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Assessment of some traditional cardiovascular risk factors in medical doctors in Southern Nigeria

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Introduction: Almost one third of deaths globally are caused by cardiovascular diseases (CVDs). Certain occupations may promote the development and worsening of risk factor for CVDs. We assessed some traditional cardiovascular risk factors and lifestyle choices that may predispose to CVDs in medical doctors in a tertiary health facility in Southern Nigeria.

Study design: Cross-sectional study

Participants and methods: One hundred sixty-nine apparently healthy medical doctors were recruited. A structured self-administered questionnaire was used to gather data on CVD risk factors. Anthropometric and blood pressure (BP) measurements were taken.

Results: Majority were males (68.0%), aged 20–39 years (43.8%), single (62.7%), and house officers (58.0%) with<1 year (48.5%) work experience. Over half were either overweight or obese. While 77.2% of those not centrally obese were males, only about 22.8% of females did not meet the criteria for central obesity (*P*-value < 0.05). While respondents had BP in prehypertensive (48.2%), stage 1 (18.5%), or stage 2 hypertension (3.6%) ranges, only 7.7% had a previous diagnosis of hypertension. Only 25.4% took fruits on a daily basis and engaged in aerobic exercises up to 30 minutes daily or at least 3–5 times a week. Other poor lifestyle choices included non-lean meat intake (76.8%), low water intake (88.2%), and junk food and soda drinks intake (daily 28%, weekly 51.2%).

Conclusion: Findings of a high prevalence of overweight/obesity, physical inactivity, and junk food intake and low fruits intake among doctors is worrisome. There is a need to educate doctors on adopting healthier lifestyles to reduce risk of CVDs.

Keywords: cardiovascular risk factors, medical doctors, lifestyle choices

Introduction

It is estimated that cardiovascular diseases (CVDs) accounted for 17.7 million human deaths in 2015 (which represents 31% of all global deaths), and that more than three quarters of deaths from CVDs take place in low- and middle-income countries, which would include Nigeria.[1] Obesity, diabetes mellitus, dyslipidemia, smoking, and hypertension contribute individually and collectively to an increased risk of CVDs.[2–4] A combination of these risk factors associated with a resultant increase in the occurrence of CVDs is a frequent finding.[5,6] Certain occupations may promote the development and worsening of hypertension, obesity, and diabetes mellitus.[7–14]

Several studies have established a link between occupations and the development of cardiovascular risk factors and CVDs.[7,8,15–18] Possible related factors include both physiologic and psychological stresses at the workplace, and worsening of cardiovascular risk profiles such as hypertension, obesity, dyslipidemia, and physical inactivity.[15,18] A high

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prevalence of cardiovascular risk factors has been documented among medical students[19–24] and health care workers;[25–30] however, limited data are available on cardiovascular risk profiles of medical doctors.[31,32] Medical doctors take the lead in the management of patients with cardiovascular risk factors and CVDs. It is important that they are healthy in order to attend to the health needs of patients. Also, a healthy-looking nonobese doctor is more likely to be comfortable with and believable by his patient when counseling on appropriate lifestyle practices and healthy diet.[33–37] Doctors who counsel their patients by adding tidbits from their own personal healthy lifestyle measures may be better able at motivating patients to similar behavior, as they are perceived as being credible.[34]

In this study, we aimed at assessment of some traditional risk factors for CVDs in medical doctors in the Niger Delta of Nigeria.

The aims of the study were to:

1. Determine anthropometric measures, blood pressures (BPs), random blood glucose levels, personal and family history of cardiovascular risk factors/disease in the study respondents.
2. Determine the prevalence of some adverse lifestyle choices that may predispose to an increased CVD risk.

Participants and methods

Study population

One hundred sixty-nine apparently healthy medical doctors were recruited consecutively from various departments in the NDUTH, Okolobiri and Federal Medical Center (FMC), Yenagoa, both in Bayelsa State. They were all above 18 years of age and included house officers, resident doctors, and consultants in various specialties and subspecialties of medicine.

Study setting

These two tertiary centers (NDUTH Okolobiri and FMC Yenagoa, Bayelsa State) serve as referral centers to several private and general hospitals in Bayelsa and Rivers states including hospitals in neighboring states such as Edo, Delta, Akwa-Ibom, and Imo in Nigeria.

Study design

A cross-sectional study.

