



Original

Dietary Supplementation among Working Women at a Tertiary Institution in Southwest Nigeria: A Cross-Sectional Study

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ABSTRACT

Background: Dietary supplementation is essential for maintaining overall health, particularly for working women who may not get enough nutrients from their diets alone due to hectic schedules. This study examined the knowledge, attitudes, and practices of dietary supplementation among working women at Babcock University in Southwest Nigeria.

Method: A cross-sectional study of 420 working women selected through a multistage sampling technique. Data were gathered using a questionnaire and analysed with IBM SPSS version 25. Descriptive and inferential statistics were calculated. Chi-square tests examined associations between the independent (socio-demographic) and dependent variables (knowledge, attitudes and practice), with statistical significance set at $p \leq 0.05$ (95% confidence level). Independent variables significantly associated with the dependent variables were entered into a logistic regression model to identify factors independently associated with dietary supplementation.

Results: The majority of respondents were 35–44 years (40.0%). Overall, 78.1% demonstrated good knowledge, 70.0% a positive attitude, and 72.1% good practice. Supplement use in the last 12 months was 80.0%. Safety practices were high, 90.0% checked expiry dates, 86.0% followed recommended dosages, only 45.0% obtained supplements by prescription, and 23.3% trusted their quality in Nigeria. Education level remained significantly associated with knowledge of and attitude towards dietary supplementation, while chronic health conditions remained significantly associated with its practice ($p < 0.05$).

Conclusion: Despite high knowledge and positive attitudes, gaps in understanding, low professional guidance, and poor product quality trust persists. Public health efforts should strengthen regulation and integrate targeted counselling to promote safe, evidence-based supplement use.

Key words: Dietary supplementation, Women, Knowledge, Attitude, Practice



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INTRODUCTION

Dietary supplements are manufactured products that complement regular food intake by providing concentrated sources of essential nutrients, which may be difficult to obtain from diet alone.^{1,2} Dietary supplementation helps the body to absorb much more of these substances than would be possible by just eating a normal diet.³ Dietary supplementation has become increasingly prevalent worldwide, with women representing a significant proportion of supplement users.⁴ Dietary supplements aid in reaching the body's daily nutritional needs and support overall well-being.² For example, calcium and vitamin D help to maintain healthy bones, iron helps in haematopoiesis, and folic acid helps to prevent birth defects. The accelerated advancement of medical knowledge and living standards has led to a growing concern among individuals regarding their health in recent years.⁵

The COVID19 pandemic saw a global surge in supplement use with studies documenting about 40% rise in vitamin C consumption^{5,6}, an 82% increase in multivitamin consumption^{5,7} and a 23% increase in global intake of other supplements reflecting public anxiety about disease prevention.^{5,8} The socioeconomic status of each nation, the degree to which various populations are aware of the advantages and disadvantages of dietary supplements, and the impact of the media all contribute to variations in the prevalence of usage of these products.^{8,9}

Dietary supplements are widely used across the globe, among women, due to factors such as health consciousness, aesthetic goals, nutritional needs, and perceived wellness benefits.^{10,11} Women often serve as primary health decision-makers for their families; they have unique nutritional needs throughout their lifecycle and may be more susceptible to marketing claims regarding health and wellness products.^{12,13} Women may also face increased nutritional demands due to chronic illnesses (e.g. sickle cell disease), puberty, pregnancy and childbirth, menopause, and even personal commitments such as work-related stress.¹³ Dietary supplementation can lead to improved health outcomes for conditions such as pregnancy, where supplements, folic acid and iron, aid in preventing spinal defects in neonates and abating iron deficiency in women, respectively.¹⁴

