

# Use of Dietary Supplements among Teachers in Public Secondary Schools in Kikuyu, Kiambu County, Kenya: A Cross Sectional Analytical Study

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## ABSTRACT

**Background:** The dietary supplements market is growing at an alarming rate despite dietary source being acknowledged as the primary and priority source of nutrients. Kenya's dietary supplements market has experienced a steady growth since 2009 owing to increasingly busy lifestyles, growing health consciousness and disposable income among the general population. Little has been documented about use of dietary supplements in Kenya despite their increase in popularity. The study sought to determine dietary supplements use among teachers in public secondary schools in kikuyu, Kiambu County, Kenya.

**Methodology:** A cross-sectional analytical study design was administered on a simple randomly selected sample of 178 teachers. A researcher administered questionnaire was used to collect data on demographic and socio economic characteristics and dietary supplements use of the participants. Statistical Package for Social Sciences (SPSS) version 22 was used to analyse data.

**Results:** The mean age of the participants was  $38 \pm 9.755$ . Majority were females (60.7%), married (65.7%) with 67.4 % having a university degree. Over half of the participants had an average monthly household income of Kshs  $>50,000$ . The prevalence of dietary supplements use among the teachers was 28.7%. The main type of supplement taken was Omega 3 and 6 (60.8%). There was significant relationship between demographic and socio economic characteristics of the participants and the use of dietary supplements ( $p < 0.05$ ) with the adjusted logistic regression identifying age, gender and income levels as the potential predictors of supplement use.

**Conclusion:** Female teachers and those above 40 years were more likely to take supplements. About half of the teachers had an average household income of  $\geq$  ksh50,000. Almost a third of the participants (28.7%) took dietary supplements with most of the supplements users taking omega 3 and 6 and calcium tablets on prescription or as a prophylactic measure. Due to the increased number of people (28.7% prevalence) using dietary supplements among the general population, there is need for a solid foundation of regulatory framework to forestall consumer exploitation and promote their safety as well as prevent abuse of the products by consumers.

**Key words:** Dietary supplements, Dietary supplements use, school teachers

## INTRODUCTION

The Global market for dietary supplements appears to be growing at an alarming rate. Over the last decade, sales of dietary supplements have soared due to swelling demand and many new companies have now invested in the dietary supplements (DS) industry, <sup>[1]</sup> with more

people appearing to appreciate the value of good health. <sup>[2]</sup> It is reported that upsurge in lifestyle diseases, healthcare costs and the ever growing aging population are some of the factors driving the growth in the DS industry in different places across the world. <sup>[3-5]</sup>

In Kenya, according to Euro monitor Kenya, [6] the consumption of various brands of dietary supplements in the country has increased since 2009 as individuals become more mindful of their health, coupled with rising disposable incomes. Besides, people seem to increasingly adopt busier lifestyles that militate against good dietary practices. [7,8]

For promotion of good health, it is important to ensure adequate intake of essential nutrients by having a variety of foods and increasing the number of food groups consumed. [5] Other studies concludes that dietary supplements can help bridge the gap between dietary intakes and the recommended nutrient intakes (RNIs) for various micronutrients in situations where the latter may not be easily attainable through normal diet. [9]

Although many studies have described the prevalence, trends and the dynamics in the use of dietary supplements in various populations, [10-12] they are mostly restricted to profiled groups or to medically challenged subjects who often use dietary supplements alongside drug prescriptions. In Kenya, there exists minimal empirical evidence regarding dietary supplements usage among the general adult population. This study, therefore intends to use teachers as a representation to fill in a gap in the literature on dietary supplements use in a general population. The purpose of this study was to establish the use of dietary supplements among teachers in Kikuyu, Kiambu County, Kenya.

### **Objectives of the study**

The specific objectives of the study were to:

1. Establish the demographic and socio economic characteristics of the teachers in public secondary schools in Kikuyu Sub-County.
2. Determine the prevalence of dietary supplements use among teachers in public secondary school in Kikuyu Sub-County.
3. Establish the relationship between demographic and socio-economic characteristics and use of dietary

supplements among teachers in public secondary schools in Kikuyu Sub-County.

## **MATERIALS AND METHODS**

A cross-sectional analytical study design was adopted in the study

### **The study population**

The study targeted teachers in public secondary schools as they typically represent the Kenyan working class in the lower middle income bracket which constitutes the majority the working population in Kenya. They are also considered as key decision makers in the local community hence they can influence opinion about use of certain products in the local context.

### **Data collection tools**

A researcher-administered questionnaire was used to source for data from the participants. The questionnaire gathered information on demographic and socio economic characteristics of the participants and the use of dietary supplements which included the types of supplements used, frequency of usage, reason for use as well as the nature and sources of information regarding dietary supplements.

