Original Article

Implication of knowledge, lifestyle and self-efficacy in the prevention of cardiovascular diseases' risk factors among the urban elderly

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Abstract
Background: Cardiovascular disease (CVD) is preventable by effectively managing its risk factors. Such risk factors (smoking, unhealthy eating habits, sedentary lifestyles, etc.) are judged to reflect an individual's self-efficacy, lifestyle modification, and CVD knowledge. **Objectives:** To evaluate the relationship between lifestyle practices, self-efficacy, and knowledge of CVDs risk factors among the elderly. **Methods:** A descriptive cross-sectional study was conducted on 424 randomly individuals whose age is ≥60 years. A questionnaire-based survey was administered on the self-efficacy rate, lifestyle practices, and respondents' knowledge of CVDs risk factors. Respondents with a score of ≤50%, 51%–74.99%, and ≥75% were classified as having low, medium, or high self-efficacy. Similarly, the same score was used to classify poor, fair, or good lifestyle; and low, average, or high knowledge. Data were analysed using Statistical Package for Social Sciences, while association among variables was determined using chi-square. **Results:** Few respondents were involved in physical exercise (1.7%), cigarette smoking (4.5%), regular soft drinks (18.2%), and alcohol consumption (13.2%). Many respondents used excess salt during cooking (92.7%) or ate outside their homes (64.6%). 58.5%, 30.0%, and 11.6% of the respondents had fair, good, and poor lifestyle practices. 11.3%, 58.7%, and 30.0% had low, medium, and high self-efficacy scores. A total of 45.3%, 35.4%, and 19.3% had low, average, and high knowledge. Knowledge and self-efficacy scores were significantly different ($P = 0.001$). **Conclusion:** High self-efficacy and its significant relationship with knowledge could mean that CVD risk factors can be checked if the elderly have a proper lifestyle, positive attitudes, and nutrition education.

Keywords
Cardiovascular diseases, elderly, knowledge, lifestyle and self-efficacy

Introduction

Non-communicable diseases (NCDs), especially cardiovascular disease (CVD), is a significant public health concern in both developed as well as middle- and low-income nations (Cogswell et al., 2016). The World Health Organization (WHO, 2018) report shows that deaths annually due to CVD exceed any other known cause of fatalities. Succinctly put, 31% of all global deaths are CVD related. CVD can be prevented by effectively controlling and managing its risk factors, emphasising primary prevention as a cost-effective way to reduce this burden (Amadi et al., 2018). According to WHO (2018), CVD worldwide is highly propelled by modifiable risk factors, including smoking, hypertension, lack of physical activity, abdominal obesity, low vegetable and fruit intake, high fat and salt intake, and dyslipidaemia and excess alcohol intake. The non-modifiable risk factors include sex, heredity, and increasing age (Al Khayyal et al., 2016). However, there is a need for preventive measures, especially in Nigeria,

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where CVD risk factors are extremely high. Based on the report of (Adeloye et al., 2015), approximately 29% of Nigeria's adults are hypertensive. A study has shown that self-efficacy, lifestyle modification, and knowledge of CVD play significant roles in preventing CVDs (Rodgers et al., 2019).

Perceived self-efficacy was defined as judging one's competence to achieve a certain performance level (Chiou et al., 2009). Performance is the complete tasks or behaviour usually done by an individual in an environment (Lamb and Keene, 2017). The self-efficacy theory proposes that patients' reliance on their ability to accomplish certain healthy behaviours affects their involvement and actual performance (e.g., diet and exercise adherence), impacting health outcomes. Indeed, self-efficacy has broadened beyond the psychological sphere and has affected health behaviours and chronic disease management.

Lifestyle and diet affect major risk factors (age, high blood pressure, tobacco smoking, etc.) of CVD. Healthy food choices and good behaviours reduce the frequency of CVD-related mortality. However, an overturn of CVDs with lifestyle and dietary modification is complex. Alteration in the diet for an extended period usually minimises CVD successfully but is more difficult to achieve than taking pills (Pryde and Kannel, 2011). The misperception is that even with intensive counselling, risk factor modification by dietary means is inconsequential (Pryde and Kannel, 2011).

Nonetheless, studies have shown that necessary behaviour modifications regarding diet can be achieved. This diet modification substantially benefits correcting and avoiding CVD risk factors, especially when implemented with other behaviour modifications (Piepoli et al., 2016; Pryde and Kannel, 2011). Smoking cessation, healthy eating habits, physical activity, and regular weight maintenance can potentially prevent CVD in later life (Arnett et al., 2019).

