



## **Exercise Paucity and Sedentary Routines: Genocide Conduits to Health Impairments in Adult Academics at Great Zimbabwe University**

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**Abstract:** Obesogenic disorders have become a global spotlight that presents manifold challenges on healthcare systems. This study explored sedentary and obesity-oriented trends among Great Zimbabwe University staff in Masvingo. The Human Movement Conceptual Framework underpinned this descriptive study which hinged on the quantitative approach. Its population comprised 100 participants from which 30 male and female academic adults from Great Zimbabwe University School of Education Department were drawn through stratified random sampling. A questionnaire characteristic of WHO s' Global Physical Activity was used to collect data that is presented on tables. Emerging findings revealed overweight and obesity as problematic issues with high prevalence rates of physical redundancy among the adult population. Sedentary lifestyle tendencies significantly affected adult staff members' physiological health aspects. Emerging findings revealed deficiencies of habitual training frequencies with aerobic-orientations among members, hence a physically latent workforce. The study recommends adults to develop habitual health and fitness training routines and behaviors to abate obesity-overweight trends. Sedentary and high calorific patterns subjugating adults to cardiovascular and atherosclerotic risks and disorders need substantial reductions through multi-systemic and multi-modal fitness regimes to promote health and exercise habits. Re-purposed high intensity progressive aerobic-oriented training dosages are necessary to reduce intramuscular fat levels, physiological frailty, oesteo-articulature impairments and to enhance intra-motor unit efficiencies.

**Keywords:** Atherosclerosis; cardiovascular; obesity; musculoskeletal; training regime.

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### **Introduction**

Physical exercise is the pinnacle for overall health development. WHO (2016) advocates for proactive adults' engagements in physical exercise habits to avoid decay of physiological parameters. Frequent aerobic-loaded dosages need to be embraced as the 21<sup>st</sup> century non-pharmacological therapeutic modes with substantive health gains. For that matter, novel-based exercise guidelines are critical in addressing existing sedentary and obesity trends. Further, high intensity training protocols capable of providing care for a plethora of cardiovascular and metabolic irregularities need serious considerations.

Although transitionalised dietary habits are critical indicators of societal health improvements, these have inevitably perpetuated high surge levels of sedentary lifestyles. Subsequently, cardiovascular risks, atherosclerotic ailments alongside physical inactivity, still remain prominent endemic causes of morbidity and mortality let alone COVID-19's barricading effects from exercise settings for the general population. Yet disregarding this turmoil increasingly becomes futile if a physically health-oriented nation is to be put into existence.

In the wake of high inactivity trends pre-disposing most societies to obesity and musculoskeletal risks,

exercise trends require overall repurposing. As frailty level increases inversely, so should the volume and exercise intensity in relation to training modes. It is against this background that this study explored the genocide-laden trends of reduced exercises on adult academic personnel at the Great Zimbabwe University. This attempt could promote positive health patterns.

## **Review of related literature**

This section explores the theoretical and empirical review of studies connected with the aforementioned research problem.

### **Conceptual Underpinning**

The study adopted the Gabriel and Morrow's (2010) conceptual model for human movement. It states that physical activity and sedentary tenets propagate human behavior patterns. Sedentary discretionary variables, (sitting, non-occupational) non-discretionary variables (sleeping, school, sitting-driving) and physical activity (transportation, household, occupational, leisure) significantly influence one's behavioral choice to engage in physical exercises. The framework explicates bi-directional physiological attributes linked with exercises (health and skill-related) in relation to energy expenditure levels (metabolic rate-basal resting, thermic effect of food, load intensity energy expenditure, exercise type and purpose). It explicitly enunciates motivational-related gains of physical exercise, setting a platform for individual's personal endorsements in health-related behavioral patterns that reduce obesity/weight disparities, hypothalamic dysfunctions and chronic severe disorders. Subsequently, overall well-being becomes the pinnacle upon which individual bio-safety zones could be established.

### **Obesity and Physical Inactivity Trends**

Globally, physical exercise forms the basis upon which overall health is founded (Godbout & Nadeau, 2021). World Health Organization insists that adults proactively engage in more physical movements and less of daily sitting (WHO, 2021). Regularized vigorous-intensity aerobic weekly dosages have been linked with positive physiological health benefits in reducing obesity and gut microbiota levels in athletes (Quiroga et al., 2020). Of note, novel-oriented Federal exercise guidelines propose shorter but frequent training modes whose initiatives are precisely in sync with contemporary sedentary behaviors than solely relying on primitive rigid forms of exercises (Calabrese & Nieman, 2021).

High intensity training protocols have been proffered for health benefits and care of a plethora of cardiovascular and metabolic functions. Advanced dietary habits have inevitably perpetuated high surge levels in sedentary lifestyles, cardiovascular risks, atherosclerotic ailments and mortality rates in most societies. Despite far-reaching nutritional trends and literature that forthwith substantiates exercise training benefits (Laddu, Lavie, Phillips & Arena, 2021), high inactivity levels with subsequent escalation in epidemiologic coronary risks still remain prominent causes of morbidity and mortality (Seals, Nagy & Moreau, 2019) let alone COVID-19 restrictive measures that isolate most people from exercise settings.