Study procedures

Questionnaire

The participants first completed a self-administered questionnaire, which was developed by the authors in line with the WHO STEPwise approach to Surveillance guidelines used in similar studies.[5,13,38] This was used to gather data regarding their sociodemographic details, which included age, sex, marital status, current level of work experience, that is, housemanship, residency training, or consultants' position including specialty/subspecialty and duration of practice. Other data included a history of being a known hypertensive and/or diabetic patient and medications being taken for either or both conditions. Also elicited was history of cigarette smoking, amount of alcohol intake weekly, amount of daily/weekly aerobic exercise, salt intake, daily fruit intake, usual animal protein source, frequency of junk food intake, and family history of hypertension and diabetes.

Physical measurements

These were done by house officers (intern doctors) who had received training on how to take required measurements. All data collectors were trained to adhere to strict procedural guidelines in the measurement of all the parameters considered in this study. The several measurements done had procedural guidelines that were effectively communicated during the training of data collectors and adhered to while collecting data.

Height was measured in meters using a standardized height-o-meter (PGZ-160 Pyrochy medical, Onitsha, Anambra State, Nigeria) with the subject standing feet together with no shoes on, against a vertical ruled bar to which a movable horizontal bar was attached. During the measurement, the horizontal bar was brought to the vertex of the subject's head, and the reading at this level was taken to the nearest millimeter. They were also made to stand upright on the scale, not leaning on any support/wall with their heads up before the readings were taken.

Weight was measured in kilograms with the subject wearing only light clothing. It was ensured that participants removed their shoes, brought out everything in the pocket like phones and keys, dropped handbags, and were relieved of any material that could have increased weight temporarily. Additionally, it was ensured that the scale was on the zero mark before each participant climbed on it for the measurement. A standardized weight scale was used (PGZ-160 Pyrochy medical). Each subject's body mass index (BMI) was calculated as weight in kg divided by the square of the height in meters (kg/m^2). Obesity was defined as a BMI of ≥30 kg/m^2 using the WHO categorization.[38] Also, BMI of <18.5, 18.5–24.9, and 25–29.9 kg/m^2 were characterized as underweight, normal, and overweight, respectively.[39] Waist circumference (WC) was measured (to the nearest 0.1 cm) at the approximate midpoint between the lower margin of the last palpable rib and the top of the iliac crest[40] using a nonstretch linear tape. Hip circumference (HC) was measured (in centimeters) at the widest diameter of the hips over the greater trochanters. Waist-to-hip ratio (WHR) was calculated as WC divided by HC.[40] WC cutoff of 94 cm for European men and 80 cm for European women were regarded as elevated and indicative of abdominal obesity.[41–44] Abdominal obesity was also defined as a WHR >0.90 in males and >0.85 in females.[40] A waist-to-height ratio (WHtR) of ≥0.5 was also indicative of central obesity.[45]

The BPs were measured at presentation by house officers (intern doctors) and resident doctors who had been trained to take required measurements. An Accoson mercury sphygmomanometer was used to determine the brachial artery systolic and diastolic BPs at Korotkoff 1 and 5, respectively, in sitting position after 30 minutes rest, with the arm at heart level and readings taken at the nearest 2 mmHg. Two BP recordings were taken from the right arm of patients with measurements being taken at 5-minute intervals. The average of two measurements was then used for the analysis.[46] BP readings were based on the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC VII) classification and guidelines.[47] Random blood glucose level was determined before participant's lunch. Diabetes mellitus and impaired glucose tolerance were defined by a random blood glucose of >11.1 and >7.8 mmol/L, respectively. The measurements were taken by either the principal investigator or well-trained house officers.

Data analysis

The responses obtained from the respondents were entered into excel sheet and analyzed using SPSS version 20 software. The data analysis consisted of descriptive statistics, based on the various objectives of the study.

The sociodemographic features of the respondents were analyzed descriptively and presented in tables as frequencies and their percentages, but the age of the respondents was further presented in mean and SD, being a continuous variable. All other continuous variables like BMI, WHR, WHtR, WC, systolic and diastolic BPs, pulse rate, and random blood sugar were presented in tables as mean and SD, including their minimum and maximum values.

To identify the presence of adverse risk factors that predispose to CVDs, all the listed lifestyles were descriptively presented, to show their distribution in the sample population.

The height and weight of respondents were used to obtain BMI, which was further classified into normal and overweight/obese categories; with systolic and diastolic BPs, classification of possible hypertensive status of respondents was obtained. Applying inferential statistics, Pearson's chi-squared test and independent *t*-test were used to test for association between outcome variables of the study and gender. Associations with a *P*-value ≤0.05 were considered statistically significant. Furthermore, ANOVA test was applied in determining the association between anthropometric parameters and age groups among respondents.

