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FACTORS AFFECTING EXERCISE SELF-EFFICACY AND TEMPTATION TO NOT EXERCISE AMONG COMMUNITY-DWELLING ADULTS WITH HYPERTENSION IN NNEWI NORTH, ANAMBRA, NIGERIA

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ABSTRACT

Background: Despite the well-documented benefits of Physical Activity (PA) in the control of hypertension (HTN), low levels of PA are still prevalent among adults with HTN.
Aim: This study aimed to determine PA level, self-efficacy, temptation not to engage in PA, and its associated factors among community-dwelling adults living with HTN in Nnewi.
Methods: The Cardiovascular and anthropometric indices of the 199 participants who were recruited consecutively were obtained, while the PA self-efficacy and temptation scales were used to assess self-efficacy and temptation levels. Data obtained was analyzed using statistical package for the social sciences (SPPS) version 24 with alpha set at 0.05.
Result: The results revealed a low self-efficacy for PA and high temptation not to engage. A significant negative correlation was observed between self-efficacy and temptation among the participants ($r=0.336$, $p<0.001$). Stress was the most implicated factor influencing both self-efficacy and temptation. Females reported higher temptation and lower PA self-efficacy (mean rank =110.87, $p=0.006$, 90.19; $p=0.014$ respectively). The study also found a significant influence of occupation on temptation to not exercise, with cooks/chefs reporting the highest mean temptation rank ($p = 0.049$).
Conclusion: There is a low exercise self-efficacy and a high temptation to not exercise among this population which were influenced by several factors such as occupation, educational level, waist hip ratio, blood pressure and Body mass index. Awareness should be targeted at improving these individuals' confidence in performing PA.

Keywords: *Hypertension, Physical activity, self-efficacy, temptation, Community-dwelling adults*

INTRODUCTION

According to recent studies, more than 27.5 million adult population in Nigeria live with HTN. [1] This high prevalence is concerning due to the severe health complications associated with HTN, such as stroke, heart failure, and kidney disease, which contribute significantly to the country's morbidity and mortality rates. The increasing prevalence of HTN in Nigeria can be attributed to a combination of factors including rapid urbanization, sedentary lifestyles, dietary changes, and genetic predispositions. [1,2]

Regular PA is a cornerstone in the management and prevention of HTN as engaging in consistent exercise has been shown to lower blood pressure, enhance cardiovascular health, and reduce the risk of associated complications. [3] PA helps by improving the efficiency of the heart, reducing arterial stiffness, and promoting overall cardiovascular fitness. [4] Despite these well-documented benefits, adherence to PA recommendations remains low among individuals with HTN [5,6] who are supposed to perform 150 to 300 minutes per week of moderate-intensity or 75 to 150 minutes per week of vigorous-intensity aerobic exercise, or an equivalent combination of moderate- and vigorous-intensity aerobic exercise. [7, 8] Various barriers, such as lack of knowledge about the benefits of exercise, physical limitations, time constraints, and socio-economic factors, contribute to the low levels of PA. [9, 10]

Exercise self-efficacy, which is the belief in one's ability to successfully engage in physical activity, plays a critical role in

determining exercise behaviour.[11] Individuals with high exercise self-efficacy are more likely to initiate and maintain regular physical activity. Conversely, the temptation to not exercise, characterized by the inclination to avoid PA due to perceived barriers such as fatigue, lack of motivation, or competing responsibilities, can significantly undermine exercise adherence. [11] Understanding these psychological constructs is essential, as they can either facilitate or hinder the adoption of a physically active lifestyle.

Despite the recognition of the importance of exercise self-efficacy and the temptation to not exercise, there is a significant gap in the research specifically focusing on community-dwelling adults with HTN in Nnewi. Existing studies have predominantly examined these factors in broader or different populations, leaving a gap in the specific context of HTN individuals living in Nigerian communities. [12-14] Adults who have HTN may be facing unique challenges and barriers that may influence their exercise behaviors differently from those in other populations. Therefore, there is a need for research that into the specific factors affecting exercise self-efficacy and temptation to not exercise in this group to develop more effective and culturally relevant interventions. This study aims to address this gap by identifying the key factors influencing exercise self-efficacy and the temptation to not exercise among community-dwelling adults with HTN in Nnewi North, Nigeria.