Furthermore, women in the athletic field use dietary supplements (such as creatine,⁵ omega-3 fatty acids, and polyphenols)⁶ mainly to improve health, achieve fast recovery, and enhance performance during competitions.^{7,8} Women in the workforce with chronic

illnesses like sickle cell disease also benefit greatly from folic acid supplementation to increase their red cell proliferation because of their constant haemolytic state.^{15,16} Ageing also takes a hard toll on women with the onset of menopause, where bones begin to lose their ability to store calcium. This is where calcium and vitamin D supplements help menopausal women in the workforce to combat pathological fractures and impaired metabolism that this condition brings.^{17,18} Dietary supplementation is an essential aspect of maintaining overall health, particularly for working women who may not receive enough nutrients from their food alone due to their hectic schedules.¹⁹

Globally, women in first-world countries are more knowledgeable about the use of dietary supplementation either for periconceptional uses or general health.²⁰ Locally, female employees have less knowledge about dietary supplements.^{5,21,22} Some females overuse supplements in place of a healthy diet, and others are not aware of the significance of these supplements.^{23,24} Attitudes toward dietary supplementation vary widely. Some working women think supplements are unnecessary when they feel physically healthy, while others place too much faith in them, believing they can compensate for poor dietary habits.²⁵ Cultural beliefs and personal experiences affects dietary supplementation by unfavourable perceptions of supplements, either due to fear of adverse effects or uncertainty about their efficacy.²⁶ Concerning practice-related problems, working women have some knowledge of dietary supplements, but their actual practices may not be in line with recommended guidelines.^{26,27} Some of those common issues include self-medication in place of drugs, reliance on unproven supplements, and irregular consumption.²⁸ Their decisions to consume supplements may also be influenced by their hectic work schedules and financial limitations, seeing as some are not subsidized by the government.^{23,27,28} Appropriate supplementation can enhance overall health, boost productivity, and help prevent vitamin deficiencies.²⁹ Misinformed or improper use, on the other hand, can lead to several health complications like toxicity, nutritional imbalances, and drug-to-drug interactions, which can prove fatal. This study examined the knowledge, attitude, and practice of dietary supplementation among female employees in tertiary institutions.

METHODS

Study setting: This study was carried out at Babcock University, a private, Christian university at Ilisan-Remo, Ogun State, Nigeria.³⁰ There is a total of 437 female employees (216 non-academic staff and 221 academic staff).

Study design: It was a cross-sectional study to examine the knowledge, attitude and practice of dietary supplementation among working women at Babcock University.

Study population: This consisted of women who were female employees of Babcock University. 18 years old and

Eligibility criteria: Women aged ≥ 18 years who had worked full-time for at least 6 months were included in the study, while those unwilling to participate or on leave of absence during the research period were excluded.

Sample size determination: The Cochran formula was used to determine the study's sample size:

$$n = Z^2pq / d^2$$

Where:

n = sample size

Z = standard normal deviate set at 1.96, which equals a 95% confidence level.

p = prevalence of good knowledge of nutrient supplements in a previous study³¹ = 70.6% = 0.706

$$q = 1 - p = 0.294$$

d = 0.05 (margin of error)

$$\text{Hence: } Z^2pq = 3.84 \times 0.706 \times 0.294 = 0.797$$

$$d^2 = 0.05 \times 0.05 = 0.0025$$

$$\text{Therefore } Z^2pq/d^2 = 0.797/0.0025 = 318.8$$

Accounting for 20% of non-responses,

$$N (\text{minimum sample size}) = 318.8/1-0.2$$

$$= 318.8/0.8 = 398$$

This was rounded to 420.

Sampling methodology: In the first stage of the multistage sampling technique, a list of all female employees (sampling frame) was obtained from the human resources department of the University. They were then stratified based on their roles into Academic Staff and Non-Academic Staff. In the second stage, a proportionate allocation was conducted based on the population of the academic and non-academic staff, thus:

$$\text{Academic staff: } 221/437 \times 420 = 212$$

$$\text{Non-academic staff: } 216/437 \times 420 = 208$$

In the final stage, the respondents were selected using the simple random sampling method (by balloting).

