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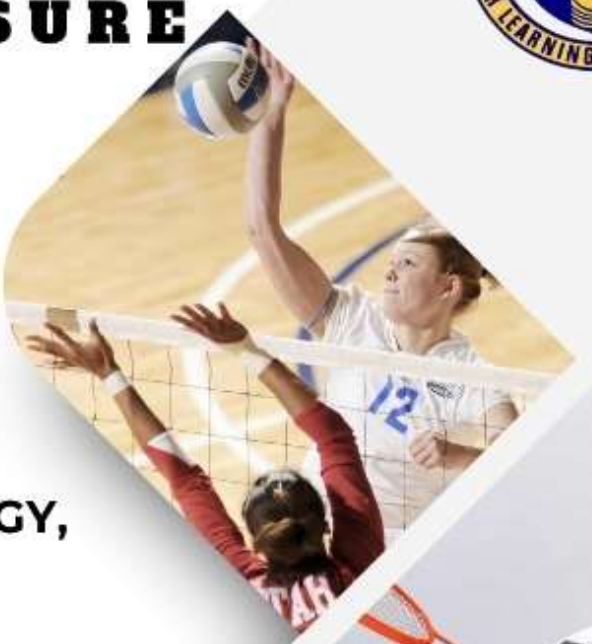

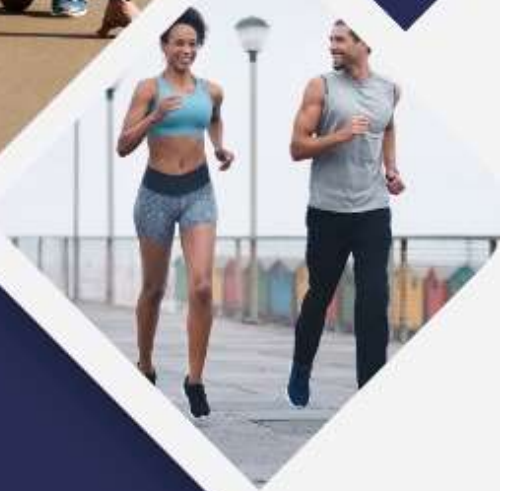

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A COMPARATIVE ASSESSMENT OF PHYSICAL ACTIVITY LEVEL AND PREVALENCE OF HIGH BLOOD PRESSURE AMONG TEACHING AND NON-TEACHING STAFF OF A SOUTH-WESTERN UNIVERSITY IN NIGERIA

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Abstract
High-blood-pressure (HBP) is a silent-killer and physical-activity is one its modifiable-risk-factors. This study assessed and compared physical-activity-level (PAL) and HBP-prevalence among teaching-and non-teaching-staff, University of Lagos. A cross-sectional-descriptive-study-design was used to select 952-respondents. An adapted pre-tested-version of WHO-STEPwise-questionnaire and Global-Physical-Activity-Questionnaire was used to collect respondents' data. HBP was defined as systolic-blood-pressure of ≥140mmHg and/or a diastolic-blood-pressure of ≥90mmHg. Data were significant at p < 0.05. Teaching-and non-teaching-staff-ages were 49±8.56 and 42±9.40 years, respectively. HBP-prevalence: teaching (18.9%); non-teaching (18.1%). PAL-status: insufficiently-physically-active: teaching (96.4%), non-teaching (89.3%); physically-active: teaching (3.6%), non-teaching (10.7%). Trekked ≥3times/week: teaching (38.7%); non-teaching (59.2%); vigorous-intensity-activity (VIA): teaching (3.8%); non-teaching (11.0%); moderate-intensity-activity (MIA): teaching (29.0%), non-teaching (26.1%). Time-spent VIA ≥75mins: teaching (3.6%), non-teaching (12.0%); MIA ≥150mins: teaching (9.2%), non-teaching (9.5%). Sitting-hrs ≤30 mins/day before standing-up: teaching (3.6%), non-teaching (12.6%). Physically-active with HBP: teaching (29.4%), non-teaching (15.7%); Insufficiently-physically-active with HBP: teaching (18.5%), non-teaching (18.4%). Trekking-frequency was significantly-associated with HBP among teaching-staff while frequency and duration of recreational-activities were associated with HBP among non-teaching-staff (p≤0.05). Odds of having HBP among non-teaching-staff decreased with trekking (OR = 0.60; 95% CI: (0.36 - 0.99); p=0.049).
High physical-inactivity and HBP existed among respondents. Health-education and awareness on physical-activity and HBP are important among these respondents.