METHODS

Study design and setting

This study adopted a cross-sectional design to obtain data among adult residents in Nnewi, Nnewi-north, Anambra state. Nnewi is one of the main cities in Anambra State Southeastern part of Nigeria with trading as their major occupation. Nnewi reportedly has a significant prevalence of HTN. [15]

Participant of study

The study population consisted of community dwelling adults living with HTN resident in Nnewi. Adults with a diagnosed HTN, who are taking HTN drugs and without any communication, cognitive or mobility-related disorders were included in this study, while we excluded hospital-bound adults living with HTN, as well as those who reside outside but commute to Nnewi. Adults who met the inclusion criteria for this study were recruited consecutively from the markets, churches, local government offices, as well as other meeting points in the community. Sample was estimated using G-power version 3.1.9.4. A sample size of 191 has 90% power to detect a minimum significant difference at a small effect size of 0.23. Alpha was set at 0.05.

Study Instruments

1. **Exercise Self-efficacy scale:**

The Exercise Self-Efficacy Scale is a self-reported scale that was used to evaluate how confident one can engage in PA when other things get in the way, it uses a five-point Likert-like scale ranging from Not at all confident to Completely Confident.

2. **Temptation to not exercise Scale**

This questionnaire, consisting of seven items, evaluates an individual's inclination to avoid PA across different scenarios, using a scale from 0% (no temptation at all) to 100% (high temptation). [16] Participants indicate their temptation level for each situation, ranging from not tempted at all (0%) to extremely tempted (100%), providing insight into their readiness to engage in physical activity.

1. **Tape Measure:** An inelastic tailor's measuring tape calibrated in centimetres (cm) and inches (inch) was used to measure waist circumferences of the participants.
2. **Automated blood Pressure Monitor:** The automated blood pressure monitors OMRON-Model KD-595 was used for checking the blood pressure of the participants in mmHg.
3. **Stadiometer:** A constructed stadiometer, was used for checking the participant's height in centimetres.

Procedure for Data Collection

All subjects provided written informed consent before participating in this study, which adhered to the Declaration of Helsinki approved by the Nnamdi Azikiwe University Teaching Hospital Research Ethics Committee (NAUTH/CS/66/VOL 16/VER 3/336/2023/082). After obtaining consent, participants' socio-demographic and anthropometric variables (age, gender, educational level, weight, height and waist circumference) were recorded. Waist circumference was measured with the participant standing erect, using the navel as the reference point, and recorded to the nearest 1 cm. Similarly, the hip circumference was measured at the largest circumference around the buttocks. Weight was measured to the nearest 1 kg with minimal clothing, and height was measured to the nearest 1 cm while participants stood erect with their heels on a vertical meter rule. Body mass index (BMI) was calculated by dividing weight in kilograms by height in meters squared.

Participants were given a 5-minute rest interval after the collection of sociodemographic and anthropometric data before measuring blood pressure at least to ensure that stabilized or minimally elevated BP due to the activities of these measurements is obtained. [17] They were comfortably seated on a chair with adequate backrest and armrests, knees flexed at 90 degrees, and arms resting on the armrests, supported by pillows if necessary. Blood pressure was measured on the left arm using an automated BP monitor, with two consecutive readings taken and averaged. The study's questionnaires were interviewer-administered by the researchers and trained assistants, who received thorough supervised training on how to administer the research instrument.

Data analysis

Data was coded in excel and analyzed using descriptive statistical analysis after coded into IBM Statistical Package for Social Sciences (SPSS) version 24. The results were presented with frequency count, range, percentage, mean, and standard deviation (SD). Spearman rank order correlation was used to test for correlation between the variables, Mann-Whitney U test was used to test for the influence of gender on exercise self-efficacy, and temptation to not exercise. Kruskal Wallis test was used to test for the influence of educational level. Alpha was set at 0.05.

RESULTS

Characteristics of the participants

A total of 199 adults living with HTN participated in this study. More than half of the participants (51.3%) were females, and the majority were traders (71.9%). The highest proportion of the study participants (34.7%) reported senior school certificates as their highest level of education, a significant percentage were overweight (36.7%) and 36.7% were obese. Majority of the study participants (69.8%) reported low self-efficacy for engaging in adequate

physical activity, high temptation level (62.3%) and 57.3% reported unhealthy waist-to-hip ratio Table 1. Mean cardiovascular, anthropometric, self-efficacy and temptation scores of the participants

The mean systolic and diastolic blood pressure values of the participants were 142.22±12.44 mmHg and 91.26±12.49 mmHg, respectively. The average waist-to-hip ratio was 0.92±0.09, which falls within the range of abdominal obesity. The mean BMI was 28.98±6.89 kg/m², classifying the participants as overweight. Additionally, the average waist and hip circumferences were 94.65±25.10 cm and 103.23±22.32 cm, respectively. The mean values for the temptation to not exercise scale and the self-efficacy scores of the participants were 55.60±22.30 and 2.56±1.01, respectively. Table 2. Responses of participants to the items on physical activity self-efficacy scale.