Study variables: The independent variables were the sociodemographic variables, while the dependent variables were knowledge, attitude and practice of dietary supplementation.

Tool for data collection and validation: The tool for data collection was a self-administered questionnaire adapted from previous studies^{5 32 33} and had four sections which gathered socio-demographic information, assessed the knowledge, attitude and practice of dietary supplementation among respondents. A pre-test of the questionnaire was carried out among 42 female employees in a neighbouring institution to assess its clarity, relevance, and reliability after which minor adjustments were made based on feedback for better clarity.

Measurement of variables: For knowledge, the maximum obtainable score was 15 points. For attitude, a five-point Likert scale was used to grade eight statements. The maximum obtainable score was 40 points. For practice the maximum obtainable score was 22 points. Those who scored 10 points and above out of 15 obtainable points were classified as having good knowledge. Those who scored 28 points and above out of 40 obtainable points were classified as having a good attitude, and those who scored 15 points and above out of 22 obtainable points were classified as having good practice.

Data analysis: The IBM SPSS version 25 software was used for data analysis. Descriptive statistics were used to calculate frequencies and proportions. The chi-square test assessed the association between independent (sociodemographic variables) and dependent variables (outcome variables: knowledge, attitude, practice of dietary supplementation) at a confidence interval of 95% with a p-value < 0.05 . The independent variables with a statistically significant association with the dependent variables were included in a model of logistic regression to identify the factors independently associated with dietary supplementation among respondents.

Ethical considerations: Ethical approval was obtained from the Ogun State Health Research and Ethics Committee (Ref: OGHREC/467/2026/922/APP). A detailed explanation of the study's objectives and procedures was given to the respondents. To maintain confidentiality, the data collection tool was numbered. Softcopy data was stored securely in password-protected devices was stored securely in password-protected devices.



RESULTS

Table 1 shows that the majority of respondents were aged 35–44 years (40.0%), possessed at least a Bachelor's degree (77.4%), and were Christians (93.3%). Most (71.0%) reported no chronic illness.

Table 1: Socio-demographic characteristics of respondents (n = 420)

Variable	Frequency (n)	Percentage (%)
Age (in years)		
18–24	28	6.7
25–34	112	26.7
35–44	168	40.0
45–54	84	20.0
55–64	25	6.0
64 and above	3	0.7
Highest Level of Education		
Secondary school	15	3.6
Diploma/NCE	38	9.0
HND	42	10.0
Bachelors	147	35.0
Masters	133	31.7
Doctorate	45	10.7
Religion		
Christian	392	93.3
Islam	23	5.5
Traditionalist	2	0.5
Chronic Health Condition¹		
None	298	71.0
Hypertension	68	16.2
Diabetes	32	7.6
Sickle cell disease	8	1.9
Asthma	10	2.4
Seizure disorders	2	0.5
Peptic ulcer	2	0.5
Currently Pregnant		
Yes	36	8.6
No	384	91.4
Currently Breastfeeding		
Yes	48	11.4
No	372	88.6

Table 2 shows that 94.8% had heard of supplements. Vitamin C (92.6%) and folic acid (89.5%) were the most known while Omega-3 (71.0%) was the least known dietary supplement. Overall, 78.1% of respondents had a good knowledge of dietary supplements

Table 1: Knowledge of Dietary Supplementation (n=420)