Key words: *High blood pressure, physical activity, prevalence, teaching staff, non-teaching staff, university*

Introduction

High blood pressure (HBP) is a silent killer and a major risk factor for cardiovascular disease, a predominant cause of death. Globally, hypertension affects 1 in 3 adults and 1.13 billion people (World Health Organisation (WHO), 2023a; WHO, 2023b). Globally, a high prevalence of HBP has been reported among university employees as teaching staff or faculty members (32.0.-39.2%) and non-teaching or administrative staff (50.0%) (Amin et al. 2014; Mohammad and Abdullah, 2017). In Nigeria, a hypertension prevalence of 21-22% was cited (Abdullahi and Amzat, 2011; Oyeyemi and Adeyemi, 2013). Available studies show few comparative studies while others were cross-sectional studies (Abdullahi and Amzat, 2011; Aryeteey and Anso, 2011; Ordinioha, 2013; Oyeyemi and Adeyemi, 2013; Amin et al. 2014; Vincent-Onabanjo et al. 2016; Eng et al. 2016; Alzeidan et al. 2016; Nassal and Mousa, 2016).

A comparative study reported the prevalence of hypertension among junior staff (23.8%) and senior staff (38.9%) and mean diastolic hypertension for the male senior and junior staff as 158.3 vs. 144.3 mmHg respectively (Omorogiuwa et al. 2009). Another study reported the blood pressure pattern of teaching and non-teaching staff as 20.1 vs. 14.8% respectively. The mean SBP for teaching and non-teaching staff was 130.9 vs. 126.9 mmHg and DBP (77.1 vs. 75.7 mmHg) respectively (Adedoyin et al. 2016). SBP was significant among teaching staff whereas DBP was not (Oyeyemi and Adeyemi, 2013). The JNC7 guideline, 2003, classified the four stages of hypertension: normal (<120 and or <80 mm Hg); prehypertension (120-139 and or 80-89 mm Hg); stage 1 hypertension (140-159 or 90-99 mm Hg) and stage 2 hypertension (≥160 & or >100 mmHg) (NIH, 2004).

Teaching/faculty staff of universities are the academics who teach the students in various university programs from the first year of admission until they graduate. The primary duties of the faculty staff include effective classroom/online teaching, academic advising and counselling of students, continuous development of the curriculum through assessment, applied research, administrative duties and social responsibility services (Adedoyin et al. 2016; Mcnesse University, 2017). Studies have reported that teachers undergo various degrees of stress and seem to be overwhelmed with ever-increasing administrative task demands (McIntyre, 2015). Another source of teacher stress is the "publish or perish syndrome" in which the teacher is not promoted by teaching alone but in conjunction with the number of papers published (Sun et al. 2011). Administrative staff guide new students and staff through admission, employment and registration processes, issue scholarships and awards, orient them into the university culture, facilitate residence life programming, monitor their completion of program.

Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure (WHO, 2024). It refers to all movement during leisure time, walking, cycling, wheeling, sports, active recreation, person's work or domestic activities and play for transport to get to and from places, or as part of a person's work or domestic activities. Both moderate- and vigorous-intensity physical activity improves health (WHO, 2024). Physical inactivity and sedentary behaviours are contributing to the rise in NCDs and placing a burden on healthcare systems (WHO, 2024). Exercise has been reported to positively predict hypertension among university staff (Bappa et al. 2022; Nwoga, 2023). It has been reported that in

adults, physical activity contributes to prevention and management of non-communicable diseases such as cardiovascular diseases, cancer and diabetes and reduces symptoms of depression and anxiety, enhances brain health, and can improve overall well-being (WHO, 2024). It is recommended that all adults should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75-150 minutes of vigorous intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week, for substantial health benefits (WHO, 2020b). Both teaching and non-teaching staff do sedentary work due to the exigency of their duties. Low physical activity and sedentary lifestyle among university staff have been reported from 10%-53% (da Conceicao et al. 2006; Emerole et al. 2007; Aryeeetey and Ansong, 2011; Ige et al. 2013; Alzeidan et al. 2016). Teachers reported significantly higher physical activity levels than support staff, and individuals with longer average sitting times per day reported significantly lower levels of physical activity (Agha and Al-Dabbagh, 2010). However, in another study, academic staff involvement in physical activity was very low (Samson-Akpan et al. 2013). Several studies have been carried out on HBP prevalence and physical activity among university staff, but few have compared HBP prevalence and PAL among teaching and non-teaching staff. This comparative study, therefore, aimed to compare and assess the physical activity level and prevalence of high-blood-pressure among teaching and non-teaching staff of the University of Lagos, Lagos State, Nigeria.