Ethics statement

Approval and consent were obtained from the research and ethics committee of NDUTH Okolobiri, and only respondents who gave informed consent were recruited for the study. Pregnant females were excluded from the study.

Results

There were 68% males and 32% females in this study as shown in Table 1; most of the respondents are in the 20–39 age group in years (85.2%); single (62.7%) and mostly house officers (58%).

Table 2 shows the mean and SDs of anthropometric variables of the respondents and also shows the minimum and maximum values.

Table 1 Sociodemographic profile of respondents

Variables	Count (n=169)	N (%)
Gender		
Male	115	68.0
Female	54	32.0
Age (in years)		
20–29	74	43.8
30–39	70	41.4
40–49	13	7.7
≥50	12	7.1
Marital status		
Single	106	62.7
Married	63	37.3
Cadre of staff		
House officer	98	58.0
Resident	51	30.2
Consultant/Professor	20	11.8
Number of years in practice		
<1	82	48.5
1–5	54	32.0
6–10	12	7.1
11–20	9	5.3
21–30	8	4.7
>30	4	2.4
Mean =4.53±8.20 years		

As shown in Table 3, over half of the respondents were either overweight or obese.

In associating outcome variables of the study with sex of respondents, Table 4 shows that 77.2% of those who were not centrally obese were males and only about 22.8% of the respondents in this category were females (P-value<0.05).

Table 5 shows ANOVA test among categories of age group and the mean scores of the various anthropometric measurements. It shows a statistically significant association between the age groups and BMI, WC, systolic blood pressure (SBP), diastolic blood pressure (DBP), and pulse rate; P-values are <0.05 at 95% CI.

Table 2 Age, blood pressure, and anthropometric features of respondents

Variables	Mean ± SD	Range Minimum	Maximum
Age (years) n=169	32.49±8.73	23	67
Body mass index (kg/m^2) n=169	25.58±3.75	19	38
Waist circumference (cm) n=169	86.60±10.65	68	116
Waist–height ratio n=168	0.51±0.06	0.40	0.68
Waist–hip ratio n=168	0.90±0.08	0.67	1.27
Systolic blood pressure (mmHg) n=168	119.55±11.77	80	150
Diastolic blood pressure (mmHg) n=168	77.24±9.84	60	100
Resting pulse rate (bpm) n=169	75.41±9.23	60	112
Random blood sugar (mmol/L) n=169	5.00±1.17	3	12

Table 3 Outcome variables of the study

Characteristics	Count	N (%)
BMI		
Normal (BMI =18.5–24.9 kg/m^2)	80	47.3
Overweight (BMI =25–29.9 kg/m^2)	66	39.1
Obese (BMI ≥30 kg/m^2)	23	13.6
Waist circumference		
Normal (<94 cm for men, <80 cm for women)	106	62.7
Overweight/Obese (>94 cm for men, >80 cm for women)	63	37.3
Waist–hip ratio		
Low risk (<0.9 for men, <0.85 for women)	79	47.0
High risk (>0.9 for men, >0.85 for women)	89	53.0
Waist–height ratio		
Low risk (<0.5)	79	47.0
High risk (≥0.5)	89	53.0

Abbreviation: BMI, body mass index.

As shown in Table 6, only 7.7% of respondents had been previously diagnosed with hypertension, 63.6% of which were on thiazide diuretic combination antihypertensives. The table also shows that 56.2% of the respondents have a positive history of hypertension in a first-degree relative while only 27.4% had a positive family history of diabetes mellitus. The table further reveals that majority of the respondents had BPs in prehypertensive (48.2%), stage 1 hypertension (18.5%), or stage 2 hypertension (3.6%) ranges.[47] None of the respondents suffered from diabetes mellitus, hence there were no data to analyze the variable.

As shown in Table 7, 94.7% respondents are nonsmokers, and up to one third of the respondents took alcohol in a range of 1–50 units weekly with a mean of 7.25±8.59 units weekly. Only 25.4% engage in aerobic exercises up to 30 minutes daily or at least 3–5 times a week. Only 25.4% took fruits on a daily basis, and 76.8% had beef as source of animal protein. Water intake was low for most of the respondents (88.2%). Twenty-eight percent of the respondents took junk foods (eg, deep-fried snacks, pizzas, burgers, chips, meat pies) and soda drinks on a daily basis, while 51.2% did so on a weekly basis. Only 8.9% had the habit of adding extra salt to already prepared meals.

