasons for intake were assessed using a structured questionnaire. Only 35.6% were aged 41-50 years, 52.2% were males, 47.8% were females, 67.8% earned above ₦100,000 monthly and 98.9% had acceptable dietary pattern. Respondents had low score (3.3%), medium score (80.0%) and high score (16.7%) intake of supplements. Also, 43.9% used dietary supplement for prevention of disease and treatment (15.0%) while 41.1% had no reason for use. Supplement with the highest consumption were vitamin/mineral (34.5%) and tea (19.0%). Sex, religion and ethnicity had significant relationship with intake of dietary supplement ($p < 0.000$). It is concluded that there is medium consumption of supplement which some consumed without any reason. It is recommended that use of dietary supplements should be recommended by a physician to avoid toxicity of vitamins and minerals

Keywords – ***assessment; intake; dietary; supplement; workers.***

INTRODUCTION

The dietary supplement industries are poorly regulated and they take in billions of dollars per year (Jackie, et. al., 2013). Among all other complementary therapies, dietary supplements are one of the easiest to access. Their popularity is related to increasing public awareness about health and health related issues (Idung & Umoh, 2015). A 2002 National Health Interview Survey in the United States revealed that 1 in 5 adults reported using a herb for either treatment of health conditions and/or for health promotion (Gardiner, et. al., 2007). The use of dietary supplements worldwide has been on a steady increase because of lack of proper communication between patients and physicians. Patients often do not disclose their use of dietary supplements to their physicians which might cause adverse health implications because physicians further give orthodox medications to patients who might be using supplements already in an attempt to promote health, prevent or treat diseases (Idung & Abasiubong, 2016).

Recently in Nigeria, many dietary supplements are marketed under different names. They have been imported into Nigeria from China, Japan, India, and South-Africa. Individuals with high socioeconomic status make better lifestyle choices. Also, educated people are more likely to have lifestyles patterns that are less stressful physically and emotionally (Idung & Umoh, 2015). Females who are, educated beyond secondary school level, older, earn higher income, with lower body mass index, are self-employed, participate in physical activities, consume more fruits and/or vegetables, consume less fat, enjoy eating out, take less processed foods, have higher stress levels, are non-smokers, and take moderate or no alcohol tend to be faithful users of dietary supplements however not in all cases (Greger, 2001). Though supplement users tend to be more educated, there is no correlation found between the consumption supplements and nutritional knowledge (Kim, Schroeder, Houser & Dwyer, 1999).

Poor healthcare systems in many developing countries and the average cost of developing a new pharmaceutical drug has made the use of herbal and other alternative therapies, attractive substitutes (Bala & Ahmed, 2008).

Since the establishment of the National Centre for Complementary and Alternative Medicine (NCCAM) in 1998 in the United States, the availability of information concerning appropriate use and place in therapy of dietary supplements has increased; though not all information were positive as several large, controlled clinical trials revealed that many dietary supplements have important safety concerns alongside being inferior to general pharmaceuticals or placebos (Barnes, Anderson & Phillipson, 2001; Jepson, Williams, & Craig, 2012; Rizos, Ntzani, Bika, Kostapanos, & Elisaf, 2012; Tacklind, Macdonald, Rutks, Stanke,. & Wilt,, 2012).

It is therefore imperative that health care providers must be familiar with the most common dietary supplements especially herbs because of supplements-to-drugs interactions which might have lethal implications on the patients if not compactible (Idung & Umoh, 2015). The main objective of this study was to assess the dietary pattern of respondents. Specifically, the study investigated the intake of dietary supplement and reasons for consumption of dietary supplements among civil servants.

METHODOLOGY

Study Population: This descriptive research was carried out among staff (between ages 21 – 70 years) of Obafemi Awolowo University, Ile – Ife, Osun state, Nigeria.