Research Question

1. What is the physical activity patterns, prevalence of high blood pressure and the association between the prevalence of high blood pressure and the physical activity level of teaching and non-teaching staff of the University of Lagos?

Research Hypotheses

1. There is no statistically significant difference between the physical activity patterns of teaching and non-teaching staff of the University of Lagos.
2. There is no statistically significant difference between the prevalence of high blood pressure among teaching and non-teaching staff of the University of Lagos.
3. There is no statistically significant association between the prevalence of high blood pressure and the physical activity level of teaching and non-teaching staff of the University of Lagos.

Methodology

A cross-sectional descriptive study design was used to carry out the comparative study. A multi-stage-sampling-technique was used to select 952 respondents (teaching staff 476; non-teaching staff 476) in the University of Lagos, Nigeria. The physical activity level (PAL) among participants was assessed using the adapted interviewer administered pre-tested version of WHO-STEPwise-questionnaire and the Global Physical Activity Questionnaire (GPAQ) (WHO, 2017; WHO, 2021). Respondents were asked questions such as “Does your work involve vigorous-intensity activity (VIA)?”; “Does your work involve moderate-intensity activity (MIA)?”. Respondent’s VIA/MIA in a typical week (Never, <3 days/week & ≥ 3 days/week); Time spent doing VIA ((None, <75 minutes & ≥75 minutes) and time spent doing MIA (None, <150 minutes & ≥150 minutes); Trekking for at least 10 minutes continuously to and fro work in a typical week (Never, <3 days/week & ≥3

days/week) and Sitting hours before standing up (≤30 minutes/day, ≤120 minutes/day and ≥360 minutes /day). Sitting hours before standing up was classified as physically active (≤30 minutes/day); moderately sedentary (≤120 minutes/day) and highly sedentary (≥360 minutes /day). Moderately sedentary and highly sedentary participants were finally grouped as insufficiently-physically-inactive. These PAL responses were regrouped under two categories: physically active and insufficiently-physically-active. A participant was physically active if he/she engaged in moderate-intensity physical activity for ≥ 3 days/week and ≥150 minutes per week or in vigorous-intensity physical activity for ≥3 days/week and ≥75 minutes/week or trek for at least 10 minutes for ≥ 3 days/week; insufficiently-physically-active if the participant engaged in <3 days/week and <150 minutes per week or in vigorous-intensity physical activity for <3 days/week and <75 minutes/week, never trekked. Physical active responses were coded one (1) while insufficiently-physically-inactive responses were coded as zero (0). Blood pressure measurement was carried out according to the standard WHO STEPS protocols using an automatic blood pressure monitor, Sphygmomanometer (OMRON IntelliSence M2Basic. Japan). Based on mean systolic blood pressure (SBP) and diastolic blood pressure (DBP), participants were grouped using the 7th report of the Joint national committee on Prevention, Detection, Evaluation and Treatment of high blood pressure as: normal <120 and/or<80; Prehypertension 120-139 and /or 80-89; Stage 1 hypertension 140-159 and/or 90-99 and Stage 2 ≥160 and /or ≥100 (NIH, 2004). Finally, participants were re-grouped as hypertensive and not-hypertensive. Participants with NBP and prehypertension were categorised as not-hypertensive while stage 1 and stage 2 blood pressure groups were classified as hypertensive. Data was analysed using SPSS version 26 statistical software and compared using descriptive statistics, chi-square, student t-test and binary logistic regression at $p<0.05$ significance level.