Knowledge of modifiable risk factors has been identified as an imperative for behaviour change and is often targeted during prevention programs (Tchicaya et al., 2018). Even though knowledge is not enough, it is assumed to bring a remarkable behavioural change unit in decision-making and provide hints for action (Davis et al., 2015). The basis for a preventive strategy lies in the knowledge and ability to change personal behaviour, identification and identify precise estimates of the impact of causal risk factors. Empirical evidence has shown that Africa's risk pattern is similar to that found in other regions (Duber et al., 2018; Wan et al., 2014). However, information on self-efficacy, lifestyle modification, and knowledge of cardiovascular risk factors from West Africa and specifically among the elders in the Ibadan metropolis (one of the major urban communities in Nigeria) is limited and scanty. Therefore, this study aimed to assess the relationship between self-efficacy, lifestyle modification, and knowledge of CVD risk factors among the elderly in Ibadan, Nigeria. To achieve the above general objective, self-efficacy, medical history, lifestyle, behavioural, and knowledge of CVD risk factors among the respondents were determined and categorised.

Methods

Study design

The study was a descriptive cross-sectional study conducted on 424 randomly individuals whose age is ≥60 years. The study involved the elderly residing in their household in the Ibadan North-West local government area of Oyo-State, Nigeria.

Sampling design

Ibadan North-West local government area comprises ten (10) wards. A systematic sampling technique was used to select the household in those wards. An elderly individual aged ≥ 60 was selected in each household. In a household with more than one elderly individual age ≥60 years, the older person (depending on their age, male or female) was selected. If there were more than one elderly resident and they had the same age, a ballot was used to select one participant.

All consenting elderly individuals who were ≥60 years in their various households were included, while those who did not give consent or people who were ≤60 years were excluded from the study.

Data collection

A semi-structured, survey-administered questionnaire was used to collect data on the socioeconomic demographic characteristics, knowledge of CVDs risk factors, lifestyle, self-efficacy, and medical and dietary history.

The self-efficacy scale included six items (dietary self-efficacy) and seven items (modifying behaviour and lifestyle) using the scale adapted from (Chiou et al., 2009). Modification behaviour's self-efficacy examined respondents' confidence level for discrete behavioural changes such as checking blood pressure once in a while, exercising regularly, and consuming a healthy diet. Respondents rated each item on a yes or no scale. The self-efficacy score was rated and classified as either low, medium, or high self-efficacy. Respondents with a total score less than the 50th percentile were classified as low. The 50th–75th percentile was classified as medium, while respondents with a total score greater than the 75th percentile were classified as having high self-efficacy.

The lifestyle behaviour risk factors consist of twelve (12) questions based on lifestyle and dietary habits that can increase or decrease CVDs risk factors. These questions include their alcohol intake, their performance of physical activities, diet quality, and smoking with a yes or no answer. A point was awarded for each correct answer based on a similar study (Whatnall et al., 2016). The

lifestyle behaviour practices score was rated and classified as either poor, fair, or good lifestyle behaviour practices. Respondents with a score below the 50th percentile were classified as poor. The 50th–75th percentile was classified as fair, while respondents with a total score greater than the 75th percentile were classified as having good lifestyle behaviour practices.

Knowledge of cardiovascular risk factors was measured using a risk factors knowledge scale adapted from (Chiou et al., 2009). The scale consists of 17 true, false, or does not know questions related to 12 cardiovascular risk factors: family history of hypertension, diabetes mellitus, obesity, increase in age, gender, ethnicity, taking excessive animal fat, taking excessive salt in food, taking excessive sugar in food, taking fruit and vegetable daily, frequent intake of red meat than fish, regular intake of fast foods, exercising for at least 30 min daily, smoking, overweight. A total knowledge score was obtained by adding each item with a possible score of 0 to 17 (0 = incorrect, 1 = correct). Each risk factor's knowledge score was obtained by summing all correct item scores divided by the number of items in those risk factors and multiplying by 100%. Each risk factor's possible score ranged from 0 to 1, with a higher score indicating higher knowledge of cardiovascular risk factors. The knowledge score was also classified as either low, fair, or good. Respondents with a total score of less than 50% were classified as low, 50%–75% were classified as fair, while respondents with a total score greater than 75% were classified as good knowledge.

All respondents in this research gave their oral consent to participate after receiving verbal and written information about the study. The study was conducted based on the guidelines for research at the Institute for Advanced Medical Research and Training, College of Medicine, University of Ibadan (Reference No: UI/EC/13/0333).

Statistical analysis

Statistical Package for Social Sciences (SPSS version 18) was used to analyse. Descriptive statistics were used to establish central tendencies, variability, and deviations, while the Chi-square test was used to find the association between dependent and independent variables. Analysed data were considered significant at $P < 0.05$.

Results

The data on the socio-demographic characteristics of the respondents are shown in Table 1. The majority of the respondents (69.6%) were females. Total respondents of 121 (28.5%) were between 60 and 64 years. About half of the respondents (50.7%) were married, and 71.9% of the respondents practised Islam. Overall, 53.3% of the respondents were traders. The socio-demographic characteristics that showed significant relationships with the gender included age ($\chi^2 = 30.1$, $p < 0.0001$), marital status ($\chi^2 = 60.0$, $p = <0.0001$), occupation ($\chi^2 = 127.0$, $p < 0.0001$) and average monthly income ($\chi^2 = 26.1$, $p < 0.001$).