Sample size determination and procedure: Multi-stage sampling procedure was adopted for the study. Obafemi Awolowo University has 13 faculties from which 6 were selected at random. From the selected faculties, 4 departments were selected randomly, from the average of 8 departments per faculty. In each of the departments, 8 respondents were further selected at random. A total of 192 respondents were selected for the study.

Method of data collection

A self-administered questionnaire was used to collect information from 192 respondents. Information collected included; socio-economic characteristics of respondents, dietary pattern of respondents, frequency of intake of dietary supplements and reasons influencing the intake of dietary supplements.

Data analysis

The data was collected and analysed with statistical Package for Social Sciences (SPSS), using descriptive statistical analysis such as the frequency counts and percentage. Correlation and the relationship between socio-economic characteristics and intake of dietary supplement was established using chi-square. Twelve of the questionnaires were not properly completed and were not included in the analysis hence, one hundred and eighty questionnaires were analysed.

Dietary pattern

The food consumption score measuring scale by World Food Programme (WFP) (2008) was used to assess the dietary pattern of respondents over 7 days. Seven food groups were assessed which included staples, pulses, vegetables, fruit, meat and fish, milk, sugar and oil, fat or butter. The food consumption score was categorised into 3 using the food consumption score profiles (Poor = 0 – 21, Borderline = 21.5 – 35 and Acceptable = greater than 35) by WFP.

Frequency of intake of dietary supplement

The respondents were asked to report their usual frequency of intake of each dietary supplement from a list of dietary supplements for a specific period ranging from once daily to 7 times daily and occasionally. The list of dietary supplements included those in the following categories; vitamins or minerals supplements, non-vitamins or non-minerals supplements, tea and others. All the supplements used were scored for each person with the minimum as 1 and maximum as 25. The scores were further categorised into low medium and high using the mean and standard deviation (Less than or equal to 1 as low, 2 – 5 as medium and 6 and above as high).

RESULTS

Table I shows that majority (91.6%) of the respondents were between 31-60 years and only 0.6% of the respondents were between age 61 – 70 years. Half (47.8%) were females, only 1.1% had primary education and others have above secondary education (98.9%). Majority (67.8%) had income greater than ₦100,000 monthly.

Table I: Socio-economic characteristics of respondents

Socio-economic characteristics	Frequency (180)	Percentage (%)
Age (years)		
21-30	14	7.8
31-40	55	30.4
41-50	64	35.6
51-60	46	25.6
61-70	1	0.6
Sex		
Male	94	52.2
Female	86	47.8
Total	**180**	**100**

Level of education		
Primary education	2	1.1
Secondary education	47	26.1
Tertiary education	88	48.9
Post Graduate	43	23.9
Monthly Income (₦)		
21,001 - 40,000	7	3.9
41,001 - 60,000	12	6.7
61,001 - 80,000	19	10.5
81,001 - 100,000	20	11.1
>100,000	122	67.8

Food Consumption of Respondents

Most (81.7%) consumed cereals, pulses (80.5%) and consumed meat and fish (82.7%) for 4 – 7 days. Half (50%) of the respondents consumed vegetables, fruits (34.4%) and milk (70.6%) for 0 – 3 days (Table II). Figure I shows that none of the respondents had low food consumption score, most (98.9%) had acceptable score and just (1.1%) had borderline range.

Table II: Frequency of food consumption of respondents

Food consumption of respondents	**Frequency of food consumption**			
	1 – 3 days		**4 – 7 days**	
Food group	**Freq.**	**(%)**	**Freq.**	**(%)**
Cereals	33	18.4	147	81.7
Pulses	35	19.4	145	80.5
Vegetables	90	50	90	50
Fruits	62	34.4	118	65.6
Meat and fish	31	17.3	149	82.7
Milk	127	70.6	53	29.4
Sugar	88	48.8	92	51.2
Oil, fat & butter	40	22.3	140	77.7