### **Contextualizing Obesity, Physical Activity, Exercise and Physical Fitness**

Physical activity, exercise and physical fitness are interchangeably used terms, yet they could be tricky concepts to classify. Unanimously accepted definitions of the terms are lacking. Operational definitions are therefore critical for easy diagnosis on how the issue of obesity could better be dealt with. The term 'obesity' is used by Karczewski et al. (2019) to refer to disproportionate body weight for height with an excessive accumulation of adipose tissues. According to Carbone et al. (2019), obesity refers to a multifactorial disease that embodies excessive fat deposition or mass in adipose tissues. In 2016, WHO popularized obesity with high links to malfunctioning of the health system. Thus far, obesity could be explained in terms of adipocyte hypertrophy (Santos & Sinha, 2021) associated with deleterious health discomforts. Understanding obesity then potentiates the stratification of health risks one is entrenched in with respect to Body Mass Index (BMI) levels (where Class I BMI=30.0-34.9; Class II BMI=35.0-39.9; Class III BMI= 40.0<sup>+</sup> (WHO, 2016).

Physical activity is a bodily movement produced by the contracting of skeletal muscle and that substantially increases energy expenditure above the basal rate. It is linked to occupational, sports, conditioning, household and other activities. Categorically, it includes, type, intensity and purpose (Gabriel & Morrow, 2010). Not all physical activities, however, are of assistance to health. Of note, moderate-intensity physical activity raises the heart rate and temperature parameters slightly leaving the person out of breath. Bodily metabolic processes can triple its resting level. For instance, continuous brisk walking for 20 minutes increases

heart rate. At higher levels vigorous-intensity physical activities entail high cardiopulmonary loading leading to high metabolic consumption of at least 6 fold its resting level through sports or exercise. Exercise then is a subset of physical activity that is planned, structured and repetitive which ultimately aims at improving or maintaining physical fitness. Gabriel and Morrow (2010) uses the terms 'physical fitness' to denote a set of either health or skill-related attributes. Implicitly these attributes are thus, pertinent operational tenets upon which physiological pathways are grounded.

### **Global Burden of Obesity and Overweight**

Obesity and overweight surge in developing countries comes in the wake of fast economic, epidemiologic and advancements in transitionalised nourishments (Hu, 2008). Obesity is a chronic disorder (Nijhawan & Behl, 2020) whose public health threats significantly contribute to the 21<sup>st</sup> century disease epidemiology (WHO, 2021). Weight loss has become a progressively worrisome health issue over the past 20 years due to high surging rates of obesity (Willis & Westerwick, 2014). Globally, 1.96 billion adults are overweight with 650 million in the obese category. In children and adults below 19 years, obesity has since increased fourfold from 4% to 18% with a 4 million mortality rate. In developed countries like the United Kingdom, 64.3% of adults in 2017 were reported to be overweight and obese (WHO 2021). In Zimbabwe obesity and overweight among women stand at 34.2% (Mangemba & Miguel 2019); Mali at, 26.9% (Seidu, Ahinkorah, Agbaglo and Nyaaba, 2020), Ghana at 40% (Tuoyire, 2018) and Egypt at 85.3% (Matos, Meseburg and Victoria 2020). These epidemiologic surge trends are likely to triple by 2024 with significant increases in mortality rates in most countries. Yet a re-look at therapeutic modes of treatment (pharmacological and non-pharmacological) need to take center stage if countries are to attain WHO visionaries for developing robust healthy nations.

### **Empirical Studies on Obesity and Overweight Trends**

Studies substantiate problematic health care concerns of obesity in the general population for medical professionals (Pettifor, 2021) and sports clinicians alike. Laar, et al. (2020) study of 276 employees from 5 Pakistan Universities found high prevalence rates of obesity (non-communicable diseases) from lack of exercise. Findings showed that the knowledge, behaviors and attitudes of

university employees greatly influenced their Body Mass Index (BMI). In a related cross sectional study among 10, 693 Iranian adults, Khorasani, Khosravi, Mezei, Nadjarzadeh & Hosseinzcoch (2020) reported greater adherence to unhealthy dietary patterns to be associated with greater odds of obesity in participants. With similar reasoning, this could also be a pointer to fertile grounds for a highly inactive population with subsequent rise in atherosclerotic disorders and mortality rates. In another South African study of 26, 339 individuals, Mlangeni et al. (2018) found physical inactivity to be problematic as 14.8% were reported to be physically redundant. Further, Keramat, Adam, Gow, & Biddle's (2020) longitudinal explorative study on the relationship between obesity and long term health condition with presentism in Australian work places revealed 19% presentism. Out of 111, 086, 35% were overweight, 22% were obese and 16% had a Long Term Health Condition (LTHC). These statistical trends significantly portray the nature and ethnicity at work places that are inevitably possible breeding hubs for multiple non-communicable diseases for the working class. In fact, Keelie (2019) rightly observed that busy schedules in work places have subjugated people to stress and tiredness to engage in exercises. Subsequently, there is much of sitting and less of physical activity for much of the day hence a physically latent workforce. Although much stress is given to conducting daily normal routine duties at work places, of late, high physical inactivity levels in the workforce further subjects it to high morbidity and mortality rates.