More than half of the respondents reported not having a family history of high blood pressure (57.3%), diabetes (86.8%), and obesity (84.4%) (Table 2). Three-quarters of the respondents reported that they had never been admitted to the hospital (75.0%) and neither visited the hospital for a check-up (76.4%). There was a significant difference between those who had a family history of high blood pressure and those who did not have it ($p = 0.03$). However, there was a significant difference between those who reported having a family history of diabetes and those who do not have it ($p = 0.012$). The majority of the respondents (98.3%) were not involved in physical exercise. 92.7% of the respondents claimed to use salt in cooking, while more than half of the respondents (55.2%) do not take foods rich in fat. Two-thirds of the respondents (64.6%) eat outside the home, 61.6% do not consume fruits daily, and 93.9% consume vegetables daily. The respondents who did not take a soft drink or regularly consumed fast food were 81.8% and 100.0%, respectively. A majority (83.5%) of the respondents reported being satisfied with their body weight. The respondents who said they do not smoke cigarettes, drink alcohol, and use nutritional supplements were 95.5%, 86.8%, and 97.9%, respectively. There was a significant difference between the proportions of those who eat outside the home and those who do not ($p = 0.0001$). The ratio of those who consume soft drinks regularly was also significantly different from those who do not regularly consume ($p = 0.019$). Also, there was a significant difference between the proportion of those who smoke cigarettes ($p < 0.001$) and take alcohol ($p < 0.001$) and those who do not. The majority of the respondents (58.5%) had a fair lifestyle, while 11.6% and 30.0% had a poor and good lifestyle.

The respondents' knowledge of CVD risk factors is shown in Table 3. More than half of the respondents claimed not to know if their family had a history of hypertension, diabetes, or obesity (54.6%), ethnicity (63%), taking excessive animal fat (72.2%), exercising for at least 30 min daily (72.6%) could cause CVD. An estimated percentage of 59.2%, 55.0%, and 53.1% of the respondents reported an increase in age, taking excessive salt in food and excessive sugar in food are risk factors for CVD development. However, 26.4% and 48.8% of the respondents reported that gender and daily consumption of fruits and vegetables are not risk factors for CVD. In comparison, 80.4% of the respondents do not know if frequent intakes of fast foods contribute to CVD development. Also, 64.2%, 58.7%, and 47.9% of the respondents reported that smoking, stress, and high blood pressure are risk factors for CVD development. In comparison, 62.3%, 69.1%, and 61.1% of the respondents do not know if overweight, obesity, and diabetes were risk factors for CVD development. 45.3%, 35.4%, and 19.3% of the respondents had low, fair, and good knowledge scores.

The self-efficacy of the elderly on CVD risk factors is shown in Table 4. The majority of the respondents can reduce their intake of excess animal fat (97.9%), level of

Table 1. Socio-demographic characteristics of the respondents.

Characteristics	Categories	Male N = 129 (100.0%)	Female N = 295 (100.0%)	Total N = 424 (100.0%)	X^2	P Value
Age (years)	60–64	34 (26.4)	87 (29.5)	121 (28.5)	30.1	0.000
	65–69	40 (31.0)	74 (25.1)	114 (26.9)		
	70–74	19 (14.7)	77 (26.1)	96 (22.6)		
	75–79	7 (5.4)	37 (12.)	44 (10.4)		
	80 and above	29 (22.5)	20 (6.8)	49 (11.6)		
Marital status	Married	104 (80.6)	111 (37.6)	215 (50.7)	60.0	0.000
	Divorced	3 (2.3)	11 (3.7)	14 (3.3)		
	Widow/widower	22 (17.1)	173 (58.6)	195 (46.0)		
State of origin	Oyo	121 (93.8)	273 (92.5)	394 (92.9)	0.215a	0.643
	Others (states)	8 (6.2)	22 (7.5)	30 (7.1)		
Ethnicity	Yoruba	129 (100.0)	295 (100.0)	424 (100.0)		
Religion	Christianity	29 (22.5)	90 (30.5)	119 (28.1)	2.865a	0.091
	Islam	100 (77.5)	205 (69.5)	305 (71.9)		
Occupation	Retired	46 (35.7)	92 (31.2)	138 (32.5)	127.048a	0.000
	Trading	30 (23.3)	196 (66.4)	226 (53.3)		
	Farming	10 (7.8)	1 (0.3)	11 (2.6)		
	Others	43 (33.3)	6 (2.0)	49 (11.6)		
Average monthly income	<20,000	90 (69.8)	263 (89.2)	353 (83.3)	26.167a	0.000
	21,000–50,000	37 (28.7)	32 (10.8)	69 (16.3)		
	51,000–100,000	1 (0.8)	0 (0.0)	1 (0.2)		
	>100,000	1 (0.8)	0 (0.0)	1 (0.2)		