Almost half of the participants (49.7%) reported absolute lack of confidence in their resolve to participate in regular PA on a rainy day, over half of the participants (54.8%) had no confidence that they would engage in PA when under a lot of stress. and 40.2% reported no confidence for when they feel they don't have the time. On the other hand, 40.2%revealed that they are completely confident when they have to do PA alone,, one quarter felt somewhat confident in their abilities to engage in adequate PA when they don't have access to a place for PA (25.1%) and when they are spending time with friends (28.6%) **Table 3.**

Participants' Physical Activity Self-Efficacy Level and Temptation to not exercise

The majority of participants (69.8%) reported low self-efficacy for PA (Figure 1), and moderate to high levels of temptation to not exercise (70.9%) (Figure 2). The participants' responses indicated least self-efficacy and worst/highest temptation to not exercise when they were stressed (61.07±30.36).

Associations between Gender and adiposity indices with each of PA self-efficacy, temptation to not exercise.

The females reported higher temptation to not exercise (mean rank =110.87, p=0.006), and lower PA self-efficacy (mean rank = 90.19; p=0.014). Additionally, participants with unhealthy WHR reported higher temptation to not exercise (mean rank=103.97; p=0.005) and lower PA self-efficacy (mean rank = 89.06; p=0.002). However, these scores did not significantly differ across WC categories ($p > 0.05$). **Table 4.**

Correlation between the anthropometric indices, self-efficacy and temptation scores of the participants.

Systolic blood pressure demonstrated a significant positive correlation with temptation (r=0.167, p=0.019) and a significant negative significant relationship with PA self-efficacy (r=-0.197, p=0.005). No significant relationship was observed between systolic BP and BMI (r=0.044, p=0.535), nor between diastolic BP and either temptation or PA self-efficacy scores ($p>0.05$) among these participants. Significant low negative correlation was also observed between temptation to not exercise and PA self-efficacy (r=0.336, $p<0.001$) **Table 5.**

Difference in temptation scale and exercise self-efficacy scores across the different educational qualification categories and occupation of the participants.

There was a significant difference in the temptation to not exercise domain across different educational qualification categories (K=22.431, P=0.004), with participants holding an OND certificate showing the highest score (174.75). Similarly, a significant difference was found in exercise self-efficacy scores among the different educational qualifications (K=17.800, P=0.023), with the highest value among individuals with a Master of Science degree (141.75). Additionally, there was a significant difference in the temptation to not exercise scores across different occupations (K=15.595, p=0.049), with chefs/cooks having the highest temptation (159.50), and followed closely by drivers (135.50). However, exercise self-efficacy scores did not differ significantly across occupation (K=13.225, P=0.104**) Table 6.**

Table 1 Characteristics of the participants

Variable	Class	Frequency	Percentage
Gender	Male	97	48.7
	Female	102	51.3
WC	Healthy WC	85	42.7
	Unhealthy WC	114	57.3
Occupation	None	9	4.5
	Trader	143	71.9
	Technician	4	2.0
	Driver	9	4.5
	Chef/cook	1	.5
	Business man/woman	13	6.5
	Healthcare	3	1.5
	Teaching/lecturing	4	2.0
	Artisan	9	4.5
	Student	2	1.0
	Civil servant	2	1.0
Highest educational qualification	No formal education	4	2.0
	primary	17	8.5
	JSSCE	52	26.1
	SSCE	69	34.7
	HND	4	2.0
	Degree	44	22.1
	OND	4	2.0
	MSC	2	1.0
	PHD	1	.5
BMI Category	Underweight	8	4.0
	Healthy BMI	44	22.1
	Overweight	73	36.7
	Obesity	73	36.7
PA confidence level	Not so confident	139	69.8
	Confident	60	30.2
Temptation level	Low temptation	75	37.7
	Moderate temptation	66	33.2
	High temptation	58	29.1
WHR	Unhealthy WHR	85	42.7
	Unhealthy WHR	114	57.3