Perez, Cancino, Moreno and Ortiz's (2021) study of 383 obese adult Chilean University Faculty staff signified weight stigma as a significant determinant of obesity linked with high chronic stress and unhealthy diet. Obesity emerged to be multifactorial in nature requiring appropriate regimes to abate weight loss in overweight and obese people. Of note, Al-Zabbaai et al. (2015) found out that physical inactivity in young age groups in Saudi Arabia ranged between 74.9% and 81%. Similarly, Al-hazaa (2018) reported elevated physical inactivity prevalence of between 43.3% and 95% among Saudi Arabian children and adults. Unlike males, females in Saudi Arabia have higher inactivity prevalence rates from less opportunities and exposure to training facilities, hence a major public health burden (Al-hazaa, 2018). Taking the middle ground, these unbalances highly predict cardiovascular and musculoskeletal risk trends in most populations

from sedentary behaviors. These burdens could become volatile ground for eminent musculoskeletal frailty and mortality rates.

Closer home, in sub-Saharan Africa, hypertension and obesity are a highly interlinked burden. Njelekela, Mpembeni, Muhihi, Mligiliche & Spiegelman (2009) study in Tanzanian urban revealed that high Body Mass Index (BMI) increased hypertension risks by 10%. Additionally, Okafor, Anyaehie and Ofoegbu (2014) in a Nigerian, Enugu metropolis study, confirmed obesity to potentially increase odds of hypertension by 50%. Further, Akpa et al.'s (2020) study of regional patterns of obesity and hypertension in African states established that the two conditions increased with age ranging between 11.9% and 51.7% (BP >/ 140/90 mm Hg), 39.5% and 69.4% (BP >/ 130/80 mm Hg). Obese Africans were more than twice as likely to be hypertensive with increasing age. For instance, Vuvor's (2017) study of 30-50 year old Ghanaians revealed that 32.5% were hypertensive. From the same study, the prevalence of obesity and overweight stood at 12.5% and 7.0% for females and males respectively. Further substantiation from Abde, Musa, Musa, Mtigan & Adam's (2021) study of Sudanese diabetic-stricken persons revealed that 45.6% risked hypertensive complications. In this regard Physical Activity Practice needs to be embraced as a life-enhancing engagement in adults (Godbout & Nadeau, 2021). Thus, the aforesaid studies simply depict critical gaps, increased budgetary costs and high risks requiring attention in spite of varied locales. This is most unlikely to spare the majority of the aging group of academics in Zimbabwean Universities in view of high workloads and low physical inactivity tendencies.

### **Mechanisms Underpinning Obesity**

A large and growing body of literature exists that explain mechanisms of obesity. High visceral Fat Mass (FM) has been found to induce synthesis of adipokines and pro-inflammatory cytokines which can impair cardiac systolic and diastolic parameters in obese persons. Cardio-depressant adipose tissues (interleukin) have inhibitory effects on cardiac stroke volume output levels. Further excess Lean Mass (LM) increase cardiac dysfunction risks with subsequent myocardial infarction (Carbone et al., 2019). Major gastrointestinal cancers are believed to develop within the frameworks of obesity which, undeniably, contributes to contemporary high surges of cancers of the digestive system (Karczewski et al., 2019). Also, excess adiposity

levels compromise metabolic processes (Satiel & Olefsky, 2017). Interestingly though, World Cancer Research Fund and International Agency for Research on Cancer (2017) established 16 types of cancer connected with adiposity with breast and visceral organ-related cancers to arise within or adjacent to fatty deposits as well as gastrointestinal cancers (pancreas, liver, oesophagus, stomach cardia and gall bladder).

Obesity is associated with chronic and acute diseases (Santos & Sinha, 2021), musculoskeletal and joint pains from excessive weight (Yoo, Cho, Lim & Kim, 2014) and neuropathic pain. This triggers physical disability and muscular de-conditioning with amplified pain intensities (Arranz, Rafecas & Alegre, 2014). This could explain why obese people face incremental risks of alterations of insulin pathways that regulate glucose metabolisms with subsequent triggering of type 2 diabetes (T<sub>2</sub>B). Notwithstanding release of substantial amounts of insulin at peripheral levels, tissues could become unresponsive at pre-diabetic stage. These dysfunctions could impair the memory, executive functional processes and neuronal damage in the hippocampus and medial pre-frontal cortex (Rasgon et al., 2014).