N = number of respondents.

salt in food (89.4%), and intake of excess refined sugar (97.9%). An estimated 98.1% and 99.1% of the respondents reported that they could increase their daily intake of fruits and vegetables, respectively. In comparison, 66.5% claimed they could not increase their physical exercise. 96.7%, 99.5%, and 96.9% of the respondents reported that they could reduce their intake of red meat and fast foods and avoid smoking. 91.7% claimed they could change their deviant lifestyle, such as drinking alcohol. Meanwhile, 98.8% of the respondents reported reducing their stressful activities, and 87.7% said they would check their blood pressure occasionally. 99.3% of the respondents agreed to maintain a healthy weight range. Many respondents (58.7%) had fair self-efficacy scores, while 11.3% and 30.0% had low and good self-efficacy scores.

The socio-demographic variables and their knowledge of CVD risk factors are shown in Table 5. 45.0% of males and 45.4% of females had low knowledge of CVD risk factors. In comparison, 18.6% of males and 19.7% of females had high knowledge of CVD risk factors. In contrast, the age range of 75–79 years revealed that 31.8%, 40.9%, and 27.3% had low, average, and high knowledge, while those above 80 years showed that 40.8%, 36.7%, and 22.4% had low, average and high knowledge on CVD risk factors respectively. There was a significant difference between the age group and knowledge of CVD risk factors ($p = 0.003$). More than half of the married respondents (52.1%) had low knowledge of CVD risk factors, while 50.0% of the divorcee and 28.6% of the widow/widower had average and high knowledge of CVD risk

factors. There was a significant difference ($p = 0.027$) between marital status and knowledge of CVD risk factors. 31.1% of the Christian respondents had low knowledge of CVD risk factors, while 50.8% of the Muslims had low knowledge of CVD risk factors. There was a significant difference ($p = 0.001$) between religious practice and knowledge of CVD risk factors.

The relationship between lifestyle scores, self-efficacy, and respondents' knowledge of CVD risk factors is shown in Table 6. There was no significant relationship ($p = 0.086$) between the respondents' knowledge of CVDs risk factors and their lifestyle. However, a significant relationship ($p = 0.001$) exists between the respondents' self-efficacy and knowledge about CVDs risk factors.

Discussion

Our basal hypothesis that an excellent lifestyle modification score, high self-efficacy, and knowledge of the CVDs risk factors would help prevent the diseases has been aided by a significant relationship between self-efficacy and knowledge of the risk factors but baseless by the lifestyle modification score among the respondents. Therefore, the respondents' knowledge did not influence their attitudes and lifestyle modifications but would rather choose to cling to their old lifestyle practices. The socio-demographic data revealed that half of the respondents were married and traders by occupation. The average monthly income was significantly higher for males than for female respondents. No previous study has checked the association between

Table 2. Medical history, lifestyle and behavioural cardiovascular risk factors of the respondents.