### **Data analyses**

Statistical analysis was conducted using the Statistical Package for Social Sciences (SPSS) version 22 for data analysis. Data collected on demographic, socio economic and use of dietary supplements was analyzed using quantitative methods by use of descriptive statistics such as means, percentages and frequencies. Chi square tests was used to test relationships while odds ratio was used to test associations between demographic and socio economic characteristics and use of dietary supplements. Statistical significance was set at  $p < 0.05$ .

### **Ethics approval and consent to participate**

Ethical clearance and approval was obtained from Kenyatta University Ethical Review committee dated April 24, 2017, Reference

Number KU/ERC/APPROVAL/VOL.1(46). A research permit was also obtained from National Council of Science, Technology and Innovation (NACOSTI) Reference Number NACOSTI/P/17/81154/16992 dated May 8, 2017. The participants gave verbal consent before the questionnaire was administered. There was full disclosure of possible benefits and compensation. The participants were free to pull out from the study at whatever level.

## RESULTS

### Demographic Characteristics of the Participants

The mean age of the participants was  $38 \pm 9$  years with the youngest teacher being 21 years and the oldest at 58. On gender distribution, 61% of the respondents were females which could be attributed to better quality urban service and living conditions, which attract females. Close proximity to the city of Nairobi to Kikuyu also attracts married women whose spouses work and reside in Nairobi and its environs. Majority of the participants were married (65.7%) (Table 1).

Table 1: Demographic characteristics of the study participants N=178

Characteristic	n	%
<b>Age group (Years)</b>		
<30	48	27
31-40	44	24.7
41-50	65	36.5
51-60	21	11.8
Mean age $38 \pm 9.755$		
<b>Gender</b>		
Male	70	39.3
Female	108	60.7
<b>Marital status</b>		
Married	117	65.7
Single	56	31.5
Widowed/Divorced	5	2.8

### Socio-economic Characteristics of the Participants

Level of Education of the Participants  
Majority (67%) of the participants had an undergraduate degree while masters degree holders and diploma holders accounted for 19% and 14% of the sample respectively (Figure 1).

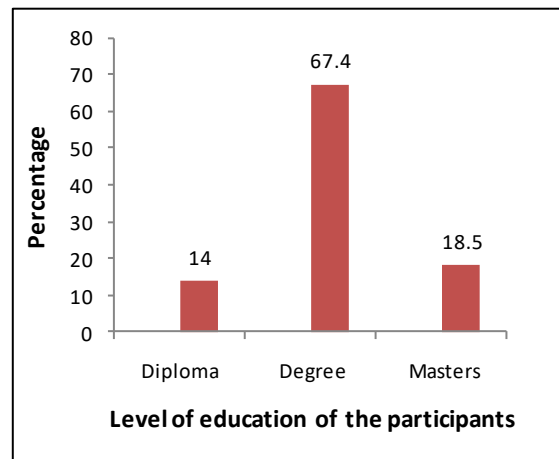


Figure 1: Level of education of the teachers

### Level of Income of the Teachers

The average monthly household income covered the net household income from all members contributing to the household expenses. Majority of the participants (53.9%) had a household income of more than Ksh 50,000, with only 4.5% of the participants having a household income of less than Ksh 20,000 (Table 2).

Table 2 : Level of income of the participants per month N=178

Income	n	%
Average monthly household income		
≤ 20,000	8	4.5
20,001-30,000	30	16.9
30,001-40,000	24	13.5
40,001-50,000	20	11.2
>50000	96	53.9

### Prevalence of dietary supplements.

The prevalence of dietary supplements use among the teachers was 28.7% (Figure 2).

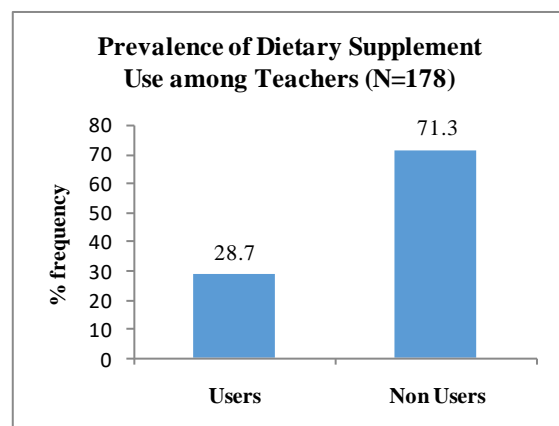


Figure 2: Prevalence of dietary supplements use

### Types of Dietary Supplements Taken and Frequency of Use

The main types of supplements taken included Omega 3 and 6 which were used by 60.8% of the DS users, followed by calcium supplements (56.9%). 64.7% of the supplements users reported taking the supplements on daily basis (Table 3).