Most atherosclerotic and cardiovascular ailments are connected with physical inactivity. Reports on muscle frailty and mobility impairment in physical tasks with subsequent metabolic dysfunctions exist. Inadequate training routines lead to oxidative stress derivatives of atherosclerosis (arterial vascular ailments), ischemic heart diseases and cardiac myopathy (Narasimhan & Rajasekeran, 2016). This weakens endothelial capacities from poor dietary habits (Siti, Kamisah & Kamsiah, 2015). Oguoma et al.'s (2021) study among Kuwait population (18-29 years) revealed high burden of overweight and obesity with 91% - 98% being physically inactive. This trend is reflective of burden health-care costs in managing high surge levels of obesity with increase in age. Further, Sharafi et al. (2020) found out that obesity and overweight were linked with depressive and anxiety irregularities among 732 patients and emerged as a potential risk factor for the development of obesity. World Obesity Federation and Centers for Disease Control and Prevention indicate intensified obesity-related conditions with high risks of SARS-CoV-2 and severe illnesses (Michalakis and Llias, 2020).

Substantial acute respiratory pathology has been associated with obesity. Atherosclerosis reduces arterial blood flow subsequently inducing extra pulmonary loading on respiratory routes of cardiorespiratory organs. During exercise or other high load tasks, this overload strain cardiorespiratory corridors eventually rupturing and causing arterial blood clots with compromised cardiac dysfunctions (Varga, Flamer, Steiner, Haberacker & Zingermagelete 2020). Obesity causes mitochondrial dysfunctions (dynamics) with inability to generate ATP energy elements needed during exhaustive workouts. Further, TV watching, computer games and other electronic screen exposures have substantially replaced physical activities in the greater population. This significantly invokes risks of overweight, obesity and development of diabetes mellitus across all age ranges from lack of exercise (Ren, Wu, Wang, Sowers & Zhang, 2021).

### **Motoric Loading as Obesity Medicine**

Studies show substantive benefits associated with habitual training. Regular acute and chronic exercises primarily increase mitochondrial energy production dynamics (Moore, et al. 2019). Aerobic exercises reduce cardiovascular risks. Its cardiovascular-protection effect stems from its vascular health-enhancing influence. Research has shown that aerobic interventions improve arterial stiffness in middle-aged, older men and post-menopausal women entrenched in sedentary behaviors. This has been reported to capacitate the endothelial function (Seals, Nagy and Moreau, 2019). Apparently, this fosters balanced vasodilator-constrictor processes during expiratory and inspiratory dynamics in response to exercise demands. From a public health perspective, physical activity is a 'health living medicine' (Arena, McNeil, Sagner & Lavie, 2017) whose role potentiates optimal function of the immune system (Laddu, Lavie, Phillips & Arena, 2021). Harmer, O'Donovan and Stamatakis's (2019) epidemiological study in Scotland and England confirmed significant reductions in bacterial and viral risks by 50% through exercise. Acute respiratory-related ailments significantly dropped by 40% for adults involved in weekly aerobic workouts than those with sedentary behaviors (Nieman and Wentz 2019). Although moderate amounts of aerobic physical activity are linked with significant reductions of risk of many serious ailments, physical inactivity issues still remain prominent (Cho, Kaplandou & Sato, 2021).

Strength training has multi-systemic benefits on the musculoskeletal system (Maestroni, et al., 2020). During mechanical loading demands, high thresholds of multiple motor units enhance higher magnitudes of force production. This invigorates intra-motor unit output efficiencies, elevated motor neuron excitability, stroke volume and intramuscular coordinative synergist processes. Overallly this boosts skeletal performance even for the aging (Tieland, Inez & Clark, 2018). Further, frequency of mechano-transduction process stores secreted elements in the metabolic regulatory. This capacitates musculoskeletal tissues to convert mechanical loading into cellular responses paving way for structural changes in musculoskeletal tissue resilience (hypertrophy) (Warden & Thompson, 2017).

This enhances articular cartilage strength and joint loading capacities. This has been found to have positive links in the management of knee articulation systems (ROM) of Osteoarthritis (Lin, Wiles, Waller & Kim, 2019). Moreover, this improves bone (skeletal) structural functions and adaptations in relation to induced daily demands (Uda, Azab & Sun, 2017) while improved bone tissue resilience furthermore enhance protection against fractures. For instance, in high jump dynamic landing, musculotendinous units' capacities may lose shock absorbing effects which could directly be transmitted through the bone. Subsequently, less resilient bones could be susceptible to possible stress fractures on lower limb appendages.

Regularized physical training promotes development of tendon resilience. In high energy explosive workouts, strong tendons are capable of efficiently storing, recoiling and producing power which enhances athletic performance, stretch shortening cycle activities and quality movement exploitations (Bahm, Mermann & Arampatz, 2015). Achilles Tendinopathy, at global level, has been reported to be a common disease among most adults and physically inactive adolescence (Head, Mallows & Debenham, 2019). Although it could be a worrying factor for the aging population, appropriate training dosages that are within individual loading parameters could significantly abate hypo-kinetic dysfunctions of this nature. Even though regular exercise is undisputed 'exercise medicine', inactivity and sedentary routines for the aging are conduits to muscular hypertrophy, reduced motor units explosive output and impaired functional levels even in every day errands. Thus, individualized

mechanical loadings could attenuate the severity of age-oriented intramuscular adipose infiltration levels, physical infirmity and muscle limitation (Moore et al., 2019).