Data analysis and findings

Table 1.0: Socio-demographic characteristics of respondents

No.	Items	Teaching (n=476) Freq (%)	Non-teaching (n=476) Freq (%)	Total (N=952) Freq (%)	χ^2	p-value
1.	**AGE**					
	18-29	17 (3.6)	43 (9.0)	60 (6.3)	141.737	<0.001
	30-39	45 (9.5)	172(36.1)	217(22.8)		
	40-49	165(34.7)	153(32.1)	318(33.4)		
	50-59	201(42.2)	87(18.3)	288(30.3)		
	60+	48(10.1)	21 (4.4)	69 (7.2)		
	Mean (SD)	**48.9±8.56**	**41.8±9.40**			
2.	**GENDER**					
	Male	319(67.0)	262(55.0)	581(61.0)	14.349	<0.001
	Female	157(33.0)	214(45.0)	371(39.0)		
3.	**MARITAL STATUS**					
	Single	37 (7.8)	91(19.1)	128(13.4)	29.025	<0.001
	Married	420(88.2)	366(76.9)	786(82.6)		
	Divorced/separated/Widowed	19 (4.0)	19 (4.0)	38 (4.0)		
4.	**RELIGION**					
	Christianity	360(75.6)	390(81.9)	750(78.8)	5.737	0.057
	Islam	104(21.8)	76(16.0)	180(18.9)		
	Others	12 (2.5)	10 (2.1)	22 (2.3)		
5.	**HIGHEST EDUCATION**					
	≤Secondary	0(0.0)	142(29.8)	142(14.9)	589.410	<0.001
	Tertiary	14(2.9)	241(50.6)	255(26.8)		
	Post-graduate	462(97.1)	93(19.5)	555(58.3)		
6.	**CADRE**					
	Junior staff	181(38.0)	398(86.6)	579(60.8)	952.000	<0.001
	Senior staff	295(62.0)	78(16.4)	373(39.2)		
	Total	**476(100)**	**476(100)**	**952(100)**		

Table 1.0 shows the socio-demographic characteristics of the respondents. The mean ages (years) for teaching staff were 49 vs. 42 years (p<0.001).

Research Question - What is the physical activity pattern, prevalence of high-blood-pressure and association between physical-activity pattern and high-blood-pressure among teaching and non-teaching staff of the University of Lagos?

Hypothesis 1 - There is no statistically significant difference between the physical-activity pattern of teaching and non-teaching staff of University of Lagos.

Table 1.1: Physical activity pattern among teaching and non-teaching staff

No.	Item	Teaching n=476	Non-teaching n=476	Total N=952		
	Physical activity pattern	**Freq (%)**	**Freq (%)**	**Freq (%)**	**$\chi 2$**	**p-value**
1.	**Respondent's work involves vigorous-intensity activity (VIA)**					
	Yes	24 (5.0)	77(16.2)	101(10.6)	31.113	0.001
	No	452(95.0)	399(83.8)	851(89.4)		
2.	**Respondent's work involves moderate-intensity activity (MIA)**					
	Yes	174(36.6)	228(47.9)	851(89.4)	28.893	<0.001
	No	302(63.4)	248(52.1)			
3.	**VIA in a typical week**					
	Never	451(94.7)	400(84.0)	851(89.4)	29.160	<0.001
	<3 days/week	7 (1.5)	24(5.0)	31 (3.3)		
	≥3 days/week+	18 (3.8)	52(11.0)	70 (7.4)		
4.	**Time spent doing VIA**					
	None	451(94.7)	400(84.0)	851(89.4)	29.160	<0.001
	<75 minutes	8 (1.7)	19 (4.0)	27(2.8)		
	≥75 minutes+	17(3.6)	57(12.0)	74(7.8)		
5.	**MIA, recreational activities/week**					
	Never	21 (4.4)	28 (5.9)	49 (5.1)	1.825	0.402
	<3 days/week	317(66.6)	324(69.1)	641(67.3)		
	≥3 days/week+	138(29.0)	124(26.1)	262(27.3)		
6.	**Time spent doing VIA**					
	None	17 (3.6)	21 (4.4)	38 (4.0)	0.463	0.794
	<150 minutes	415(87.2)	410(86.1)	825(86.7)		
	≥150 minutes+	44 (9.2)	45 (9.5)	89 (9.3)		
7.	**Trekking for at least 10 minutes continuously to and fro work in a typical week**					

	Never	168(35.3)	126(26.5)	294(30.9)	42.943	<0.001
	<3 days/week	124(26.0)	68(14.3)	192(20.2)		
	≥3 days/week+	184(38.7)	282(59.2)	466(48.9)		
8.	**Sitting hours before standing up**					
	≤30 minutes/day^{+}	17 (3.6)	60(12.6)	77 (8.1)	27.666	<0.001
	≤120 minutes/day^{++}	154(32.3)	125(26.3)	279(29.3)		
	≥360 minutes /day^{+++}	305(64.1)	291(61.1)	596(62.6)		
	Total	**476(100)**	**476(100)**	**952(100)**		

$^{+}$Physically active: $^{++}$ Moderately sedentary; $^{+++}$Highly sedentary; (Moderately sedentary and highly sedentary = insufficiently physically inactive)

Table 1.1 shows the physical activity pattern of the respondents. Non-teaching staff job involved more vigorous-intensity activity (VIA) and moderate-intensity activity (MIA) than those of the teaching staff.