Discussion

Over half of the respondents were either overweight or obese. Obesity affects a large proportion of the world's population with the inclusion of health professionals.[48–52] Prevalence of overweight/obesity in medical doctors has previously been reported to be up to 48%–65%.[52–54]

When anthropometric measures were associated with the sexes of respondents, three quarters of those who were not centrally obese were males. We made this assessment using WC and WHR, both of which have been shown to be strongly associated with central fat localization,[55–57] and are sensitive measures of central obesity. Central obesity is thought to be more pathogenic than overall obesity and also contributes more to CVDs than overall obesity.[58–60] Several studies show that women are more likely to be centrally obese than men.[55,56,61–63]

The current study also showed a statistically significant association between the age groups and BMI, WC, SBP, and DBP. Advancing age is a risk factor for obesity and hypertension.[64,65] There was also a significant association between the age groups and resting pulse rate. Elevated

Table 4 Outcome variables of the study compared in males vs females

Characteristics	Sex of respondents		Chi-squared test	*P*-value
	Males N (%)	Females N (%)	χ^2	
BMI				
Normal (BMI =18.5–24.9 kg/m^2)	50 (62.5)	30 (37.5)	2.15	0.14
Overweight (BMI =25–29.9 kg/m^2) or obese (BMI ≥30 kg/m^2)	65 (73.0)	24 (27.0)		
Waist circumference				
Normal (<94 cm for men, <80 cm for women)	61 (77.2)	18 (22.8)	5.99	0.01
Overweight/Obese (>94 cm for men, >80 cm for women)	54 (59.6)	36 (40.4)		
Waist–hip ratio				
Low risk (<0.9 for men, <0.85 for women)	61 (77.2)	18 (22.8)	38.18	0.00
High risk (>0.9 for men, >0.85 for women)	53 (20.0)	36 (80.0)		
Waist–height ratio				
Low risk (<0.5)	51 (64.6)	28 (35.4)	0.75	0.39
High risk (≥0.5)	63 (70.8)	26 (29.2)		

Abbreviation: BMI, body mass index.

Table 5 Comparison of study variables among age groups

Parameters	Age group (years)				ANOVA test	
	20–29	30–39	40–49	≥50	F	*P*-value
BMI	24.62±3.16	25.66±3.73	26.23±3.44	30.33±4.12	9.41	0.00
WC	84.09±8.78	85.05±9.16	92.15±10.45	105.08±10.49	20.25	0.00
WHtR	0.51±0.07	0.51±0.06	0.48±0.04	0.50±0.04	1.03	0.38
WHR	0.89±0.08	0.91±0.08	0.87±0.07	0.88±0.07	1.34	0.26
SBP	118.52±11.10	117.51±11.35	124.62±11.98	132.17±9.82	6.95	0.00
DBP	76.53±9.24	75.71±9.72	81.08±6.46	86.33±12.12	5.11	0.00
PR	73.09±7.26	76.79±9.48	75.38±12.20	81.67±11.59	4.13	0.01
RBS	4.89±1.12	5.21±1.26	4.69±0.63	4.75±1.29	1.49	0.22

Notes: Results reported as mean ± SD; significant at $P<0.05$.
Abbreviations: BMI, body mass index; DBP, diastolic blood pressure; PR, pulse rate; RBS, random blood sugar; SBP, systolic blood pressure; WC, waist circumference; WHtR, waist-to-height ratio; WHpR, waist-to-hip ratio.

resting pulse rate (RPR) is strongly associated with adverse cardiovascular outcomes.[66,67] Mean RPR in our respondents was 81.67±11.59 bpm. Elevated RPR >80 bpm often leads to rupture of atherosclerotic plaques and consequent occurrence of acute coronary syndrome.[68,69]

Only 7.7% of the respondents had been previously diagnosed with hypertension; however, 22.1% had BP ≥140 mmHg SBP and/or DBP ≥90 mmHg. Majority (48.2%) had SBP in the range of 120–139 and/or DBP 80–89 mmHg; however, BP reading was done only once. Detection of hypertension remains low in sub-Saharan Africa because of poor awareness and a highly deficient and underfunded health system.[61–63,70,71] Medical doctors show low rates of undergoing routine medical checks on themselves[72] despite possibly dying more from physical illnesses than mental health challenges, which have been the foci of most studies on doctors' health and health-related behaviors.[73] Doctors may have a high prevalence of chronic illnesses[74] with prevalence rate of CVDs of 4%–15% previously reported.[75–77]