Characteristics	Categories	Male N = 129 n (100%)	Female N = 295 n (100%)	Total N = 424 n (100%)	X^2	P-Value
Family history of high blood pressure	Yes	41 (31.8)	140 (47.5)	181 (42.7)	9.0a	0.003
Family history of obesity	Yes	17 (13.2)	49 (16.6)	66 (15.6)	0.8a	0.370
Previous admission into the hospital	Yes	38 (29.5)	68 (23.1)	106 (25.0)	2.0a	0.161
If yes, what ailment	Fever	5 (13.2)	26 (38.2)	31 (29.2)	20.8a	0.000
	Accident	8 (21.1)	4 (5.9)	12 (11.3)		
	Hypertension/diabetes	0 (0.00	12 (17.6)	12 (11.3)		
	Others	25 (65.8)	26 (38.2)	51 (48.1)		
Do you normally go for medical check-up?	Yes	27 (20.9)	73 (24.7)	100 (23.6)	0.7a	0.395
If yes, how often	Every week	3 (11.1)	6 (8.2)	9 (9.0)	0.5a	0.916
	Every 2 week	1 (3.7)	5 (6.8)	6 (6.0)		
	Every month	5 (18.5)	14 (19.2)	19 (19.0)		
	Others	18 (66.7)	48 (65.8)	66 (66.0)		
Involvement in physical exercise	Yes	1 (0.8)	6 (2.0)	7 (1.7)	0.9a	0.349
If yes, how often?	Every day	1 (100.0)	6 (100.0)	7 (100.0)		
Use of salt in cooking	Yes	120 (93.0)	273 (92.5)	393 (92.7)	0.0a	0.861
Intake of fatty foods	Yes	64 (49.6)	126 (42.7)	190 (44.8)	1.8a	0.189
Eating outside the home	Yes	108 (83.7)	166 (56.3)	274 (64.6)	29.6a	0.000
If yes, how often?	Every day	14 (31.8)	51 (57.3)	65 (48.9)	7.7a	0.006
	Occasionally	30 (68.2)	38 (42.7)	68 (51.1)		
Daily consumption of fruits	Yes	50 (38.8)	113 (38.3)	163 (38.4)	0.0a	0.929
Daily consumption of vegetables	Yes	122 (94.6)	276 (93.6)	398 (93.9)	0.2a	0.689
Regular intake of soft drinks	Yes	32 (24.8)	45 (15.3)	77 (18.2)	5.5a	0.019
satisfaction with bodyweight	Yes	112 (86.8)	242 (82.0)	354 (83.5)	1.5a	0.222
Cigarette smoking	Yes	17 (13.2)	2 (0.7)	19 (4.5)	32.8a	0.000
Alcohol consumption	Yes	41 (31.8)	15 (5.1)	56 (13.2)	55.8a	0.000
Use of nutritional supplement	Yes	1 (0.8)	8 (2.7)	9 (2.1)	1.6a	0.203
Type of nutritional supplement	Blood tonic	1 (100.0)	7 (87.5)	8 (88.9)	0.1a	0.708
	Supplement	0 (0.0)	1 (12.5)	1 (11.1)		
Intake of at least 3 meals per day	Yes	108 (83.7)	276 (93.6)	384 (90.6)	10.2a	0.001
Lifestyle	Poor	34 (26.4)	15 (5.1)	49 (11.6)	49.495	0.000
	Good	76 (58.9)	172 (58.3)	248 (58.5)		
	Excellent	19 (14.7)	108 (36.6)	127 (30.0)		
	Total	129 (100.0)	295 (100.0)	424 (100.0)		

N = number of respondents.

self-efficacy and knowledge of cardiovascular risk factors among the elderly in Nigeria's urban centres.

The average monthly income was significantly higher in males than in female respondents. Due to the African culture, many African women have poor socioeconomic status, and their men exercise authoritative control over the household resources (Kehler, 2001; Olayiwola and Ketiku, 2006). In Africa, it has been realised that men's socio-cultural and historical ascendancy has contributed negatively to intergenerational women's access to economic, property, social and political prosperity (Akinola, 2018). Taking Nigeria as an example, the unfairness in property inheritance law has a more significant negative impact on women than men. This situation has led to women having a high level of negative cultural attitudes, economic dependence, poverty, and limited decision-making power. However, information on gender further gives a logical component in developing programmes seeking to organise individuals who have been

marginalised to demand their rights in the community (Wahab EO, 2013). The greater number of elderly female respondents than males justifies the assertion that women live longer than men (Olayiwola and Ketiku, 2006). The majority of the respondents practised Islam, while the minority were Christians. This may be because Islam is the predominant religion in the Ibadan North-East area of Oyo State, where this study was conducted (Nolte et al., 2016).

Most of the respondents in this study reported not having a family history of high blood pressure, diabetes, and obesity. This is not unconnected with the culture of not disclosing Nigeria's prevalent family illness(s). This has significantly contributed to Nigeria's low validity of vital statistics (Makinde et al., 2020).

Lifestyle modifications are keys to promoting better health in ageing adults and reducing CVD risk in adults (Arnett et al., 2019). Nearly all the respondents studied were not involved in any physical exercise. This finding

Table 3. Respondents' knowledge of CVD risk factors.

Characteristics	Categories	Male N = 129 n (%)	Female N = 295 n (%)	Total N = 424 n (100%)	X^2	P value
Family history of hypertension, diabetes, obesity	Yes	60 (46.5)	104 (35.3)	164 (38.7)	7.300	0.026
Increase in age	Yes	85 (65.9)	166 (56.3)	251 (59.2)	8.458	0.015
Gender	Yes	15 (11.6)	16 (3.8)	31 (7.3)	6.286	0.043
Ethnicity	Yes	8 (6.2)	5 (1.7)	13 (3.1)	6.423	0.040
Taking excessive animal fat	Yes	28 (21.7)	53 (18.0)	81 (19.1)	7.616	0.022
Taking excessive salt in food	Yes	79 (61.2)	154 (52.2)	233 (55.0)	2.981	0.225
Taking excessive sugar in food	Yes	73 (56.6)	152 (51.5)	225 (53.1)	0.938	0.626
Taking fruit and vegetable daily	Yes	10 (7.8)	9 (3.1)	19 (4.5)	9.138	0.010
Frequent intake of red meat than fish	Yes	21 (16.3)	53 (12.5)	74 (17.5)	1.015	0.602
Frequent intake of fast foods	Yes	21 (16.3)	43 (14.6)	64 (15.1)	0.962	0.618
Exercising for at least 30 min daily	Yes	28 (21.7)	43 (14.6)	71 (16.7)	10.734	0.005
Smoking	Yes	77 (59.7)	195 (66.1)	272 (64.2)	13.913	0.001
Stress	Yes	72 (55.8)	177 (60.0)	249 (58.7)	5.656	0.059
High blood pressure	Yes	55 (42.6)	148 (50.2)	203 (47.9)	2.059	0.357
Overweight	Yes	12 (9.3)	37 (12.5)	49 (11.6)	1.083	0.582
Being too fat (obesity)	Yes	16 (12.4)	41 (13.9)	57 (13.4)	6.343	0.042
High blood sugar (diabetes)	Yes	47 (36.4)	103 (34.9)	150 (35.4)	2.155	0.340
Knowledge	Low	58 (13.7)	134 (31.6)	192 (45.3)	0.115	0.944
	Average	47 (11.1)	103 (24.3)	150 (35.4)		
	High	24 (5.7)	58 (13.7)	82 (19.3)		
	Total	129 (30.4)	295 (69.6)	424 (100.0)		