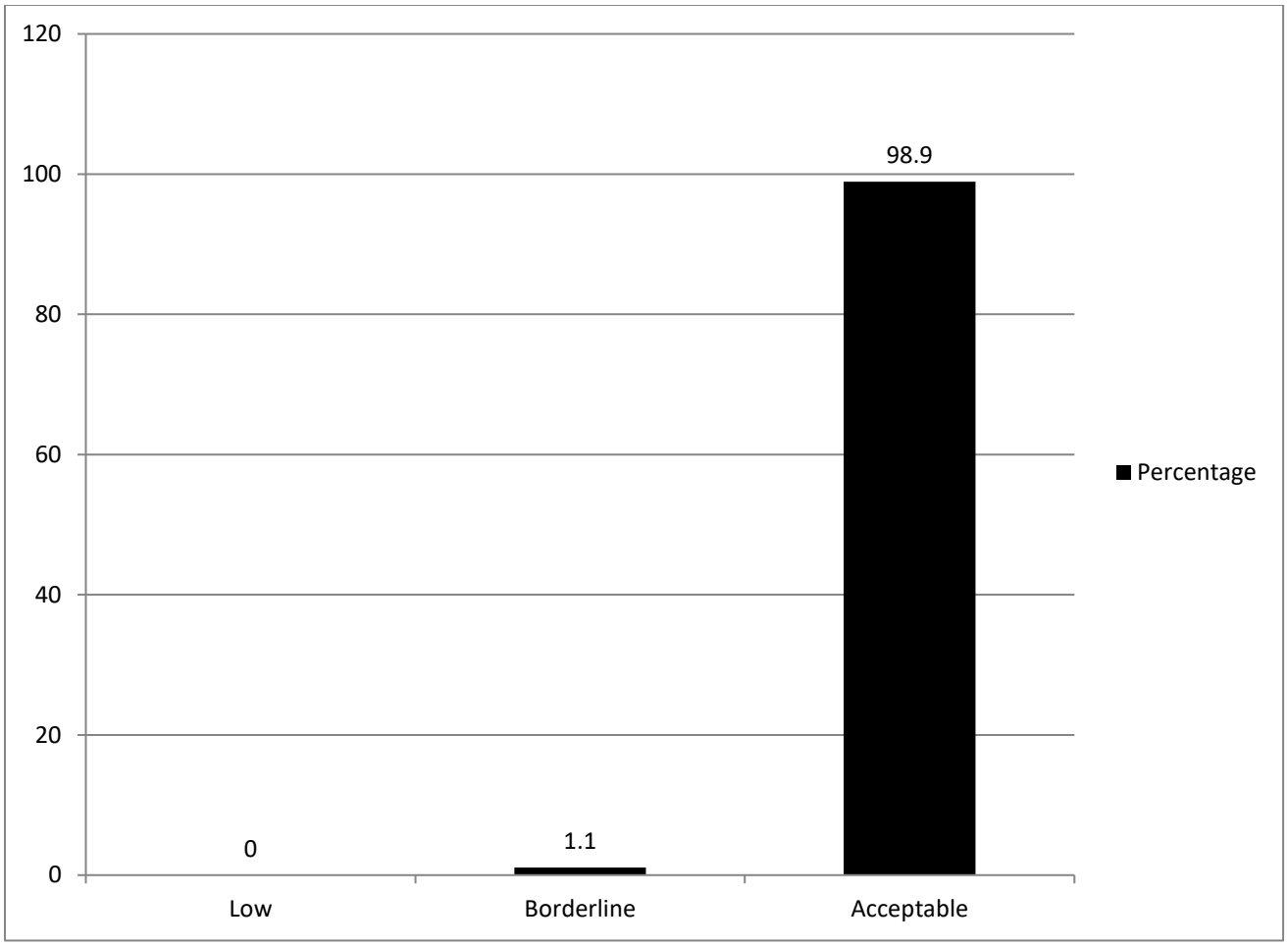

Figure I: Percentage of food consumption score of respondents

Intake of Supplements

Table III shows that about half (55.0%) of the respondents used vitamin C and only 3.3% used Omega 3 salmon oil occasionally, 2.8% blood pressure formulation 1 to 3 times daily and none of the respondents used any other supplement except vitamin C (0.6%) above 3 times daily. As seen on Figure II respondents had low(3.3%), medium intake(80.0%) and high(16.7%) intake of supplements. However consumption was higher among males (75.0%) than females(69.0%).