Out of all the study respondents who had been previously diagnosed hypertensive and were on antihypertensive medications, 63.6% of them were on antihypertensive combinations that included thiazide diuretics. Over two thirds of hyperten-

Table 6 History of hypertension, diabetes mellitus, and body mass index of respondents

Characteristics	Count (n=169)	N (%)
Known hypertensive		
Yes	13	7.7
No	156	92.3
Duration of hypertension (years) N=13		
<5	8	61.5
≥5	5	38.5
BP medication		
Thiazide combination	7	63.6
No thiazide	4	36.4
Family history of HTN		
Yes	95	56.2
No	74	43.8
HTN status		
Normal (SBP <120 mmHg; DBP <80 mmHg)	50	29.8
Pre-HTN (SBP =120–139 mmHg; DBP =80–89 mmHg)	81	48.2
Stage 1 HTN (SBP =140–159 mmHg; DBP =90–99 mmHg)	31	18.5
Stage 2 HTN (SBP ≥160 mmHg; DBP ≥100 mmHg)	6	3.6
Family history of diabetes mellitus		
Yes	46	27.4
No	122	72.6

Abbreviations: BP, blood pressure; DBP, diastolic blood pressure; HTN, hypertension; SBP, systolic blood pressure.

Table 7 Some lifestyle characteristics of respondents

Characteristics	Count (n=169)	N %
Smoking status		
Smoker (mean pack years 2.50±1.73, range 1–5 pack years)	9	5.3
Nonsmoker	160	94.7
Alcohol consumption status		
Takes alcohol (mean 7.25±8.59 units weekly, range 1–50 units weekly)	61	36.1
No alcohol intake	108	63.9
Exercise		
Aerobic exercise 30 minutes daily or 3–5 times a week	43	25.4
No aerobic exercise	126	74.6
Consumes fruits daily		
Yes	43	25.4
No	126	74.6
Adds extra salt to meals		
Yes	15	8.9
No	154	91.1
Main source of protein		
Beef only	33	19.6
Beef and chicken	9	5.4
Beef, chicken, and fish	50	29.8
Beef and fish	23	13.7
Chicken and fish	20	11.9
Fish only	19	11.3
Beef, chicken, fish, and pork	14	8.3
Daily water intake		
Low (<2.7 L for women, <3.7 L for men)	149	88.2
Moderate (2.7 L for women, 3.7 L for men)	12	7.1
High (>2.7 L for women, >3.7 L for men)	8	4.7
Junk food/soda drinks		
Take daily	47	28.0
Take weekly	86	51.2
Take monthly	4	2.4
Do not take	31	18.5

sive patients cannot achieve BP control on one drug alone and require two or more antihypertensive drugs from different classes.[78–80] Thiazide diuretics are first-line antihypertensive agents[47] and are the most frequently prescribed antihypertensives in Nigeria and sub-Saharan Africa at large usually in combination with dihydropyridine calcium-channel blockers, angiotensin-converting enzyme inhibitors, or angiotensin receptor blockers.[81–83]

A positive history of hypertension in a first-degree relative was present in over half of the respondents. A positive family history of hypertension is a risk factor for hypertension, obesity, dyslipidemia, type 2 diabetes mellitus, and CVDs[84–86] and several studies have shown an increased prevalence of hypertension among first-degree relatives of hypertensive patients.[86,87]

Only 27.4% of the respondents had a positive family history of diabetes mellitus. Previous studies have shown a prevalence rate of 10.3%–26.9% in first-degree relatives of type 1 and/or type 2 diabetic patients.[88,89] Having a first-degree relative with type 2 diabetes mellitus may increase the risk of becoming diabetic by as much as 40%.[89]

Few of the respondents smoked cigarettes (5.3%, all males). The World Bank collection of development indicators reported a prevalence of 17.4% of smoking among Nigerian male adults in 2015.[90] The WHO report on global tobacco epidemic, 2017[91] also reported a prevalence of adult tobacco/cigarette smoking of 10%/7.2% in adults; however, we had a lower prevalence of smoking among doctors in this study.

Up to one third of respondents took alcohol in a range of 1–50 units weekly with a mean of 7.25±8.59 units weekly. Alcohol intake >14 units weekly for women and >21 units per week for men is associated with increased risk of CVDs;[92–94] it is, therefore, worrisome that we had a medical doctor taking up to 50 units of alcohol weekly.