N = number of respondents.

Table 4. Self-efficacy of the elderly on CVD risk factors.

Characteristics	Categories	Male N = 129 n(%)	Female N = 295 n(%)	Total N = 424 N(100%)	X^2	P value
I can reduce my intake of excess animal fat	Yes	123 (95.3)	292 (99.0)	415 (97.9)	5.706	0.017
I can reduce my level of salt in food	Yes	105 (81.4)	274 (92.9)	379 (89.4)	12.481	0.000
I can reduce my intake of excess refined sugar	Yes	125 (96.9)	290 (98.3)	415 (97.9)	0.854	0.355
I can increase my intake of fruits daily	Yes	125 (96.9)	291 (98.6)	416 (98.1)	1.476	0.224
I can increase my intake of vegetables daily	Yes	127 (98.4)	293 (99.3)	420 (99.1)	0.731	0.393
I can reduce my intake of red meat	Yes	122 (94.6)	288 (97.7)	410 (96.7)	2.621	0.105
I can reduce my intake of fast foods	Yes	129 (100)	293 (99.3)	422 (99.5)	0.879	0.349
I will avoid smoking	Yes	116 (89.9)	295 (100.0)	411 (96.9)	30.669	0.000
I will increase my physical exercise	Yes	38 (29.5)	104 (35.3)	142 (33.5)	1.354	0.245
I will change my bad lifestyle such as drinking alcohol	Yes	96 (74.4)	293 (99.3)	389 (91.7)	73.498	0.000
I will reduce my stressful activities	Yes	124 (96.1)	295 (100.0)	419 (98.8)	11.571	0.001
I will check my blood pressure once in a while	Yes	100 (77.5)	272 (92.2)	372 (87.7)	17.985	0.000
I can maintain a healthy weight range	Yes	128 (99.2)	293 (99.3)	421 (99.3)	0.012	0.912
Self-efficacy	Low	34 (8.0)	14 (3.3)	48 (11.3)	42.7a	0.000
	Medium	67 (15.8)	182 (42.9)	249 (58.7)		
	High	28 (6.6)	99 (23.3)	127 (30.0)		
	Total	129 (30.4)	295 (69.6)	424 (100.0)		

N = number of respondents.

is worrisome and higher than Cameroun's report, which differed in the study age (Aminde et al., 2017). Huynh-Honbaum and colleagues (Huynh-Hohnbaum et al., 2015) reported that low physical activity increased with age, accounting for the inactivity observed in this study. Studies have shown that physical inactivity, smoking, and poor nutrition are the primary cause of chronic illnesses and are risk factors for CVD (Benjamin et al., 2019; Rekhy and Mcconchie, 2014). Regular physical activities among the middle or older age group significantly reduce CVD and improve the quality of life (Lönnberg et al., 2020).

Table 5. Socio-demographic variables of the respondents and their knowledge on CVDs risk factors.