Table III: Frequency of intake of supplements

Supplements	1-3 times daily		>3 times daily		Occasionally	
	Freq.	(%)	Freq.	(%)	Freq.	(%)
Vitamins/ Minerals supplements						
Vitamin C	25	13.9	1	0.6	99	55.0
Vitamin B	6	3.3	0	0.0	7	3.9
Cac 1000	5	2.8	0	0.0	9	5.0
Orheptal blood tonic	16	8.9	0	0.0	9	5.0
Formula IV plus virus	7	3.9	0	0.0	1	0.6
Super IQ brain function	2	1.1	0	0.0	0	0.0
Supreme immune booster	1	0.6	0	0.0	0	0.0
Calming chronic stress	1	0.6	0	0.0	0	0.0
Total	**63**	**34.5**	**1**	**0.6**	**125**	**69.5**
Non-vitamins/ Non-Minerals supplements						
Aloe vera plus	5	2.8	0	0.0	4	2.2
Omega 3 salmon oil	1	0.6	0	0.0	6	3.3
Omega 3 capsules	2	1.1	0	0.0	3	1.7
Bladder and yeast infection	1	0.6	0	0.0	0	0.0
Total	**9**	**5.1**	**0**	**0.0**	**13**	**7.2**
Tea						
Tianshi tea	14	7.8	0	0.0	15	8.3
Pine pollen tea	2	1.2	0	0.0	0	0.0
Moringa Oleifera	18	10	0	0.0	34	18.9
Total	**34**	**19**	**0**	**0.0**	**49**	**27.2**
Others						
Garlic alliums complex	1	0.6	0	0.0	4	2.2
Thermogenic	1	0.6	0	0.0	0	0.0
Full Motion	2	1.1	0	0.0	0	0.0
Blood pressure formulation	5	2.8	0	0.0	1	0.6
Diabetes care package	0	0.0	0	0.0	1	0.6
Total	**9**	**5.1**	**0**	**0.0**	**6**	**3.4**