Table 1.1.1: Summary of the Physical activity status of teaching and non-teaching staff

No.	**Item**	**Teaching**	**Non-teaching**	**Total**	**$\chi 2$**	**p-value**
		Freq(%)	**Freq(%)**	**N=952**		
1.	**How many days in a typical week vigorous-intensity activities was part of your work**					
	Insufficiently physically active	459(51.9)	425(48.1)	884(100)	18.308	<0.001
	Physically active	17(25.0)	51(75.0)	68(100)		
2.	**Time spent doing vigorous-intensity activities at work on a typical day**					
	Insufficiently physically active	460(52.1)	423(47.9)	883(100)	21.391	0.022
	Physically active	16(23.2)	53(76.8)	69(100)		
3.	**How many days in a typical week moderate-intensity sports, fitness or recreational (leisure) activities was done**					
	Insufficiently physically active	337(48.9)	352(51.1)	689(100)	1.182	0.277
	Physically active	139(52.9)	124(47.1)	263(100)		
4.	**How much time spent doing moderate-intensity sports, fitness or recreational**					

	(leisure) activities on a typical day					
	Insufficiently physically active	437(49.2)	452(50.8)	889(100)	3.825	0.051
	Physically active	39(61.9)	24(38.1)	63(100)		
5.	**Trekking for at least 10 minutes in a typical week**					
	Insufficiently physically active	295(59.9)	198(40.2)	493(100)	39.584	<0.001
	Physically active	181(39.4)	278(60.6)	459(100)		
6.	**Sitting hours before standing up (minutes per day); sedentary activities**					
	Insufficiently physically active	465(52.7)	417(47.3)	882(100)	35.527	<0.001
	Physically active	11(15.7)	59(84.3)	59(84.3)		
7.	**Physical activity status**					
	Insufficiently physically inactive	459(96.4)	425(89.3)	884(92.9)	18.308	<0.001
	Physically active	17 (3.6)	51(10.7)	68 (7.1)		
	Total	**476(100)**	**476(100)**	**952(100)**		

Table 1.1.1 shows the summary of the physical-activity status of teaching and non-teaching staff. Summarily, non-teaching staff were more physically-active than the teaching-staff ($p<0.05$).

Hypothesis 2 - There is no statistically significant difference between the prevalence of high-blood-pressure among teaching and non-teaching staff of University of Lagos.

Table 1.2: Prevalence of high blood pressure among teaching and non-teaching staff using the 2003 JNC blood pressure cut-off point

No.	**Blood pressure (mm Hg)**	**Teaching n=476**	**Non-teaching n=476**	**Total N=952**		
1.	**SBP RANGE**	**Freq (%)**	**Freq (%)**	**Freq (%)**	**$\chi 2$**	**p-value**
	<120	126(26.5)	197(41.4)	323(33.9)	24.649	<0.001
	120-129	161(33.8)	132(27.7)	293(30.8)		
	130-139	109(22.9)	77(16.2)	186(19.5)		
	≥140	80(16.8)	70(14.7)	150(15.8)		

	Mean (SD)		127.05 ±13.44	123.64 ±16.15		
	t = 3.540, p< 0.001					
2.	**DBP RANGE**					
	<80		203(42.6)	245(51.5)	448(47.1)	18.160	0.001
	<80		236(49.6)	175(36.8)	411(43.2)		
	80-89		32 (6.7)	43 (9.0)	75 (7.8)		
	≥90		5 (1.1)	13 (2.7)	18 (1.9)		
	Mean (SD)		79.62±7.68	78.56±9.57		
	t =1.882, p=0.060					
3.	**HBP STATUS**					
	Not-hypertensive		386(81.1)	390(81.9)	776(81.5)	0.112	0.738
	Hypertensive		90(18.9)	86(18.1)	176(18.5)		
4.	**CATEGORY**	**BP RANGE**					
	Normal	<120 & or <80	112(23.5)	175(36.8)	287(30.2)	19.833	<0.001
	Pre-HBP	120-139 & or 80-89	261(54.8)	214(45.0)	475(49.9)		
	Stage1 HBP	140-159 & or 90-99	88(18.5)	74(15.5)	162(17.0)		
	Stage2 HBP	≥160 & or ≥100	15 (3.2)	13 (2.7)	28 (2.9)		

*BP= Blood pressure; *SBP = Systolic blood pressure; DBP = Diastolic blood pressure; HBP = High blood pressure; PHBP=Pre-hypertensive; 1HBP= Stage 1 HBP; Stage 2 HBP

Table 1.2 shows the prevalence of high-blood-pressure among the respondents. The mean systolic blood pressure was higher among the teaching than the non-teaching staff (127.28±13.47 vs. 123.87±16.14: p<0.001). The prevalence of HBP, both Pre-HBP, stage 1HBP and stage 2HBP were also higher among the teaching (18.9%, 34.8%, 18.5%, 3.2%) than the non-teaching staff (18.1%, 45.0%, 15.5%, 2.7%) (p<0.05)

Hypothesis 3 - There is no statistically significant association between the prevalence of high-blood-pressure and physical activity level among teaching and non-teaching staff of University of Lagos.