High intensity training has been reported to decrease atherosclerotic risks of abdominal and visceral fats subsequently enhancing catabolic and hydrolysis processes of low-density lipoprotein and triglycerides (Strasser & Pesta, 2013). This has reducing effects on risk of developing chronic and cardiovascular-oriented ailments like diabetes (Saedifard, Medina-Ingosa & West, 2019). Health habits routines of resistance training encourage development of high musculoskeletal mitochondrial function, oxidative and glycolytic enzyme capacity and glucose homeostasis with subsequent low blood glucose levels (Evans and McMillan, 2019). This promotes immune functions, decline in severity of viral infections and vascular reactivity for individuals with immune-compromised conditions (Calabrese & Nieman, 2021) through high infector and cytotoxic immune cells (neutrophils, monocytes and natural killer cells). Trafficking of immune cells is thought to boost immune-surveillance and host protection against pathogens infiltrations (Rooney, Bigley & La Voy, 2018). Consequently, this advances the re-circulation of immunoglobulins and production of anti-inflammatory cytokines that stimulate lymphoid progenitors in the bone marrow (Shen, Tasdogan & Ubellacker, 2021). Regular exercise reduces side-effects in cancer patients (adults) (Hayes, Newton & Spencer, 2019) with overall mental health gains able to subdue kinesiophobia, depressive moods, sleep disorders and nociceptive pain associated with socio-psychological and physiological disorders (Sluka, Frey and Hoeger, 2018). Thus training regimes need to be viewed from multi-systemic and multifactorial dimensions. For instance, while a particular training regime is set towards addressing a cardiovascular-related parameter, other physiological bio-markers regarding peak aerobic consumptions, tendon, cartilage, muscle, psychological and endothelial functions are concurrently addressed.

### **Benchmarking Obesity Reduction**

Increasing daily energy expenditure through supervised or unsupervised regimes affects energy balance triggering weight loss. Engaging in glycolytic energy systems dissipates glycogen and triglycerols with heightened exercise intensities with subsequent weight loss. Moderate daily routine schedules split into multiple short periods

augmented with weight loss on structured exercise and counselling on lifestyle activities, significantly contribute to obesity treatment (Petridou, Siopi & Mougios, 2018). Pharmacotherapeutic approaches have been found to effectively trim down overweight and obesity through adherence to approved diets and drugs (Ren, Wang, Sowers & Zhang, 2021).

Endurance training and High Intensity Interval Training constitute cost-effective treatment therapies for body weight loss in obese people from high energy expenditure exercise modes (McDaniel, Naquin & Kraemer 2020). These have been confirmed to bring changes in body composition and long term weight management (Sword, 2012). Quiroga et al. (2020) observed that physical exercise intervention increased maximum dynamic strength on upper and lower appendages among obese children during a 12 week training exercise. The study revealed the significance of routine exercises to be an effective non-pharmacological treatment therapy in early obesity. This suggests obesity to be a modifiable risk factor even in adults through appropriately chosen training regimes. However, considerations should be made in view of musculoskeletal and joint overload parameters basing on individual capacity limitations to avoid as much perturbation as possible of index injuries. This allows for gradual physiological adaptations to be made since atrophied muscles are still less-resilient and prone to multiple injuries.

Wearable fitness trackers potentially provide sustainable health outcomes (Cho, Kaplanidou & Sato, 2021). Individuals can self-evaluate and make regular self-checks regarding training gains and when/where necessary, makes appropriate adjustments to re-dress their regimes. Further, uses of contemporary evidence-based scientific monitory tools (tread mill, bicycle egometer) specifically address a multiplicity of musculoskeletal and cardiovascular deficiencies (Heinrich et al., 2015). This could be done under individual and supervised settings. Contemporary evidence-based multi-modal scientific tools could provide multi-systemic health benefits (Maestroni et al., 2020). Additionally, magnitude-related regimes addressing various body parameters should be in sync with load intensity (Nielsen et al., 2017) to avoid breakdown. This is relative to time spent on prescribed work load. For instance, engaging in 20 meter moderate-intensity physical activity daily shuttle runs for 10 repetition maximums weekly, followed by vigorous-intensity

exercises for the same distance in the next week. Time limits are critical to allow for regular progressions and monitoring of accrued benefits.

## Methodology

This section presents the methodology that guided the study.

### Research Design

The study employed the descriptive design anchored on the quantitative approach. The design entails scientifically describing information on existing trends, situation or population.