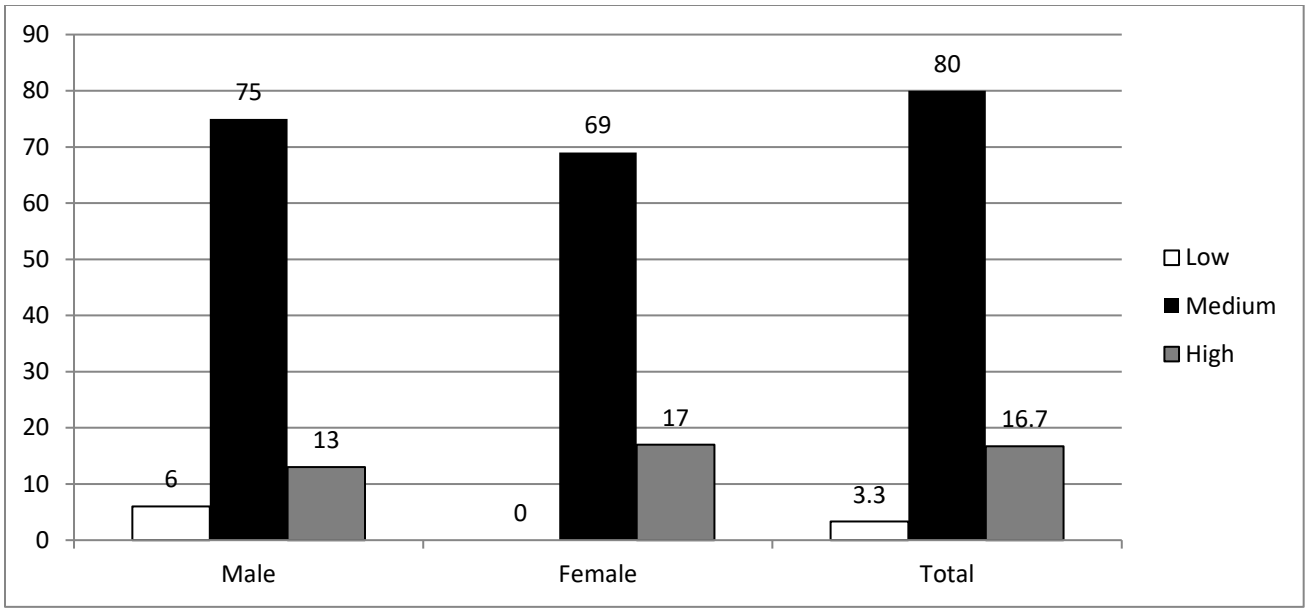

Figure II: Level of intake of dietary supplement

Reasons for intake of supplements

Only 43.9% of the respondents used dietary supplement for prevention of disease, 15.0% as part of treatment for a disease condition and 41.1% had no-reason as shown in Table IV. Some (25.0%) of the respondents used dietary supplements as recommended by a medical practitioner, 27.8% as recommended by a friend or a colleague and 47.2% as recommended by the sales representative. Only, 8.3% never saw advertisement on dietary supplements and 46.6% saw it regularly.

Table IV: Reasons for intake and source of information of dietary supplements

Reasons for intake of dietary supplements	Frequency (180)	(%)
No reason	74	41.1
Prevention disease	79	43.9
Treatment of disease	27	15.0
Who recommended supplements		
Medical doctor / Practitioner	45	25.0
Friend / Colleague	50	27.8
Sales representative	85	47.2
Number of advert seen on supplements		
Never	15	8.4
Rarely	42	23.4
Regularly	119	66
Once a week	2	1.1
Twice a week	2	1.1

Socio economic characteristics and intake of supplements

As seen on Table V, correlation analysis showed that age, household size, number of children and years of formal education showed no significant relationship with the intake of dietary supplement.

Table V: Relationship between socio-economic characteristics of the respondents and intake of dietary supplements

Socio-economic characteristics	Intake of dietary supplement	
	Correlation coefficient (r)	p-value
Age	0.026	0.644
Household size	0.014	0.808
Number of children	0.037	0.528
Years of formal education	-0.018	0.742

Chi-square analysis of socio economics characteristics and intake of supplements

Table VI shows that, marital status and income did not have significant ($p > 0.05$) relationship with intake of dietary supplements having (p- values of - 0.468 and 0.246,) respectively. However, sex, religion and ethnicity had significant ($p < 0.05$) relationship with intake of dietary supplements.

Table VI: Association between socio-economic characteristics and intake of supplements

Variables	Intake of dietary supplement						
Socio-economic characteristics	Low		Medium		High		P value
	(Freq.)	(%)	(Freq.)	(%)	(Freq.)	(%)	
Sex							
Male	6	3.3	75	41.7	13	7.2	0.040
Female	0	0.0	69	38.33	17	9.44	
Marital status							
Single	1	0.6	10	5.6	1	0.6	0.468
Married	5	2.8	134	74.4	29	16.1	
Religion							
Christianity	4	2.2	108	60.0	25	13.9	
Islamic	1	0.6	36	20	5	2.8	0.000
Traditional	1	0.6	0	0.0	0	0.0	
Ethnicity							
Yoruba	3	1.7	119	66.1	20	11.1	
Igbo	0	0.0	18	10.0	9	5	0.000
Hausa	3	1.7	5	2.8	1	0.6	
Others	0	0.0	2	1.1	0	0.0	
Income (₦)							
21,001 – 40,000	0	0.0	6	3.3	1	0.6	
41,001 – 60,000	1	0.6	10	5.6	1	0.6	
61,001 – 80,000	0	0.0	13	7.2	6	3.3	0.246
81,001 – 100,000	2	1.1	13	7.2	5	2.8	
>100,000	3	1.7	102	56.7	17	9.5	