Table 1.3: Bivariate-analysis of association between physical-activity and high blood pressure among teaching and non-teaching staff

		Teaching staff*			Non-teaching staff*		
		Not-HBP	HBP	Total	Not-HBP	HBP	
		n=361	n=115	N = 476	n=367	n=109	N = 476
	Physical activity	Freq (%)	Freq (%)		Freq (%)	Freq (%)	Total
1.	**Work involved moderate intensity activity (MIA)**						
	Yes	129(35.7)	45(39.1)	174(36.6)	183(49.9)	45(41.3)	228(47.9)
	No	232(64.3)	70(60.9)	302(63.4)	184(50.1)	64(58.7)	248(52.1)
		$\chi2$ = 0.434	p=0.507		$\chi2$ =2.479	p = 0.127	
2.	**Work involved vigorous intensity activity (VIA)**						
	Yes	17 (4.7)	7 (6.1)	24 (5.0)	55(15.0)	22(20.2)	77(16.2)
	No	344(95.3)	108(93.9)	452(95.0)	312(85.0)	87(79.8)	399(83.8)
		$\chi2$ = 0.34	p=0.624		$\chi2$ =1.67	p= 0.235	
3.	**In a typical week, on how many days do you do vigorous-intensity activities as part of your work?**						
	Never	148(35.2)	273(64.8)	421(88.4)	205(47.7)	225(52.3)	430(90.3)
	<3days/wk	5(33.3)	10(66.7)	15 (3.2)	8(50.0)	8(50.0)	16 (3.4)
	≥3days/wk*	15(37.5)	25(62.5)	40 (8.4)	16(53.3)	14(46.7)	30 (6.3)
		$\chi2$ = 0.114	p=0.945		$\chi2$ =0.383	p=0.826	
4.	**Time spent doing vigorous-intensity activities at work on a typical day.**						
	None	148(35.2)	273(64.8)	421(88.4)	205(47.7)	225(52.3)	430(90.3)
	<75 mins	4(26.7)	11(73.3)	15 (3.2)	7(58.3)	5(41.7)	12 (2.5)
	≥75 mins*	16(40.0)	24(60.0)	40 (8.4)	17(50.0)	17(50.0)	34 (7.2)
	$\chi2$ = 0.880	p=0.644			$\chi2$ = 0.584	p=0.747	
5.	**Participate in moderately-intensity recreational activities per week**						
	Never	14 (3.9)	7 (6.1)	21 (4.4)	16 (4.4)	12 (11.0)	28 (5.8)
	≤3 days/wk	235(65.1)	82(71.3)	317(66.6)	246(67.0)	78(71.6)	324(68.1)
	≥3 days/wk*	112(31.0)	26(22.6)	138(29.0)	105(28.6)	19(17.4)	124(26.1)
		$\chi2$ =3.600	p=0.165		$\chi2$ =10.602	p=0.005	

6.	**Time spent in recreational activities per day**						
	None	12 (3.3)	5 (4.4)	17(3.6)	13 (3.5)	8 (7.3)	21 (4.4)
	<150 mins/d	311(86.2)	104(90.4)	415(87.2)	324(88.3)	86(78.9)	410(86.1)
	≥150mins/d*	38(10.5)	6 (5.2)	44(9.2)	30 (8.2)	15(13.8)	45 (9.5)
		$\chi2$ =3.099	p=0.212		$\chi2$ =6.381	p=0.041	
7.	**Trekking for at least 10 minutes in a typical week**						
	Never	131(36.3)	37(32.2)	168(35.3)	92(25.1)	34(31.2)	126(26.5)
	≤3 days/wk	82(22.7)	42(36.5)	124(26.1)	48(13.1)	20(18.3)	68(14.3)
	≥3 days/wk*	148(41.0)	36(31.3)	184(38.6)	227(61.8)	55(50.5)	282(59.2)
		$\chi2$ =8.920	p=0.012		$\chi2$ =4.666	p=0.097	
8.	**Sitting hours before standing up (minutes per day); Sedentary activity**						
	≥360 mins/d	117(69.6)	230(74.7)	347(72.9)	121(52.8)	128(51.8)	249(52.3)
	≤120 mins/d	46(27.4)	58(18.8)	104(21.8)	80(34.9)	95(38.5)	175(36.8)
	≤30 mins/d*	5 (3.0)	20 (6.5)	25 (5.3)	28(12.3)	24(9.7)	52(10.9)
		$\chi2$ =6.575	p=0.037		$\chi2$ =1.111	p=0.574	