Characteristics	Categories	Knowledge of CVD risk factors			X^2	P value
		Low	Average	High		
Gender	Male	58 (45.0)	47 (36.4)	24 (18.6)	0.115	0.944
	Female	134 (45.4)	103 (34.9)	58 (19.7)		
	Total	192 (45.3)	150 (35.4)	82 (19.3)		
Age (years)	60–64	72 (59.5)	28 (23.1)	21 (17.4)	23.516	0.003
	65–69	46 (40.4)	41 (36.0)	27 (23.7)		
	70–74	40 (41.7)	45 (46.9)	11 (11.5)		
	75–79	14 (31.8)	18 (40.9)	12 (27.3)		
	80 and above	20 (40.8)	18 (36.7)	11 (22.4)		
	Total	192 (45.3)	150 (35.7)	82 (19.3)		
Marital status	Married	112 (52.1)	63 (29.3)	40 (18.6)	10.934	0.027
	Divorced	3 (21.4)	7 (50.0)	4 (28.6)		
	Widow/widower	77 (39.5)	80 (41.0)	38 (19.5)		
	Total	192 (45.3)	150 (35.4)	82 (19.3)		
State of origin	Oyo	180 (45.7)	132 (33.5)	82 (20.8)	11.975	0.003
	Others	12 (40.0)	18 (60.0)	0 (0.0)		
	Total	192 (45.3)	150 (35.4)	82 (19.3)		
Religion	Christianity	37 (31.1)	52 (43.7)	30 (25.2)	13.542	0.001
	Islam	155 (50.8)	98 (32.1)	52 (17.0)		
	Total	192 (45.3)	150 (35.4)	82 (19.3)		
Occupation	Retired	47 (34.1)	61 (44.2)	30 (21.7)	15.548	0.016
	Trading	112 (49.6)	70 (31.0)	44 (19.5)		
	Farming	5 (45.5)	6 (54.5)	0 (0.0)		
	Others	28 (57.1)	13 (26.5)	8 (16.3)		
	Total	192 (45.3)	150 (35.4)	82 (19.3)		
Average monthly income	<20,000	160 (45.3)	133 (37.7)	60 (17.0)	14.835	0.022
	21,000–50,000	32 (46.4)	16 (23.2)	21 (30.4)		
	51,000–100,000	0 (0.0)	1 (100.0)	0 (0.0)		
	>100,000	0 (0.0)	0 (0.0)	1 (100.0)		
	Total	192 (45.3)	150 (35.4)	82 (19.3)		

N = number of respondents; CVDs = cardiovascular diseases.

Table 6. Relationship between lifestyle scores, self-efficacy, and knowledge.

		knowledge				χ^2	P value
Characteristics	Categories	Low	Average	High	Total		
Lifestyle score	Poor	19 (9.9)	21 (14.0)	9 (11.0)	49 (11.6)	8.148	0.086
	Good	118 (61.5)	91 (60.7)	39 (47.6)	248 (58.5)		
	Excellent	55 (28.6)	38 (25.3)	34 (41.5)	127 (30.0)		
	Total	192 (100.0)					
Self-efficacy	Low	21 (5.0)	24 (5.7)	3 (0.7)	48 (11.3)	17.8	0.001
	Medium	105 (24.8)	97 (22.9)	47 (11.1)	249 (58.7)		
	High	66 (15.6)	29 (6.8)	32 (7.5)	127 (30.0)		
	Total	192 (45.3)	150 (35.4)	82 (19.3)	424 (100.0)		

Additionally, exercise is particularly favourable to ageing adults by protecting against age-related adverse cellular and systemic effects, improving endothelial functions, and reducing cellular senescence (Garatachea et al., 2015). Two-thirds of the respondents involved in this study do eat outside their homes. Eating out of the house has previously been linked to a higher energy intake and a sedentary lifestyle in adults aged 35–74 years (Naska et al., 2015; Orfanos et al., 2007). Many older people's inability to shop and cook has been linked to nutritionally inadequate diets. The problem is worsened by ill health, grief, and depression, which may lead to a paucity of interest in food. Older adults who have spent their lives cooking for the family find it difficult to cook for themselves after the dismissal of their spouse and alone (Vesnaver et al., 2015). Holmes and Roberts (Holmes and Roberts, 2011) reported that men often struggle to cook for themselves when widowed. A woman's presence positively influences

their eating habits in the household. (Rekhy and Mcconchie, 2014) revealed that marriage positively induced fruit and vegetable consumption.

The inadequate fruit consumption among the participants could reflect the Nigerian family diet in which fruits are eaten by choice and chance as snacks. Simultaneously, dietary vegetables are chiefly served as part of daily meals (Iloh, 2014; Rekhy and Mcconchie, 2014). This finding is in hand with reports of changing Nigeria's nutritional patterns, which are characterised by consuming nutrient-deficient and calorie-dense foods (Iloh, 2013). High social-economic status is related to adequate consumption of fruits, which give various antioxidant and anti-inflammatory properties (Rahamon, 2014; Rekhy and Mcconchie, 2014; Santos, 2021). Identifying CVD risk factors mainly related to inadequate fruit consumption that is persuadable to effective interventions offers an excellent chance for prior diet-related health promotions. This is particularly important in a limited resource environment where healthcare-seeking behaviour and utilisation are driven mainly by the need for curative services rather than imperative for proactive preventive care. In addition, most of the respondents were not using nutritional supplements, and many were taking an average of three meals per day.