Questions	Yes n (%)	No n (%)	
Have you heard about dietary supplements before?	398 (94.8)	22 (5.2)	
What are dietary supplements?	Yes n (%)	No n (%)	I don't know (%)
Products that substitute natural food	62 (14.8)	312 (74.3)	46 (11.0)
Products used to treat diseases	98 (23.3)	289 (68.8)	33 (7.9)
Products used to replace meals	51 (12.1)	334 (79.5)	35 (8.3)
Products used to improve overall health	378 (90.0)	28 (6.7)	14 (3.3)
Products used to improve physical appearance	301 (71.7)	84 (20.0)	35 (8.3)
Products taken to add nutrients to the diet	392 (93.3)	18 (4.3)	10 (2.4)
What types of dietary supplements you know.	Yes n (%)	No n (%)	
Vitamin C	389 (92.6)	31 (7.4)	
Folic acid	376 (89.5)	44 (10.5)	
Omega-3 fish oil	298 (71.0)	122 (29.0)	
Zinc	310 (73.8)	110 (26.2)	
Calcium	365 (86.9)	55 (13.1)	
B-complex vitamins	342 (81.4)	78 (18.6)	
Vitamin D	359 (85.5)	61 (14.5)	
Knowledge Score	Frequency (n)	Percentage (%)	
Good knowledge ($\geq 10/15$)	328	78.1	
Poor knowledge ($< 10/15$)	92	21.9	

Table 3 shows that the majority of respondents (70.0%) had a positive attitude towards dietary supplementation.

Table 3: Attitude toward Dietary Supplementation (n=420)

Statement	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)
Dietary supplements can improve my overall well-being	168 (40.0)	188 (44.8)	48 (11.4)	14 (3.3)	2 (0.5)
Taking dietary supplements is necessary for women	88 (21.0)	143 (34.0)	105 (25.0)	67 (16.0)	17 (4.0)
Dietary supplements can help prevent diseases	126 (30.0)	168 (40.0)	84 (20.0)	34 (8.1)	8 (1.9)
I trust the quality of dietary supplements sold in Nigeria	17 (4.0)	81 (19.3)	126 (30.0)	147 (35.0)	49 (11.7)
Dietary supplements are too expensive for regular use	109 (26.0)	143 (34.0)	88 (21.0)	67 (16.0)	13 (3.1)
Dietary supplements can be harmful if taken incorrectly	231 (55.0)	147 (35.0)	34 (8.1)	8 (1.9)	0 (0.0)
People should consult healthcare professionals before taking	273 (65.0)	128 (30.5)	15 (3.6)	4 (1.0)	0 (0.0)
There are side effects from taking dietary supplements	168 (40.0)	147 (35.0)	76 (18.1)	25 (6.0)	4 (1.0)
Attitude Score	Frequency	Percentage			
Positive attitude ($\geq 28/40$)	294	70.0			
Negative attitude ($< 28/40$)	126	30.0			

Table 4 shows that about 80.0% had used dietary supplements in the last 12 months, mainly for immunity (88.7%) and health maintenance (87.5%). Overall, 72.1% of respondents had good practice of dietary supplementation.

Table 4: Practice of dietary supplementation among respondents.

Questions	Frequency (n)	Percentage (%)
Have used dietary supplements in the last 12 month		
Yes	336	80.0
No	84	20.0
Reasons for use	Yes n (%)	No n (%)
To maintain good health	294 (87.5)	42 (12.5)
To supplement inadequate diet/nutrition	231 (68.8)	105 (31.2)
To address specific health condition	147 (43.8)	189 (56.2)
Due to pregnancy/breastfeeding	76 (22.6)	260 (77.4)
To prevent illness/boost immunity	298 (88.7)	38 (11.3)
Due to previous COVID-19 concerns	105 (31.3)	231 (68.7)
Weight loss	88 (26.2)	248 (73.8)
Beauty/skin enhancement	126 (37.5)	210 (62.5)
I purchase dietary supplements with a doctor's prescription.		
Yes	189	45.0
No	231	55.0
I check the expiry dates of supplements before purchasing and consuming.	Always n(%) 315 (75.0)	Sometimes n (%) 63 (15.0)
How frequently do you take dietary supplements	122 (29.0)	214 (51.0)
I follow the recommended dosage.	273 (65.0)	88 (21.0)
I consult a healthcare professional before starting a new supplement.	168 (40.0)	84 (20.0)
I buy supplements only from licensed pharmacies or credible stores?	231 (55.0)	109 (26.0)
		59 (14.0)
		21 (5.0)
Practice Score	Frequency (n)	Percentage (%)
Good practice ($\geq 15/22$)	303	72.1
Poor practice ($< 15/22$)	117	27.9

Table 5 shows the bivariate analysis of factors associated with the knowledge, attitude and practice of dietary supplementation. Age of the respondents, level of education, chronic health condition and pregnancy showed a statistically significant association with knowledge, attitude and practice of dietary supplementation.