Key:

WC Waist circumference
WHR Waist hip ratio
JSSCE Junior Secondary school certificate
SSCE Senior school certificate
HND Higher National Diploma
OND Ordinary National Diploma
MSC Master's degree
PHD Doctor of Philosophy
BMI Body Mass Index

Table 2 Mean cardiovascular, anthropometric, self-efficacy and temptation scores of the participants

Variable	Minimum	Maximum	Mean	Standard Deviation	Median (IQR)
Systolic BP	100	185	142.22	12.443	
Diastolic BP	60	140	91.26	12.493	
Waist Circumference (cm)	31.00	312.42	94.6487	25.09746	
Hip Circumference	34.00	246.38	103.2268	23.31706	
Waist hip ratio	0.68	1.32	0.9177	.09455	
BMI	16.98	62.28	28.9769	6.89345	
How tempted are you not to exercise when?					
You are angry	0	100	55.83	31.035	
You feel satisfied	0	100.0	41.390	33.4294	
You are stressed	0	100	61.07	30.259	
You feel that you don't have the time	0	100	56.46	29.544	
Family events or situations interfere	0	100	56.27	29.324	
You're busy	0	100	59.14	30.488	
You have work to do	0	100	58.74	29.788	
Mean Temptation	4.71	100.00	55.5977	22.30441	
Mean Self-efficacy	1.00	5.00	2.5620	1.01424	

Keywords:
WC **Waist circumference**
BMI **Body Mass Index**
BP **Blood Pressure**

Table 3 Responses of participants to the items on physical activity self-efficacy scale.

Item	Not at all confident	Somewhat Confident	Moderately Confident	Very Confident	Completely Confident
I am confident I can participate in regular physical activity when; It is raining or snowing or icy	99(49.7)	27(13.6)	24(12.1)	15(7.5)	34(17.1)
I am confident I can participate in regular physical activity when; I am under a lot of stress	109(54.8)	31(15.6)	28(14.1)	17(8.5)	14(7.0)
I am confident I can participate in regular physical activity when; I feel I don't have the time	85(42.7)	50(25.1)	33(16.6)	16(8.0)	15(7.5)
I am confident I can participate in regular physical activity when; I have to do physical activity alone	19(9.5)	34(17.1)	33(16.6)	33(16.6)	80(40.2)
I am confident I can participate in regular physical activity when; I don't have access to a place for physical activity	48 (24.1)	50(25.1)	45(22.6)	33(16.6)	23(11.6)
I am confident I can participate in regular physical activity when; I am spending time with friends.	42(21.1)	57(28.6)	43(21.6)	30(15.1)	27(13.6)