In the current study, majority of the respondents (74.6%) did not perform aerobic exercises up to 30 minutes daily or at least 3–5 times a week. Low rates of physical activity are associated with obesity, hypertension, type 2 diabetes mellitus, dyslipidemias, and cardiovascular events such as stroke.[95–99] Low levels of aerobic activity have been reported among physicians.[100] This has been blamed on the rigors of medical training and the residency programs that are very stressful and leave medical students and residency trainees little time and incentive to eat healthy and be physically active.[101] Such bad habits may be carried over after medical training.[100,101,102]

Over two thirds of the study respondents admitted that they did not take fruits on a daily basis. Low fruit intake is associated with increased risk of hypertension and CVDs.[103–106] Fruits and vegetables contain potassium and high potassium intake is associated with BP reduction in both normotensive and hypertensive individuals.[107–109] Dietary approach to stop hypertension (DASH) diet recommends 4–5 servings of fruits daily.[109]

Majority (76.8%) of the respondents preferred to eat beef (non-lean red meat) as a source of animal protein. Intake of beef may be associated with increased risk of hypertension and coronary heart disease because of the high saturated fat content of beef.[110–112] Reduced consumption of meats, especially red meats or non-lean meats, and greater consumption of fruits and vegetables are recommended by the American Heart Association based on the findings from several studies.[113] All animal products contain cholesterol and may be best avoided even though many doctors still recommend inclusion of chicken and fish in meals.[114] Choline, which is a nutrient that is found in meat and fish, may increase a person's risk for heart disease, through the production of its pro-atherosclerotic metabolite, trimethylamine-N-oxide (TMAO).[115] An elevated TMAO level has been associated with increased platelet activation, blood clotting, and an increased risk of major adverse cardiovascular events even after adjustment for traditional cardiovascular risk factors.[116] The study found that those with the highest levels of TMAO were 2.5 times more likely to suffer from an adverse cardiovascular event, compared to those who had the lowest levels.[115,116]

Almost 90% of respondents took <2.7 L of plain water for women and <3.7 L of plain water on a daily basis for men. For an average, healthy adult living in a temperate climate, the recommended daily fluid intake deemed as adequate is about 15.5 cups (3.7 L) of fluids for men and about 11.5 cups (2.7 L) of fluids a day for women and includes fluids from water, other beverages, and food.[117] However, persons in hot tropical climates such as ours typically need more water to stay adequately hydrated. Several studies suggest that low intake of plain water is associated with other less desirable behaviors such as poor dietary quality and lifestyle[118,119] and may be associated with obesity,[120–123] and type 2 diabetes[124] if substituted with sugar-sweetened beverages.

Daily intake of junk foods and soda drinks as found among 28% of study participants in this study is associated with increased risk of obesity, hypertension, and CVDs such as stroke, heart failure, and ischemic heart disease.[125–130]

Adding salt to prepared food was low in occurrence among study participants. DASH diet and other healthy living food guidelines have shown that added salt to prepared meals increases CVD risk.[131–134]

Study limitations

BP measurement was done only once; hence, respondents with bp ≥140/90 mmHg could not be defined as being hypertensive. Weight and height were also measured only once. The respondents were apparently healthy medical doctors who did not report any symptoms or signs of ill health; however, no blood work was done to prove that they were within all normal healthy parameters.

Conclusions

Our findings of a high prevalence of several cardiovascular risk factors including overweight/obesity, physical inactivity, junk food intake, and low fruits intake among doctors who advise patients against similar lifestyles is worrisome. These factors are known to be associated with an overall negative impact on cardiovascular health. Routine screening of medical doctors for cardiovascular risk factors is needed. Also, interventions to help doctors adopt healthier lifestyles are needed. In America, their National Academy of Sciences recommends a minimum of 25 hours of instruction be set aside for nutritional education but many of their medical schools fall far short of this recommendation.[135] We need to institute such bars for learning of nutritional quality and behavioral changes here in our Nigerian medical schools and aspire to achieve them so we can possibly raise a generation of healthy-eating medical doctors with good cardiovascular health.

Data sharing statement

The datasets analyzed during the current study are available from the corresponding author on reasonable request.

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Authors contributions

TEA designed the study, wrote the protocol, and managed both the statistical analysis and literature research, while TEA and EUC both contributed to writing the final manuscript. All authors contributed toward data analysis, drafting and revising the paper and agree to be accountable for all aspects of the work.

Disclosure

The authors report no conflicts of interest in this work.

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