DISCUSSION

Research has demonstrated that higher socioeconomic status (SES; annual income and education level) is related to healthier food choices in adult populations (Darmon & Drewnowski, 2008). The result of this study revealed that most of the respondents had healthy dietary pattern with an acceptable food consumption score, and most of them consumed dietary supplements which is in agreement with Murphy, White, Park & Sharma *(*2007) and Sebastian, Cleveland, Goldman, & Moshfegh (2007). Users of dietary supplements have been linked to having higher nutrient intakes from food, indicating that they pay close attention to their diets.

This study showed frequent use of dietary supplements among the respondents and this finding was in agreement with that reported by Gardiner, *et. al*., 2007. The most popular dietary supplements used by the respondents were the vitamin or mineral based supplements. Supplement use is positively related to several health-related characteristics (Radimer, et. al., 2004) as this study showed that among the respondents, 43.9% used dietary supplement as part of prevention of disease and only 15% used it as part of treatment of a disease condition. This put forward that many people use dietary supplements as one of the steps in a larger plan to adopt a healthy lifestyle. Dietary supplement consumption may be directly linked with socio-economic characteristics, psychological factors, health related characteristics, and a case of disease (Ishihara, Sobue, Yamamoto, Sasaki & Tsugane, 2003).

Dietary supplements were previously used as part of a remedial process for malnutrition which was a major health issue. However, prevention and treatment of diseases are now among the top reasons why dietary supplements are used as nutritional supplement. For example, dietary supplements and herbs are reported to have notable physiological effects. Fish oil supplementation has also been reported to have beneficial effect on hypertension (Fugh-Berman, 2000).

The results from the research revealed that only 25% of the respondents used dietary supplements recommended by a medical doctor or practitioner, 27.8% by friends or colleagues while 47.2% was sales representatives. Ease of accessibility and lack of accountability to healthcare professionals on the intended use of the supplement added greatly to the popularity of dietary supplements (Gardiner, et. al., 2007). Most dietary supplement users, including African Americans, often self-prescribe herbs and natural products based on information obtained from other sources and non-health care professionals (Kennedy, 2005).

Studies have also shown that the media play important role in the decision to use supplements (Scofield & Unruh, 2006; Chung, Hwang & Kim, 2007). The population is increasingly exposed to more information from the media than from the scientific community (Winterstein & Storrs, 2001; Millen, Dodd, & Suber, 2004). Supplements in general, are advertised and sold as serving several purposes, such as to improve performance, decrease body fat, increase muscle mass, prevent illness and disease, help control or lose weight, treat medical problems, increase alertness, boost immunity and reduce stress. Supplements are frequently regarded as ‘‘miraculous products’’ that are believed to produce ‘‘magical results’’ in a short period. Often, they are taken to compensate for inadequate dietary intake (Krumbach, Ellis & Driskell, 1999;

Morrison, Gizis & Shorter, 2004; Erdman, Fung & Reimer, 2006; Braun, et. al., 2009). The media certainly must have been the reason while 41.1% of the respondents in this study used dietary supplement.

CONCLUSION AND RECOMMENDATIONS

Based on the findings from this research, it was discovered that most of the respondents had acceptable dietary intake and yet have medium intake of dietary supplements. Supplement mostly consumed were vitamin/mineral and tea. Almost half of the respondents have no reason for intake. It is recommended that supplement intake should be recommended by a physician to avoid toxicity of vitamins and minerals.

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