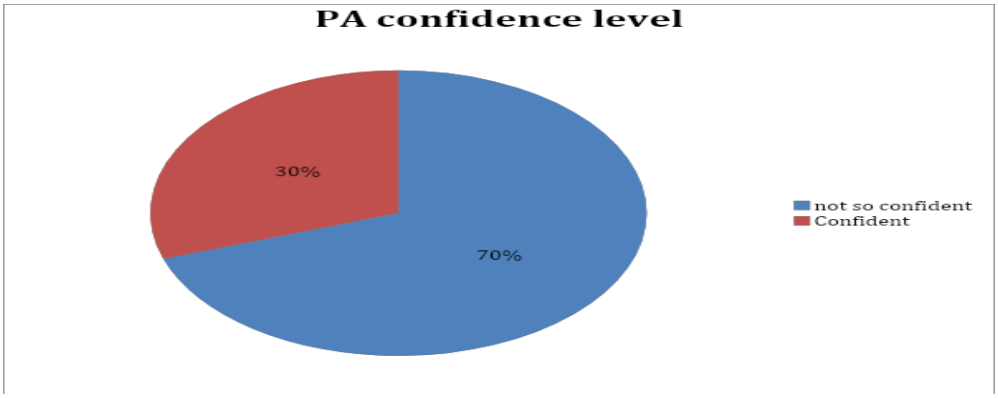

Figure 1 Physical Activity Self-efficacy/Confidence level

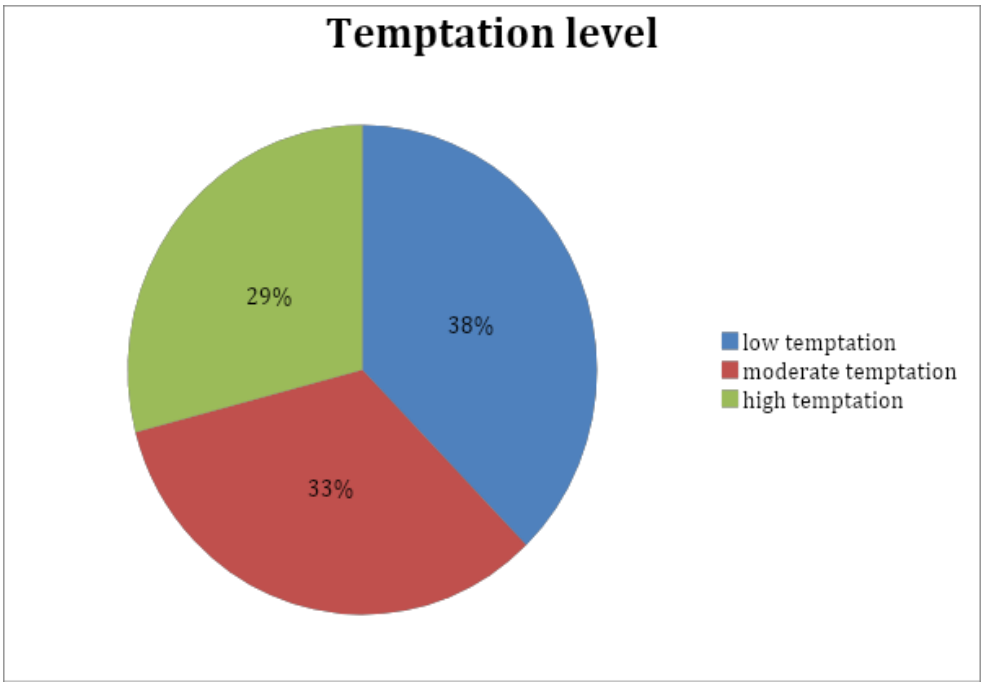

Figure 2 Level of Temptation to not exercise

Table 4 Associations between Gender and adiposity indices with each of PA self-efficacy, temptation to not exercise.

Variable	Mean	Rank	U	P
	Male	**Female**		
Temptation	88.57	110.87	3838.500	0.006
PA Self-efficacy	110.32	90.19	3946.000	0.014
	WC	**Status**		
	Healthy WC	**Unhealthy WC**		
Temptation	94.67	103.97	4392.000	0.260
PA Self-efficacy	104.45	96.68	4466.500	0.345
	WHR	**Status**		
	Healthy WHR	**Unhealthy WHR**		
Temptation	86.59	110.00	3705.500	0.005
PA Self-efficacy	114.68	89.06	3597.500	0.002

Keywords:

WC Waist circumference

WHR Waist hip ratio

PA Physical Activity

Table 5 Spearman rank order test of correlation among anthropometric indices, self-efficacy and temptation scores.

	Diastolic BP	Waist Circumference	Hip Circumference	WHR	BMI	mean temptation	mean_self_efficacy
Systolic BP (mmHg)	r=0.509**	r=0.089	r=-0.023	r=0.222**	r=0.044	r=0.167*	r=-0.197**
	p<0.001	p=0.210	p=0.749	p=0.002	p=0.535	p=0.019	p=0.005
Diastolic BP (mmHg)		r=0.094	r=0.083	r=0.063	r=0.126	r=0.070	r=-0.052
		p=0.184	p=0.245	p=0.377	p=0.077	p=0.327	p=0.467
Waist Circumference (cm)			r=0.775**	r=0.472**	r=0.580**	r=0.081	r=0.038
			p<0.001	p<0.001	p<0.001	p=0.255	p=0.594
5. Hip Circumference (cm)				r=-0.092	r=0.565**	r=0.021	r=0.072
				p=0.198	p<0.001	p=0.767	p=0.310
WHR					r=0.162*	r=0.079	r=-0.124
					p=0.023	p=0.265	p=0.081
BMI						r=0.024	r=0.128
						p=0.737	p=0.072
Mean Temptation %							r=-0.336**
							p<0.001

Table 6: Kruskal Wallis test of Educational Qualification on PA self-efficacy and temptation scale scores