Table 3: Type of supplement and frequency of use of dietary supplements N=51

Type of supplement	n	%
Omega 3 and 6	31	60.8
Calcium supplements	29	56.9
Multivitamins	10	19.6
Iron tablets	8	15.7
Spirulina	4	7.8
Frequency of intake	n	%
Daily	33	64.7
Weekly	10	19.6
Monthly	3	5.6
Rarely	5	9.8

\*Multiple responses allowed

### Reasons for Taking Dietary Supplements

The reasons the dietary supplement users gave for taking supplements were varied (Table 4). The majority (59.6%), of the participants said they took the supplements on prescription. 29.8% and 25.5%, said they took them to prevent diseases or deficiencies and promote good health respectively, while 2.1% used them to prevent aging or for cosmetic purposes.

Table 4: Participants reasons for taking dietary supplements N=51

Reasons for taking supplements	n	%
On prescription	28	59.6
Prevent diseases or Deficiencies	14	29.8
Promote health	12	25.5
Beauty or to prevent aging	1	2.1

\*Multiple responses allowed

### Participants Sources of Dietary Supplements

Most of the participants had multiple sources for the supplements with the majority (60.8%) getting their supplements from pharmacies, non-chemist supplements stockiest (47.1%) and health facilities (43.1%). The least reported source friends/family by 15.7% of the users (Table 5)

Table 5: Sources of dietary supplements N=51

Sources of supplements	n	%
Pharmacies	31	60.8
Supplement stores	24	47.1
Health facilities	22	43.1
Friends and Family	8	15.7

\*Multiple responses allowed

### Sources of Information on Dietary Supplements Use

The main source of information regarding use of dietary supplements were doctors/nurses (66.7%), followed by the internet (62.7%), Corporate marketing agents (47.1%) and nutritionists (23.5%). The least reported sources of information were the mainstream media (9.8%) and the social media by 5.9% of the participants (Figure 3).

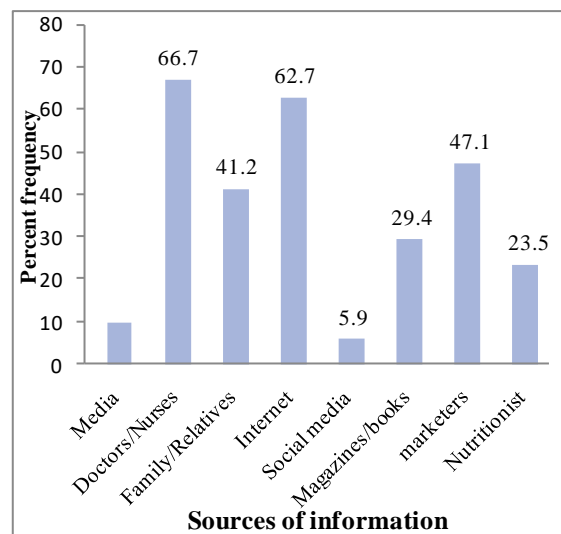


Figure 3: Sources of information on dietary supplement use

### Relationship between Demographic and Socio-economic Characteristics and the Use of Dietary Supplements

Chi square test revealed that there was significant relationship between demographic and socio economic characteristics of the participants (age, gender, marital status and average household income) and the use of DS ( $p < 0.05$ ). (Table 6). However, this study did not establish any significant relationship between the participant level of education and DS use ( $p = 0.150$ ).

Table 6: Relationship between demographics and socioeconomic characteristics and prevalence of dietary supplement use

Variable	$\chi^2$ /Likelihood ratio	df	P value
<b>Prevalence Vs.</b>			
Age	16.831	2	0.001*
Gender	15.191	1	0.000*
Marital status	10.290	2	0.006*
Average household income	9.088	4	0.049*
Level of education	3.793	2	0.150

\*significant ( $P < 0.05$ )

Further, all the above variables were fitted on the logistical regression equation to identify the predictor of supplement use (Adjusted Odds Ratio). The adjusted logistic regression identified age (AOR:3.2; C.I; 1.811-8.956; P value=0.023), gender (AOR: 4.89; C.I; 1.951-12.261; P value=0.001), and income levels (AOR: 2.313; C.I;1.988-4.161;P value=0.028) as the potential predictors of supplement use. (Table 7).