*Physically active

Table 1.3 of the bivariate analysis revealed that participation in moderately-intensity recreational activities such as sports, fitness or leisure activities and the time spent in these recreational activities per day were statistically associated with high-blood-pressure among non-teaching staff than the teaching staff while trekking for at least 10 minutes in a typical week to and from work and engaging in sedentary activities were significant with the teaching-staff ($p<0.05$).

Table 1.3.1: Summary of bivariate analysis of association between physical activity status and high blood pressure among teaching and non-teaching staff

		Teaching staff			**Non-teaching staff**				
	Physical activity Levels JNC7 2003	**Not-HBP Freq (%) n=168**	**HBP Freq (%) n=308**	**Total (N= 476)**	**Not-HBP Freq (%)**	**HBP Freq (%)**	**Total (N= 476)**	**$\chi2$**	**p-value**
1.	**Insufficiently physically active**	374 (81.5)	85 (18.5)	459 (96.4)	347 (81.6)	78 (18.4)	425 (89.3)	0.024	0.949
2.	**Physically active**	12 (70.6)	5 (29.4)	17 (3.6)	43 (84.3)	8 (15.7)	51 (10.7)	1.553	0.213

Table 1.3.1 shows the summary of bivariate analysis of the association between physical activity levels and high-blood-pressure among the respondents. A lower percentage of teaching staff (18.5%) who were insufficiently physically active were hypertensive, more than those physically active (29.4%), while a lower percentage of the non-teaching staff (15.7%) who were physically active were hypertensive than those insufficiently physically active (18.4%).

Table 1.3.2: Binary logistic regression showing the risk factors associated with high blood pressure among teaching and non-teaching staff

No.		Teaching staff			Non-teaching staff		
	Variables	**OR**	**95% CI**	**p**	**OR**	**95% CI**	**p-value**
1.	**Increasing age (yrs)**						
	≥40	3.91	2.23 - 6.85	<0.001	2.76	1.03 - 7.39	0.043
	<40	1			1		
2.	**Gender**						
	Female	1.12	0.64 - 1.96	0.682	0.36	0.20 - 0.63	<0.001
	Male	1			1		
3.	**Marital status**						
	Married	1.02	0.52 - 1.97	0.951	1.51	0.68 - 3.35	0.310
	Single	1			1		
	Trekking for at least 10 minutes in a typical week						
	≥3 days	0.66	0.41 - 1.06	0.092	0.60	0.36 - 0.99	0.049
	<3 days	1			1		
4.	**Moderately-intensity recreational activities (MIA) per week**						
	Yes	0.74	0.42 - 1.27	0.281	1.09	0.66 - 1.81	0.717
	No	1			1		
5.	**Time spent in MIA (minutes)**						
	≥150	1.82	0.88 - 3.78	0.105	0.84	0.32 - 2.19	0.723
	<150	1			1		

Table 1.3.2 presents the binary logistic regression which revealed that the common predictors of HBP among teaching and non-teaching staff were increasing age ((OR = 3.91; 95% CI: (2.23 - 6.85); p<0.001) vs. (OR = 2.76; 95% CI: (1.03-7.39); p=0.043)). Teaching staff who were ≥ 40 years old were 3.91 times more likely to be hypertensive than their colleagues below 40 years old. Major predictors of being hypertensive among non-teaching staff were sex (OR = 0.36, 95% CI: (0.20 - 0.63); p<0.001); and trekking to work (OR =0.60; 955 CI: (0.36 - 0.99), p=0.049).