Variable	Class	Mean rank	K	U
Temptation	None	91.00	22.431	0.004
	Primary	123.85		
	JSSCE	91.85		
	SSCE	106.24		
	HND	102.75		
	Degree	75.47		
	OND	174.75		
	MSC	80.75		
	PHD	20.00		
PA Self-efficacy	None	93.00	17.800	.023
	Primary	75.94		
	JSSCE	110.54		
	SSCE	85.90		
	HND	122.75		
	Degree	110.74		
	OND	38.75		
	MSC	141.75		
	PHD	54.00		
Mean temptation	Trader	92.88	15.595	0.049
	Technician	32.13		
	Civil servant	67.50		
	Driver	135.50		
	Chef/cook	159.50		
	Business man/woman	86.96		
	Healthcare	102.50		
	Teaching/lecturing	60.25		
	Artisan	115.78		
PA Self-efficacy	Trader	94.67	13.225	0.104
	Technician	104.00		
	Civil servant	166.50		
	Driver	68.33		
	Chef/cook	53.50		
	Business man/woman	111.62		
	Healthcare	153.50		
	Teaching/lecturing	51.25		
	Artisan	74.72		

DISCUSSION

Exercise remains one of the most advocated means of prevention and management of HTN, and over time, the barriers to exercise appear to be mediated by different contextual factors, which includes lack of motivation for behavior change. Self-efficacy for behavioral change as well as ability to overcome temptation are important factors in inculcating and maintaining a healthy behavioral change.

Sex disparities in the prevalence of HTN have been a subject of considerable discussion among researchers. Studies indicate that more men than women have HTN until the age of 45. Between the ages of 45 and 64, the percentages of men and women with HTN are similar, and beyond 64, a higher percentage of women have high blood pressure. Projections suggest that in the near future, more women than men will have HTN. [18,19] Our study found an almost equal gender distribution of HTN, with a slightly higher prevalence among women than men. This is consistent with the findings of Ramirez and Sullivan [21] and Song et al [20] but contradicting those of Everett and Zajacova. [22]

The mean values of the systolic and diastolic BP of the participants suggested poor control of HTN among these known HTN patients. This could be as a result of poor follow up and return for routine checks after diagnosis. In Nigeria, antihypertensive medications are sold over the counter and so this may have inadvertently encouraged self-medication and reduced hospital visits for routine check-ups among persons with HTN . While this practice makes drugs readily available and accessible, it can also significantly negatively affect the control of HTN among patients, thereby predisposing them to higher risks of strokes and other cardiovascular diseases that could significantly be prevented with proper BP control.

Moreover, the average BMI and waist-to-hip ratio of the participants fell within overweight and obesity. This can be attributed to the complex interplay of dietary habits, physical inactivity, socioeconomic status, and chronic stress. Majority of our participants were traders who often face demanding and stressful work environments, which can contribute to chronic stress and poor mental health, further elevating blood pressure and promoting unhealthy eating behaviors. [23] Sedentary lifestyles, exacerbated by the long hours spent in trading activities, may also lead to weight gain and elevated blood pressure. [24, 25] The high rates of overweight and obesity in this population also help explain the prevalence of HTN . Obesity and physical inactivity are well-documented risk factors for HTN across various studies and populations. [26-29] Furthermore, these anthropometric variables are also likely to influence the reduced levels of confidence, self-efficacy, and a higher propensity to avoid exercise. [30]

Trading is a major source of livelihood or income in the area of study, hence, as most of the individuals living in Anambra state are involved in one trade or the other especially those living in Nnewi and Onitsha metropolis. In our study, the majority of the participants were traders, a finding which is consistent with that of a study conducted by Orizu et al. and Ezeomedo et al. [31, 32] Although this is the prevalent occupation, it also raises awareness to the number of health

conditions that have been observed prevalent among this Occupation of which HTN is one of them. [33-36] This may be because of the common educational status of this population. As observed in different studies, most traders in Nnewi have between primary to senior school certificates as their highest level of education which could have influenced their perception and awareness of some health issues and even their health seeking behaviors. [37] Also, this may be due to the possible ignorance or limited availability of health insurance for this population thereby influencing their access to healthcare services. [38]

Not surprisingly, most participants reported SSCE or lower certificates as their highest level of education. This low educational attainment level within the community may possibly attribute to the unhealthy adiposity indices, low PA self-efficacy, and high temptation to not exercise among participants. Low academic attainment may contribute to poorer knowledge about the importance of exercise in managing HTN, as well as lower self-efficacy and higher temptations not to be physically active. Similar to the results of the present study, Leonard found that higher educational attainment can improve exercise self-efficacy as well as understanding of the need for exercise in managing HTN. [39]