The majority neither consumed alcohol nor smoked cigarettes. A similar result was observed by Boedhi-Darmojo (2002) in Indonesia. The elderly were very cautious of food that can predispose them to CVD and new trendy foods like fast foods. (BeLue et al., 2009) reported alcohol and cigarette smoking as risk factors for CVD development. In this study, consumption of alcohol and cigarette smoking was meagre. However, cigarette smoking and alcohol consumption was higher in males than in their female counterparts. This agrees with the review of (Townsend et al., 2006) and the work of (Conway et al., 2017) in Sub-Sahara Africa and the USA, respectively, that males are more likely to smoke than females. Also, (Liu et al., 2017) reported that Chinese men smoke more than females. Generally, the respondents in this study who consumed alcohol regularly were lower than those reported by (Puepet and Ohwovoriole, 2008), where half of the respondents consumed alcohol regularly.

In this study, very few respondents had good knowledge of CVD risk factors. This report agrees with the report of (Vaidya et al., 2013) in Nepal, where participants also had poor knowledge of CVD risk factors but differed from the account of (Akinmoladun et al., 2021) in the same country where the respondents had a higher level of education as compared to the respondents in this study. Smoking, stress, increase in age, excess salt and sugar consumption, non-consumption of fruit and vegetables daily, high blood pressure, and diabetes were the notable CVD risk factors in descending order. There was a tendency for overweight and obesity among the respondents as most respondents did not recognise overweight and obesity as risk factors for CVD. According to (Dhana et al., 2016; Khan et al., 2018), an increase in body mass index (BMI) can lead to the early development of CVDs, resulting in decreased quality of life and life expectancy. This may be so as fatness is often associated with wealth and good health in this part of the world. This implies that CVD risk factors might also be high among the respondents. According to (Aneje et al., 2000) and (Yu et al., 2018), CVD can be successfully prevented or managed through good nutrition and health knowledge. (Boateng et al., 2017) noted that knowledge of CVD by any community would determine their perception and healthy behaviour practices, which may eventually decrease their CVD risks.

Under medical care specialists' direction, self-management of health behaviours has been promised for CVD patients (Rodgers et al., 2019). The majority of the respondents had fair self-efficacy regarding CVD risk factors. This means that the elders in this study had a reasonable confidence level in managing CVD because the majority are willing to change their lifestyles, which are risk factors for developing CVDs. Studies have shown self-efficacy correlates with CVD self-management behaviour (Chiou et al., 2009). However, (Sarkar et al., 2007) showed that patients with better control of their care are often more engaged in managing these risk factors. Self-efficacy and patient engagement are important factors of disease management in patients with CVD. Moreover, a person's perception of their ability to self-manage their CVD significantly improves health behaviours and clinical outcomes. However, the higher self-efficacy in females than their male counterparts may be due to African men's adamant nature and ego to refuse change.

The non-significant difference in knowledge of CVD risk factors between gender contradicts the report of (Aminde et al., 2017) that women had more knowledge of stroke risk factors. The retirees in this study had a significantly higher knowledge level than others. This may be due to their education while in school and a higher wage or income. This study also showed that the elderly with low education or income had low knowledge of CVD risk factors and higher cardiovascular risk. Higher socio-economic status results in the affordability of health care services and more medical knowledge, which leads to the adoption of healthier behaviours (Liu et al., 2020; Rekhy and Mcconchie, 2014).

Knowing CVD risk factors in each population is vital for developing perceptions about CVD risk and formulating healthy behaviours to reduce CVD risk. There is a significant relationship between self-efficacy and knowledge of CVD risk factors. According to (Aneje et al., 2000) and (Yu et al., 2018), CVD can be successfully prevented or managed through good nutrition practices and health knowledge. There was no significant relationship between the respondents' lifestyle score and knowledge score of CVD risk factors. This means that knowledge did not transform into practice among the respondents.

Conclusion

This study's respondents' knowledge of CVD risk factors was flawed. This could result in low prevention of CVDs

among the elderly. However, the knowledge did not transmit to practice as most respondents with good knowledge of CVD risk factors did not practice what they knew. Instead, they still adhere to their traditional way of life. Female self-efficacy was higher than their male counterparts. This means that elderly females were ready to change their bad habits contributing to CVD development.

Moreover, alcohol drinking and cigarette smoking were low-risk factors among the respondents, as a high percentage did not smoke cigarettes or drink alcohol. However, among the respondents, salt intake and inadequate physical exercise were high-risk factors for CVD development. These results suggest that CVD management programs driven by behavioural theory emphasising patient self-efficacy can have critical clinical impacts and may also be a mechanism for reducing unnecessary health services utilisation and health care costs. It can be concluded that if the respondents' knowledge of CVD risk factors increases, elders will be able to change their lifestyles and behaviours that can predispose them to CVDs.

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Authors' contributions

OFA: Conceptualisation, Formal analysis, Writing- Original draft preparation. OFA and FAF: Methodology, Investigation, Formal analysis. CNN: Writing- Reviewing and Editing.

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Supplemental Material

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