Table 5: Bivariate analysis between socio-demographic variables and KAP outcomes.

Variable	Knowledge		Attitude		Practice	
	Good - n (%)	Poor n (%)	Positive - n (%)	Negative - n (%)	Good n(%)	Poor n(%)
Age in years						
<35	94 (67.1)	46(32.9)	83(59.3)	57(40.7)	87(62.1)	53(37.9)
≥ 35	234(83.6)	46(16.4)	211(75.4)	69(24.6)	216(77.1)	64(22.9)
χ^2 (p value)	14.74 (<0.001) *		11.48 (<0.001) *		10.45 (0.001) *	
Level of Education						
Non tertiary	3(20.0)	12(80.0)	3(20.0)	12(80.0)	3(20.0)	12(80.0)
Tertiary	325(80.2)	80(19.8)	291(71.9)	114(28.1)	300(74.1)	105(25.9)



χ^2 (p value)	30.69 (<0.001)*	18.52 (<0.001)*	21.04 (<0.001)*
Chronic Health condition			
Yes	109(89.3)	13(10.7)	52(42.6)
No	219(73.5)	79(26.5)	65(21.8)
χ^2 (p value)	12.72 (<0.001)*	15.16 (<0.001)*	18.65 (0.001)*
Pregnancy			
Yes	21(58.3)	15(41.7)	20(55.6)
No	307(79.9)	77(20.1)	97(25.3)
χ^2 (p value)	8.99 (0.003)*	9.73 (0.002)*	15.03 (<0.001)*

*statistically significant

Table 6 that the level of education remained significantly associated with the knowledge of and attitude towards dietary supplementation, while the presence of chronic health conditions remained significantly associated with the practice of dietary supplementation.

Table 6: Multivariate analysis between socio-demographic variables and KAP outcomes.

Variable	AOR	95% CI	p-Value
Knowledge			
Age in years			
<35	Ref		
≥35	0.71	0.44-1.16	0.175
Level of Education			
Non tertiary	Ref		
Tertiary	5.89	1.95-17.80	0.002*
Chronic Health condition			
Yes	0.69	0.43-1.11	0.125
No	Ref		
Pregnancy			
Yes	1.42	0.60-3.35	0.429
No	Ref		
Attitude			
Age in years			
<35	Ref		
≥35	1.04	0.66-1.64	0.855
Level of Education			
Non tertiary	Ref		
Tertiary	3.01	1.06-8.52	0.038*
Chronic Health condition			
Yes	0.90	0.57-1.43	0.655
No	Ref		
Pregnancy			
Yes	0.87	0.41-1.84	0.725
No	Ref		
Practice			
Age in years			
<35	Ref		
≥35	1.16	0.75-1.79	0.504
Level of Education			
Non tertiary	Ref		
Tertiary	1.74	0.61-4.96	0.300
Chronic Health condition			

Yes	1.79	1.11-2.89	0.016*
No	Ref		
Pregnancy			
Yes	1.50	0.68-3.30	0.315
No	Ref		

*Statistically significant

DISCUSSION

The findings of this study revealed a generally high level of knowledge, positive attitudes and good practices regarding dietary supplementation among respondents. The majority of respondents had heard of dietary supplements, and correctly identified them as products that add nutrients to the diet, and recognised common supplements such as Vitamin C and folic acid, with 78.1% demonstrating good knowledge. This result agrees with a study³⁴ in Lagos, where high awareness of dietary supplements was reported, though misconceptions existed about their ability to replace natural food. The higher knowledge level in the present study may be due to the older age and higher educational status of respondents. While knowledge of dietary supplements was high, some misconceptions remained in the current study, with a proportion of respondents believing that supplements could improve physical appearance or act beyond their nutritional role. This shows that knowledge does not always equate to an in-depth understanding.