**Table 7: Demographic and socio-economic predictors of dietary supplement use**

Variable	Odds Ratio	95% CI		P-value
		Upper	Lower	
Age				
21- 30	**			
31-40	2.313	8.282	0.646	0.198
41 and above	3.252	8.956	1.181	0.023*
Gender				
Male	**			
Female	4.891	12.261	1.951	0.001*
Marital status				
Single/Widowed	1.988	19.622	0.201	0.556
Married	1.017	7.975	0.130	0.987
Education level				
Diploma	**			
Degree	1.054	4.456	0.249	0.943
Masters	1.115	3.075	0.404	0.834
Household Income				
≤ 20000	**			
20001-30,000	1.964	11.194	0.345	0.447
30,001-40,000	0.901	3.948	0.206	0.891
40,001-50,000	0.435	1.855	0.102	0.261
≥50,001	2.313	4.161	1.988	0.028*

\*significant at (P<0.05)

Reference category: Not using supplements\*\*: Base category

## DISCUSSION

The use of dietary supplements established by the current study (28.7%) among participants falls below that reported in another study where almost a half (47.7%) of US adults aged 20-69 were taking at least one DS in the previous month. [13] The higher prevalence could be attributed to better socio economic environment that prevail in developed countries which imply both better access to information on dietary supplements and purchasing power. [14] Currently, there are no studies on use of dietary supplements in Kenya on a general population.

The main types of supplements taken by the DS users were Omega 3 and 6, calcium supplements, multivitamins, iron tablets, with most of the participants

reporting daily supplement intake. This corroborates the other findings who all reported calcium, multi vitamins, fish oils and iron as being the commonly used dietary supplements. [15-17] The highly unsaturated fatty acid (HUFA) supplements are particularly becoming popular due to their reported enhancement of cardiovascular health a growing health threat assuming public importance in Kenya. [2] Calcium supplements are popular with the older people trying to prevent/manage musculoskeletal conditions such as osteoporosis and osteoarthritis. [18]

Supplements taken on prescription, prevention of diseases or deficiencies and to promote health established in this study as the main reasons for taking supplements are consistent with other studies that reported dietary supplements usage for maintenance of good health, bone health, and filling nutrient gaps. [19-21] In this study, the main sources of supplements were pharmacies, health facilities, supplement stores with the least cited source being family/friends. These findings indicate that most dietary supplement users do so on prescription hence the main sources of DS supply were found to be health facilities including pharmacies. These findings underscore the important role that should be played by healthcare professionals as a credible source of information to their clients.

Majority of dietary supplements users cited health workers as being the primary source of information unlike in a number of surveys showing that most of people who use dietary supplements or other forms of alternative therapy do not tell their physicians or pharmacists. [22-24] This could be related to the credibility attached to the healthcare workers, by most people, as a source of health-related information. The internet came second as a major source of information on dietary supplements use which corroborates a study on Croatian students whose prevalence of use of the internet as a source for dietary supplements usage was also high as a trusted source of information. [25] The findings underscores

the growing importance of the internet as platform of passing nutritional information in the country and which nutrition IEC interventions need leverage. [26]

The study established a significant relationship in dietary supplements usage with age, gender, marital status and income levels of the participants which is consistent with other studies where dietary supplement usage in adults was consistently reported to be higher as one grows older and moves upward the income ladder. [16,27,28] In this study, older teachers were more likely to take supplements as compared to younger teachers. This could however be an indicator that older people tend to have more challenges in achieving adequate nutrient supply to the body (intake, absorption, and metabolism) hence the need for nutritional support through supplements. Furthermore, within each sub-set, women were more likely than men to take supplements. These could be attributed to women being generally, more conscious of their health than men. [29] The higher uptake of supplemental calcium and vitamin D amongst women could be occasioned by the concern about the growing burden and impact of osteoporosis and hence the need for maintaining bone health and prevent/delay the onset of osteoporosis. [30] In order to maintain a consistent supply of dietary supplements, one needs to have enough money. From this study, teachers from households that generated more than average income were more likely to use supplements as compared to those from lower income families because a consistent supply requires enough money. [16] This could be attributed to more disposable income.

## CONCLUSION

Almost a third of the teachers consumed dietary supplements on prescription or as a prophylactic measure with omega 3 and 6 and calcium being the most commonly consumed supplements. The use of supplements increases with age, income and gender. Due to the increased

number of people (28.7% prevalence) using dietary supplements among the general population, there is need for a solid foundation of regulatory framework to forestall consumer exploitation and promote their safety as well as prevent abuse of the products by consumers. The internet is increasingly becoming appreciated by most people in the country as a platform for exchange of information including dietary information, it should thus be leveraged by information education and communication (IEC) interventions as it can prove more effective, efficient and cost-effective with certain categories of nutrition and health audience.

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## Operational Definitions

### A dietary supplement

A commercial product intended to supplement the diet to provide vitamins, minerals and essential oils that are perceived to be missing by an individual consumer; or not being consumed in sufficient quantities in an individual's diet. It is intended for ingestion as a pill, capsule, tablet, powder or liquid form.

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