### Population and Sampling

The study population was 100 participants from the Great Zimbabwe University School of Education. A sample of 30 academic staff was drawn through stratified random sampling. Bowley's proportional allocation formula statistically distributed respondents into their particular strata.

### Instruments Used

A questionnaire characteristic of WHO's Global Physical Activity was used to collect data. Participants were asked about the usual amount of time they engaged in varied intensity leisure-time-physical activities during a typical week. Cardiovascular and atherosclerotic risks were ascertained by a positive response to any of the following conditions: Has a doctor or other health care professional ever told you had congestive heart failure, coronary heart-disease, angina/heart attack? BMI was calculated using the National Institute of

Health to determine overweight/underweight levels, obese and normal weight. Obesity and overweight conditions were ascertained through eating habits. For smokers, risks were determined when current smoker smoked greater than 100 cigarettes in their life time while diabetic participants would have received a doctor's confirmation.

### Validity and Reliability

Cronbach alpha statistics was used to determine the internal consistency of the questionnaire items before the instrument was used in the field. The test yielded the Cronbach's Alpha of 0.8 which indicates acceptable reliability. The instrument was pilot-tested using a smaller related sample from the University's School of Education Department staff prior to its administration to the intended respondents. Ambiguous statements were adjusted before the data collection process started.

### Statistical Treatment of Data

Data presentation was performed using frequencies and was presented on tables.

### Ethical Considerations

Ethical clearance was sought from Great Zimbabwe University Research Department Authorities. Informed consent was sought from study participants. Furthermore, anonymity and Confidentiality of data were established to meet ethical standards.

**Table 1: Participants' Bio-data on Age, Sex and BMI conditions**

		SEX					
		Male (n=15)		Female (n=15)		Total (n=30)	
		No	%	No	%	No	%
Age	38-50	3	20%	4	26.6%	7	23.3%
	51-59	8	53.3%	6	40%	14	46.6%
	60+	3	20%	5	33.3%	8	26.6%
Weight (kg/m <sup>2</sup> )	65-70	2	13.3%	3	20%	5	16.6%
	71-80	4	26.6%	2	13.3%	6	20%
	81+	9	60%	10	66.6%	19	63.3%
Height (cm)	141-160	2	13.3%	3	20%	5	16.6%
	161-180	10	66.6%	11	73.3%	21	70%
	181+	3	20%	1	6.6%	4	26.6%
BMI	<18.5kg (underweight)	-	-	-	-	-	-
	18.5-24.9 kg (normal weight)	2	13.3%	-	-	2	6.6%
	25.0-29.9 kg (overweight)	7	46.6%	9	60%	16	53.3%
	30 kg + (obese)	6	40%	8	53.3%	14	46.6%

## Results and Discussion

In this section, study findings are explicated and clued up by three research questions that guided the study.

**Research question 1:** What is the prevalence of obesity and overweight problems among adult staff at Great Zimbabwe University?

According to table 1, bio-data indicate that most participants were in the 51-59 age range, 53.3% and 46.6% for males and females respectively. BMI shows that women were more overweight (60%) than men (46.6%) in the 25.0-29.9kg category while males were more obese (53.3%) than females (46.6%) in the over 30kg category. Only 13.3% apiece for male and female sections are in the normal weight group suggesting adherence to restrictive diets and exercise workouts to keep themselves within comfort ranges.

Results trends suggest a physically latent workforce susceptible to cardiovascular and atherosclerotic discomforts from low inactivity levels. Study results are, however, below Oguoma et al.'s (2021) findings among Kuwait people in which overweight and obesity was a rampant physical inactivity burden contributing 91%-98%. It is in this sense that Akpa, Made, Ojo, Ovbiagele, Adu, Motala (2020) regional

study established patterns of hypertension and obesity to increase with age range in African states (11.9%-51.7%, BP >/ 140/90mm Hg; 39.5%-69.4%, BP >/ 130/80mm Hg). Study results further advance Petifor's (2021) report in which obesity emerged a problematic issue with threats on health-care systems, medical professionals and the general population.

Regarding medical assessment in table 2, most participants risked developing coronary ailments (60%). Women show greater risk (66.7%) than men (53.3%). Participants were at high risks of developing diabetes as indicated by the figure of 76.7%.

The figure of 40% for smokers is indicative of high chances of developing cancer and cardiorespiratory challenges during aerobic workouts while non-smokers (80%) maybe asymptomatic to smoking effects. Lavie et al. (2018) indicated high visceral Fat Mass impairing cardiac, systolic and diastolic parameters in obese persons, a juncture at which Carbone et al. (2019) and McGlory, Allmen, Stokes, Morton and Hector (2018) believe may lead to myocardial dysfunctions and compromised metabolic processes.