Regarding the attitudes towards dietary supplementation, the majority of respondents exhibited a positive attitude, aligning with a study²⁶ in Malaysia, which showed that while consumers generally hold positive attitudes toward supplements, concerns about cost and quality remain significant barriers. Consistent with these positive attitudes, about 80% of respondents had used supplements in the last twelve months, with the commonest reasons being to boost immunity and maintain good health, and with the majority checking expiry dates, following dosage, and buying these supplements from credible stores. The prevalence of dietary supplement use is notably high when compared with findings from the UAE³³ and Lagos, Nigeria³⁵, where the prevalence ranged between 50-60% in both studies. The higher prevalence in the current study may be attributed to the population studied, who were educated and employed and were more likely to adopt preventive health behaviours.

In addition, the majority of respondents demonstrated good practice. This aligns with a study in the United Arab Emirates³³ where 56.6% reported supplement use,

with immunity boosting being the primary reason. The relatively low physician involvement mirrors findings from Ghana³⁶ where self-medication and media influence dominated practice. Higher education, presence of chronic illness, and pregnancy status were significantly associated with better knowledge, positive attitude, and good practice ($p < 0.05$), aligning with a study in Australia³⁷ where tertiary education was a strong predictor of responsible supplement use. This finding is, however, not surprising as women who are pregnant or living with chronic conditions tend to have increased contact with healthcare services, which may improve their exposure to health information.

Furthermore, on multivariate analysis, education level remained significantly associated with knowledge of and attitude towards dietary supplementation, while chronic health conditions remained significantly associated with its practice. This finding is also not surprising as education equips individuals with health literacy and makes them more receptive to positive health attitudes. Individuals with chronic health conditions will likely take medications and monitor their own health. Despite the high knowledge and positive attitudes observed in the current study, coexisting gaps in accurate understanding, limited professional guidance, and systemic challenges, such as poor regulatory trust underscore that improving knowledge alone is insufficient; structural and health system factors must also be addressed. Strengthening regulatory oversight by agencies such as the National Agency for Food and Drug Administration and Control is critical to ensuring product quality and rebuilding consumer trust.

Finally, integrating routine counselling on dietary supplementation into primary healthcare service, especially for women of reproductive age, could bridge the gap between knowledge and safe practice. Public health campaigns should move beyond general awareness to addressing specific misconceptions.

Study limitations: The study design does not allow for the determination of causal relationships. Information on dietary supplementation was based on participants' self-report, which may be affected by recall bias.

CONCLUSION

Most respondents demonstrated good knowledge of dietary supplements and generally showed positive attitudes and safe practices regarding their use, particularly for boosting immunity and maintaining good health. Higher education and chronic illness were associated with better knowledge and responsible supplement use, likely due to increased exposure to health information. However, persistent misconceptions, limited professional guidance, and concerns about product regulation suggest the need for improved public health education and stronger regulatory oversight.

Declarations

Authors' contribution: NOA, the first author, conceived the research idea and A-OC wrote the first draft. NOA, NEO and VCO critically revised the content of the manuscript. OJ, IR, AR and OO aided in the acquisition of data. The data was interpreted by NOA, NEO and VCO. All authors reviewed the manuscript, approved the final submission and agree to be accountable for all aspects of the work

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Disclosure in AI use: The Authors employed the AI tool, ChatGPT (version GPT-5.5), solely to support language refinement. This AI tool played no role in designing the study, formulating the research methods, gathering or analyzing data, interpreting results, or drawing conclusions. The authors are solely responsible for all scientific content, analysis, and interpretation contained in this work.

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