Further, our study observed a significant difference in the temptation to not exercise and self-efficacy scores across the different educational qualification categories of the participants. We identified a trend of lower temptation to not exercise and higher exercise self-efficacy among individuals with post-secondary educational qualifications. However, exceptions were noted for those with Ordinary National Diploma (OND) holders who exhibited higher temptation scores and lowest self-efficacy scores. Generally, higher educational attainment is associated with better health literacy, which includes a greater understanding of the benefits of PA and more confidence in managing one's health. [40, 41] Individuals with post-secondary education may have more access to resources and information that promote healthy lifestyles, thereby reducing their temptation to not exercise and increasing their self-efficacy in engaging in physical activity.

The higher temptation and lower self-efficacy scores among persons with OND could have been influenced by the nature of their occupational environment which has been identified in other studies. [42, 43] Individuals with OND qualifications might be in more physically demanding jobs that leave them fatigued and less motivated to engage in additional exercise. This could explain their higher temptation to not exercise and lower self-efficacy scores. On the other hand, HND holders may have roles that are less physically demanding but more mentally taxing or time-consuming, leading to higher temptation to not exercise due to perceived time constraints or stress, despite having a higher self-efficacy for exercise due to their educational background.

Furthermore, the study observed that stress was the most common factor affecting Temptation among the participants of the present study. Participants were most tempted not to exercise when they were stressed. Busy schedules, much work to do, and not enough time closely followed in quick succession, while participants were least tempted not to exercise when they felt satisfied. It could be that participants consider engaging in PA a luxury activity,

or one that is done for reward or as a means of unwinding. It also exposes the culture of the community, where engaging in meaningful PA such as playing a game of football is seen as a rewarding activity reserved only for weekends. While the nature of the work (busy schedules-and work volume) of the majority of our participants could possibly have influenced their temptation, these responses can also be interpreted as a reduced readiness for PA behavior change. Individuals who are committed to making effective changes would plan their activities and find ways of incorporating them into their regular routines as well as manifest a bit more resilience in the face of deterring situations. It could also be that the participants of the present study have inadequate knowledge of what makes up a physically active lifestyle. Understanding adequate PA recommendations and components is important in assessing PA self-efficacy and temptation. Some people tend to associate adequate PA to gyms and specific equipment rather than as a more encompassing activity which can be incorporated into one's everyday life.

Best self-efficacy scores among these participants was observed in the item "I am confident I can participate in regular PA when I have to do PA alone," while the worst scores were observed in the item "I am confident I can participate in regular PA when I am under a lot of stress." Similarly, stress was also the most important factor in temptation to not exercise. This further buttress the inverse relationship between self-efficacy and temptation. Individuals who are more confident for PA participation would most likely be less tempted to avoid engaging in PA. These findings correspond with the reports of other studies. [44-46] Given the importance of PA and the need for its inclusivity, it has been advocated that PA should be incorporated into all domains of life, including work, travel, and recreation (Oldridge-Turner et al., 2022; WHO, 2019). For our participants, this could mean incorporating small stretches and short walks around the workplace each hour, walking part of the distance to work, or visiting friends for at least 10 minutes instead of using other means of transportation. The responses from our participants suggest they may be unaware of these simple ways to incorporate PA into their daily routines, even outside a professional exercise setting and still achieve the WHO recommended PA level for people with HTN (at least 150–300 minutes of moderate-intensity aerobic PA 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). [47] Amin and colleagues in their study in Ghana reported that their participants (people with diabetes type 2) were unaware of the recommended PA level. [44] Therefore, increasing awareness is recommended for this population and others with similar characteristics.

The current research showed that the female participants had a higher temptation to not exercise. Similarly, a higher level of PA self-efficacy score was found among the male participants. A significant difference was found in the temptation to not exercise score and exercise self-efficacy scores across the different gender categories of the participants. The higher temptation to not exercise score among female participants could be due to the fact that women often face more barriers, such as balancing work and family responsibilities, which can lead to a higher temptation to not exercise. [28] Additionally, societal norms and lower exposure to PA during

childhood and adolescence might reduce women's self-efficacy in exercising. [48] Conversely, men tend to have more encouragement and opportunities to engage in physical activities from a young age, resulting in higher self-efficacy scores. [49] The competitive nature and activities common among male participants may also contribute to their higher exercise self-efficacy scores.