Discussion of Findings

The socio-demographic information of the respondents showed that the mean ages of the teaching and non-teaching staff were 48.9±8.56 and 41.8±9.40, respectively. The prevalence of high blood pressure (HBP) was slightly higher among the teaching (18.9%) than the non-teaching staff (18.1%). The respondents had blood-pressure like those reported in (Alzeidan et al. 2016). The HBP among teaching staff was lower than that cited in another study while that of non-teaching was higher (Adedoyin et al. 2016). Our findings revealed that while non-teaching staff did more vigorous intensity activities (VIA), trekking, and sitting ≤30 minutes/day before standing, teaching staff did more of the moderately-intensity recreational activities (MIA). Higher number of non-teaching staff trekked the recommended ≥3 days/week for at least 10 minutes continuously to and from workplace than teaching staff (59.2 vs. 38.7%). This result was the opposite of that reported in some other universities (Adedoyin et al. 2016). However, both respondents trekked more than their counterparts in Ghana and Saudi Arabia (Aryeetey and Ansong, 2011; Alzeidan et al. 2016; Nazzal and Mousa, 2016). Our findings also revealed that only approximately 4.0 % of teaching staff sat for the recommended ≤30 minutes/day before standing up compared to 12.6 % non-teaching staff (p<0.05). Summarily, even though non-teaching staff (10.7%) were physically active than the teaching staff (3.6%), there was a very high physical inactivity among both respondents (96.4 vs 89.3%). Generally, it has been reported that non-teaching staff were more physically active than teaching staff (Adedoyin et al. 2016). This might be due to the nature of their duties and socio-economic status. Teaching duties require that teaching staff sit down for a long time researching, studying, writing papers and lecture notes whereas the non-academic duties require that they move about, except those in secretarial duties. The dual responsibilities of teaching staff, consisting of administrative tasks and research duties with numerous deadlines, might make them vulnerable to high sedentary lifestyle. This low physical activity and high sedentary lifestyle, even though higher in this study population, has also been reported among their colleagues in other universities (da Conceicao et al. 2006; Emerole et al. 2007).

Physical inactivity was strongly associated with HBP among the respondents. This agrees with the report of Nwogu, (2023). Teaching staff who sat ≤30 minutes before standing up were less hypertensive than those who lived a more sedentary lifestyle, sitting ≥120 minutes/day before standing up (p<0.05). While low recreational activities and time spent were associated with HBP among the non-teaching staff, not trekking was associated with HBP among the teaching staff. This agreed with the result cited in another study (Adedoyin et al. 2016). Non-teaching staff who participated in the recommended MIA (17.4%) and time, who were hypertensive, were lower than those who did not (82.6%) (p<0.05). Teaching staff who trekked at least 10 minutes in a typical day had a lower high blood pressure

status (31.3%) than their colleagues who did not (68.7%). Teaching staff who were insufficiently physically active with HBP (18.5%) was lower than those who were physically active (29.4%) while the reverse was the case with the non-teaching staff. This implies that there might be other factors responsible for the high blood pressure status of teaching staff than physical activities. Further studies are recommended in this area. Non-teaching staff who trekked for at least 10 minutes to work in a typical week, ≥3 days, were 0.60 times less likely to have HBP than those who trekked <3 days per week (OR = 0.60; 95% CI: (0.36 - 0.99); p=0.049). Female non-teaching staff were 0.36 less likely to have HBP than their male counterparts. HBP decreased with physical activity among non-teaching staff.

Intervention studies have demonstrated that increased physical-activity was effective in the treatment of high-blood- pressure in different populations. Regular exercise helps to make the heart and blood vessels more flexible and efficient and lowers blood pressure (WHO, 2020b). According to WHO recommendation on levels of physical-activity, for 18-64 years old, adults should accumulate at least 2½ hours (150 minutes) of moderate intensity aerobic physical activity throughout the week or do at least 1¼ hours (75 minutes) of vigorous intensity aerobic physical activity throughout the week or trek for at least 10 minutes continuously ≥3 days/week (WHO, 2020b). In adults, physical activity confers benefits for improved all-cause mortality, cardiovascular disease mortality and incident hypertension (WHO, 2020b). High physical inactivity can predispose both respondents to a greater prevalence of high-blood-pressure.

Conclusion

HBP prevalence was higher among teaching than non-teaching staff. Teaching staff who were hypertensive participated in more vigorous and moderate-intensity activities per week than the non-teaching staff. However, there was a high physical inactivity among both respondents. Creating health education and awareness about modifiable risk factors of HBP, such as promoting improved physical activity, is important among both respondents in this study.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

i. Both the teaching and non-teaching staff should increase their physical-activity- levels, especially those who are forty years and above.
ii. Both respondents should check their blood-pressure regularly because high-blood-pressure is a silent-killer.
iii. Teaching-staff should minimise sedentary work.
iv. The University authority should create an awareness-campaign to educate the staff on the health importance of physical-activity and other risk factors of high-blood-pressure.

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