**Table 2: Medical Assessment Risks**

CORONARY AND OBESITY RISK FACTORS	Male		Female		Overall	
	Yes	No	Yes	No	Yes	No
Has a doctor or other health care professionals ever told you had congestive heart failure, coronary heart disease, angina or hypertension?	8 (53.3%)	7 (46.7%)	10 (66.7%)	5 (33.3%)	18 (60%)	12 (40%)
Have you ever been told by a doctor as having diabetes in your life time?	4 (26.7%)	11 (73.3%)	3 (20%)	12 (80%)	7 (23.3%)	23 (76.7%)
Smokers Only: Have you smoked greater than 100 cigarettes in your life time?	3 (20%)	12 (80%)	-	-	3 (10%)	12 (40%)

In obese smokers, acute respiratory pathology reduces arterial blood flow inducing extra pulmonary loading on cardiorespiratory organs during exercise or other high load daily tasks (Gupta et al., 2020). Hence, as reflected in results of this study, with insufficient physical exercise, people

struggle to find comfort zones as high adiposity perpetuates cell atrophy tendencies (obesity and overweight).

**Research question 2:** How far do sedentary lifestyles affect participants' health aspects?



In table 3, most participants indicated heavy reliance on fried foods (93.3% females, 86.7% males) and soft drinks (83.3%, 73.3%). Women (100%, 86.7%) prefer taking breakfast and snacks than men (60%, 46.7%) possibly because of their involvement in culinary roles at home. Traditionally,

men prefer less of breakfast than sadza as they are mostly involved in long day hours of heavy work. Lunch is a common demand in both genders (100%) which makes it a critical physiological health attribute. However, results portray more sedentary patterns than physical activities.

**Table 3: Trends of Calorific Intakes and Sedentary Life Style Habits of Participants**

Variable	Male	Female
<b>Fruits consumption in a week</b>		
Less than 5 days	21(70%)	10(33.3%)
Greater than 5 days	9(30%)	20(66.7%)
<b>Vegetable consumption a week</b>		
Less than 5 days	18(60%)	11(36.7%)
Greater than 5 days	12(40%)	19(63.3%)
<b>Kinds of meals taken</b>		
<b>Fried foods</b>		
Yes	26(86.7%)	28(93.3%)
No	4(13.3%)	2(6.7%)
<b>Soft drinks</b>		
Yes	22(73.3%)	25(83.3%)
No	8(26.7%)	5(16.7%)
<b>Snacks</b>		
Yes	14(46.7%)	26(86.7%)
No	16(53.3%)	4(13.3%)
<b>Breakfast</b>		
Yes	18(60%)	30(100%)
No	12(40%)	-
<b>Lunch</b>		
Yes	30(100%)	30(100%)
No	-	-

Results align with Khorasan, Khosravi, Mezei, Nadjarzadeh & Hosseinzcoch (2020) whose Iranian adults report revealed greater adherence to unhealthy dietary patterns linked with greater odds of obesity. Perez, Canciano, Moreno & Ortiz (2020) further advanced these findings from their Chilean University Faculty adult staff study where weight was a significant determinant of obesity with high chronic stress and unhealthy diet. As noted by Okafor, Anyaehie & Ofoegbu (2014), obesity potentially increases odds of hypertension by 50% hence a noteworthy advice warranting utmost attention to reduce atherosclerotic epidemics. Abdeilbag, Musa, Musa, Mtigan, and Adam (2021) further substantiated 45.6% hypertensive complications among Sudanese.

Results show overwhelming trends of sedentary living (lifestyle type where an individual is exposed to greater eating habits with very little or no physical exercise or energy expenditure) for both

genders with the female section reporting the highest tendencies (93.3%) than males (83.3%). Sedentary refers to As indicated both genders are heavily involved in sedentary work for greater than 6 hours (86.7%, 63.3%) despite the small sections of 20% and 13.3% who indicated less than 6 hours. Keramat, Adam, Gow & Biddle (2020) Australian workplace explorative study revealed 35% overweight, 22% obesity and 16% Long Term Health Conditions. Therefore, high figures in this study are reflective of non-existence of physical exercise routines with greater risks of developing multiple cardiorespiratory and coronary diseases. In this regard, this study corroborate well with advances from Khorasani, Khosravi, Mezei, Nadjarzadeh & Hosseinzcoch (2020) study among Pakistan University employees where high prevalence rates of obesity and inactivity emerged. Their lack of knowledge, sedentary lifestyles and attitudes negatively impacted on their BMI.

Most participants spend greater than six hours in office work (90%, 83.3%) which further extends to their homes (73.3%, 66.7%). Thus participants, for much of their time, are pre-occupied with heavy exhaustive workloads allowing for little or no space for exercise routines. Turning to office work roles, findings of this study are in sync with Keilie's (2019) observations in which busy schedules in work places subjugated people to stress and tiredness to engage in training workouts.

Participants had varied responses as 40% and 26.7% were very often involved in sitting activities

watching TV and handwork, 46.7% and 20% (often), 26.7%, 20% (sometimes) while 13.3% and 6.7% (seldom) had the least report. Sleeping hours varied as 53.3% men and 40% women reported resting for less than 6 hours. Variations could be ascribed to extension of office work roles at home with less resting hours or early waking to drive or catch shuttling transport to go to work. Most women (60%) see the importance attested to enough resting sleep of greater than 6 hours than men (46.7%).