The study found that individuals with an unhealthy waist circumference and waist-to-hip ratio exhibited a higher temptation to not exercise, while those with healthy measurements had higher exercise self-efficacy scores. This was not surprising as high waist circumference and waist-to-hip ratio are regarded as characteristics of obesity-which in turn has been associated with decreased exercise engagement. [50] Also, our study supports this with a positive correlation between the participants' waist-to-hip values with their body mass index. This significant difference in exercise-related attitudes and behaviors based on waist-to-hip ratio categories may be due to several factors. Individuals with unhealthy waist measurements might feel more self-conscious or physically uncomfortable during exercise, leading to greater reluctance and higher temptation to avoid physical activity. They may also experience more physical limitations or health issues that make exercise seem daunting or less achievable, thereby lowering their self-efficacy. Conversely, those with healthy waist measurements likely feel more capable and confident in their ability to engage in physical activities, boosting their self-efficacy. They might have experienced positive reinforcement from past physical activities, creating a virtuous cycle of exercise and confidence. [53] It is important to note that there are currently no available studies to either support or contradict our findings directly. This gap in the literature shows the need for further research to explore the relationship between waist-to-hip ratio, temptation to exercise, and exercise self-efficacy.

Additionally, there was a significant negative correlation between the temptation to not exercise scores and exercise self-efficacy scores of the participants. This means that an increase in the temptation to not exercise scores of the participants would result in the corresponding decrease in the level of exercise self-efficacy scores. According to Nigg et al, self-efficacy increase promotes the continuous decrease in the temptation to not exercise. [53]

Finally, the study revealed that there was a significant difference in the temptation to not exercise score across the different occupations of the participants with the chef/cook having a higher temptation to not exercise value. Chefs and cooks often have demanding and irregular work schedules, which can lead to fatigue and leave little time for exercise. [51] The physically demanding nature of their job might also contribute to a higher temptation to rest rather than engage in additional PA during their limited free time.

Additionally, the work environment in kitchens can be high-stress and fast-paced, potentially leading to burnout and a greater inclination to avoid exercise. [51] Moreover, the temptation to sample food throughout the day could lead to weight gain, making PA seem more daunting and less appealing. These factors collectively contribute to the higher temptation to not exercise among chefs and cooks. Stress emerged as the most critical factor for low self-efficacy and high temptation to not

exercise, as most participants indicated they were least likely to engage in PA when stressed. This highlights that, beyond the other risks associated with poorly managed stress, it significantly undermines healthy behaviors like exercising. Although Burg et al pointed out in their study that the effect of stress on exercise varies in individuals, [57] to some it increases their desire to exercise, [54] some it decreases and while in some it has no effect, several studies have identified stress as a barrier to exercising and PA. [55, 56] Therefore, it is crucial to incorporate stress management training for participants, alongside promoting PA as an effective stress-relief strategy. Teaching participants how to channel their stress into exercise could help mitigate the negative impact of stress on their PA levels, ultimately improving their overall health and well-being.

CONCLUSION

In conclusion, this study reveals a low level of exercise self-efficacy and high temptation to not exercise among community-dwelling adults living with HTN in Nnewi. The findings also revealed a significant negative correlation between self-efficacy and temptation to not exercise, with stress being a major influencing factor. Females reported higher temptation and lower PA self-efficacy, while occupation, particularly for chefs/cooks, significantly impacted temptation levels. The high rates of overweight and obesity, coupled with low educational attainment, further compounded the challenges to PA engagement. These results highlight the need for targeted interventions that address stress management, enhance self-efficacy, and provide practical strategies for incorporating PA into daily routines. Promoting awareness of PA recommendations and integrating PA into all domains of life, including work and recreation, is essential for improving health outcomes in this population.

Ethical Approval and Consent to Participate: This study adhered to the Declaration of Helsinki approved by the Nnamdi Azikiwe University Teaching Hospital Research Ethics Committee (NAUTH/CS/66/VOL 16/VER 3/336/2023/082). A written informed consent was obtained from all participants before commencement of data collection.

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Authors contribution: IAA and FAM conceptualized the study, AUN, IRV, ENA and CEA collected the data for this study, SJO, IAA, and AUN wrote the initial draft of the manuscript, SJO and IAA wrote the final manuscript draft, IAA, CEA and FAM analysed and visualised be data, ENA, SJO, and IAA gathered the resources for the literature, FAM supervised the study.

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