**Table 4: Trends of Sedentary Lifestyle and office work loads of Participants**

Variable	Males	Females
<b>Sedentary work?</b>		
Yes	25(83.3%)	28(93.3%)
No	5(16.7%)	2(6.7%)
Time spend on sedentary work		
Less than 5 hours	6(20%)	4(13.3%)
Greater than 5 hours	19(63.3%)	26(86.7%)
<b>Time spend on daily office work</b>		
6 hours or less	5(16.7%)	3(10%)
Greater than 6 hours	25(83.3%)	27(90%)
<b>Extra hours extending office work at home?</b>		
3-5 hours	20(66.7%)	22(73.3%)
6-8 hours	10(33.3%)	8(26.7%)
9 hours+	-	-
Sitting activities-watching TV, handwork?		
Never	-	-
Seldom	4(13.3%)	2(6.7%)
Sometimes	8(26.7%)	6(20%)
Often	6(20%)	14(46.7%)
Very Often	12(40%)	8(26.7%)
Sleeping time reserved?		
Less than 6 hours	16(53.3%)	12(40%)
Greater than 6 hours	14(46.7%)	18(60%)

**Research question 3:** How frequently do members engage in physical aerobic exercises?

Regarding weekly physical activities, table 5 shows that most women (86.7%) and men (80%) never engaged themselves in sports exercises except for a few cases (20% males and 13.3% females). Most females (73.3%) and males (66.7%) reserve less than an hour for exercise while a few have more than 3 hours spared for this. Further, there are low intensity levels of physical activity in both genders as indicated by figures of 86.7% and 60% respectively. These biomarkers are clear attestation of physical inactivity trends. This is despite a small

section of 26.7% of males that is involved in moderate routines.

The modes of transport further substantiate high inactivity levels as most participants either personally drives (80% females, 73.3% males) or opt for public transport (20% females, 26.7% males) to and fro their workplaces. This could be explained to calculated distances between residential areas and the workplace which would require shuttling and driving services. This could also account for non-existence of continuous walking to and from workplaces (93.3% females, 86.7% males) though 6.7% apiece sometimes prefer walking. This

prohibits them from walking. Results indicate a physically redundant staff in view of their high calorific intakes and sedentary behaviors. Consequently, they are at great risks of overweight and obesity-related ailments. Thus far, results reinforce Al-hazaa's (2018) study report during which elevated inactivity levels (43.3% - 95%) were reported among Saudi Arabian children and adults.

Women showed greater prevalence rates from lack of opportunities and exposures to training facilities. High physical inactivity levels, like in this study, have further been substantiated by Al-Zabbaai's (2015) report of between 74.9%-81% physical inactivity presence in Saudi Arabian young adults.

**Table 5: Participants' Habitual Physical Activity Levels**

Variable	Males	Females
<b>Practice sports/physical activity weekly?</b>		
Never	12(80%)	13(86.7%)
Seldom	3(20%)	2(13.3%)
Sometimes	-	-
Often	-	-
Very Often	-	-
<b>Weekly hours?</b>		
Less than 1 hour	10(66.7%)	11(73.3%)
Greater than 3 hours	5(33.3%)	3(20%)
<b>Level of physical activity intensity?</b>		
Vigorous activity level	-	-
Moderate activity level	4(26.7%)	-
Low activity level	2(13.3%)	2(13.3%)
None	9(60%)	13(86.7%)
<b>Mode of transport to and fro workplace?</b>		
Private driving	11(73.3)	12(80%)
Public transport	4(26.7%)	3(20%)
<b>Do you spend at least 20 minutes for continuous WALKING in a typical week to and fro work place?</b>		
Never	13(86.7%)	14(93.3%)
Seldom	1(6.7%)	1(6.7%)
Sometimes	1(6.7%)	-
Often	-	-
Very Often	-	-

## Conclusions and Recommendations

### Conclusions

Overweight and obesity emerged as problematic issues with high prevalence rates of physical redundancy among the adult population at Great Zimbabwe University. Sedentary lifestyles and behaviors significantly affected adult staff members' physiological health aspects and exercise trends which highly subjugated them to cardiovascular and atherosclerotic disorders. Reduced training frequencies with aerobic-orientations lacked among the adult staff at the University hence a physically latent workforce.

### Recommendations

The study recommends adults to develop habitual physical fitness routines and behaviors to reduce obesity and overweight problems. Sedentary life

patterns and high calorific intakes subjugating adults to cardiovascular and atherosclerotic risks and disorders should be substantially avoided or reduced through multi-systemic and multi-modal fitness regimes to promote health and exercise habits. Re-purposed high intensity progressive aerobic-oriented training dosages are necessary to reduce intramuscular fat levels, physiological frailty, osteo-articulation impairments and enhance intra-motor unit efficiencies.

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