THE PREVALENCE OF OBESITY AND ITS ASSOCIATION WITH LIFESTYLE HABITS AMONG UNIVERSITY OF BENIN STUDENTS

OBIOMAH AKPEVWEOGHENE INIOLUWA

EDU2102461

FACULTY OF EDUCATION

UNIVERSITY OF BENIN

BENIN CITY

DECEMBER, 2025.

THE PREVALENCE OF OBESITY AND ITS ASSOCIATION WITH LIFESTYLE HABITS AMONG UNIVERSITY OF BENIN STUDENTS

OBIOMAH AKPEVWEOGHENE INIOLUWA

EDU2102461

A RESEARCH PROJECT SUBMITTED TO THE FACULTY OF EDUCATION, UNIVERSITY OF BENIN, BENIN CITY, EDO STATE.

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE (EDUCATION) B.Sc. (Ed.) DEGREE IN HUMAN KINETICS AND SPORTS SCIENCE, UNIVERSITY OF BENIN, BENIN CITY.

DECEMBER, 2025.

CERTIFICATION

We, the undersigned certify that this work was carried out by **OBIOMAH AKPEVWEOGHENE INIOLUWA**, with the Matriculation number **EDU2102461** of the Department of Human Kinetics and Sports Science, Faculty of Education, University of Benin, Benin City, for the award of B.Sc. (Education) in Human Kinetics and Sports Science.

Dr. G. E. ARAINRU
(Project Supervisor)

Date: 15-12-2025

Dr. R. F. ANI
(Project Co-ordinator)

Date: 15-12-25

DR. A. U. ORIAKHI
Head of Department

Date: 18th Dec., 2025

15/12/25

DEDICATION

This project is dedicated to God Almighty for strengthening me to start this project and seeing me through to the very end.

ACKNOWLEDGEMENT

The author wishes to express sincere appreciation to all who supported the completion of her project. She extends special thanks to her father, Dr Ufuoma Bamidele Obiomah and amazing grandfather Rev A. M. O. Obiomah for their continuous guidance and encouragement. She also acknowledges her sister Edesiri Kemi Obiomah for her support and love. Gratitude is expressed to her reading partner Alao Olusegun Emmanuel for his cooperation throughout the study process. She further appreciates both Ovuoraye Ovowero Joshua and Ojokoh ibhadode Constantine for individually showing up for her emotionally at when needed.

TABLE OF CONTENTS

ABSTRACT

This study focuses on the prevalence of obesity and its association with lifestyle habits among undergraduates of the University of Benin in both Ugbowo and Ekehuan campuses . The research study utilized a descriptive survey method and data were collected from 200 students through a structured questionnaire that assessed variables such as dietary patterns, physical activity, sedentary behavior, alcohol consumption, and smoking. Descriptive statistics were used to analyze the data obtained from the administered questionnaires. The findings from the study showed that obesity is present among students and is influenced by lifestyle factors such as unhealthy dietary choices, low levels of physical activity, high screen time, and frequent consumption of sugary drinks. Students who engaged in regular exercise and maintained balanced diets demonstrated better weight management. The study concludes that lifestyle habits play a significant role in obesity among university students and recommends health promotion programs, improved nutrition awareness, and increased opportunities for physical activity within the campus environment.

CHAPTER ONE

INTRODUCTION

Background of the study

Obesity has become a critical health challenge worldwide, escalating to epidemic proportions over recent decades. The World Health Organization (WHO, 2020) defines obesity as an excessive accumulation of body fat that can lead to health complications, typically identified by a body mass index (BMI) of 30 kg/m² or more. In 2016, it was estimated that over 650 million adults were classified as obese, with forecasts indicating that this figure will continue to grow, especially among younger populations (WHO, 2021). This condition is significantly linked to a higher risk of developing various non-communicable diseases (NCDs), including heart problems, type 2 diabetes, musculoskeletal disorders, and certain cancers (Ng et al., 2014). Additionally, obesity can result in reduced quality of life and an increased risk of premature death (Hruby & Hu, 2015). Despite the ongoing efforts from governments and health organizations around the globe, obesity remains a major public health concern, influenced by a complex mix of genetic, lifestyle, and environmental elements (Swinburn et al., 2011). This issue is not confined to wealthier countries; it has increasingly become a significant problem in low- and middle-income nations, spurred by urban development, changes in diet, and a growing trend of sedentary living (Popkin et al., 2020). These worldwide trends underscore the necessity of examining how lifestyle choices impact obesity rates in specific demographics, such as university students in Nigeria.

Obesity has recently emerged as a significant health challenge in Africa, specifically in urban areas where lifestyles shift towards Western-style diets and more sedentary habits. This marks a departure from the traditional view of the continent primarily facing undernutrition. Current data indicates a rapid increase in obesity rates among adults and adolescents. Agyemang et al. (2016) describe sub-Saharan Africa’s "nutrition transition," highlighting a

rise in the consumption of energy-dense, nutrient-poor foods and a decrease in physical activity. In Nigeria, the prevalence of overweight and obesity has more than doubled in the last two decades. A national survey by Adeboye et al. (2012) discovered that obesity rates among adults range from 8.1% to 22.2%, with urban-dwelling women notably affected. Alarmingly, the Nigeria Demographic and Health Survey (NDHS, 2018) revealed an increase in obesity rates among women of reproductive age, suggesting an emerging epidemic with serious implications for maternal and child health.

Various factors contribute to this alarming trend in Nigeria: rapid urbanization, a reduction in physically demanding jobs, the widespread availability of processed foods, and cultural beliefs equating larger body sizes with wealth and attractiveness (Okafor, 2012). The rise of fast-food outlets and the decline of accessible recreational opportunities exacerbate the situation. This shift in dietary habits and lifestyle choices highlights a critical need for public health interventions, particularly aimed at the youth, who are forming habits that will shape their health in the long run.

University students experience significant lifestyle transformations that may contribute to unhealthy weight gain. The transition from adolescence to adulthood introduces a new level of independence, along with heightened academic demands, irregular eating schedules, late-night snacks, social drinking, and reduced physical activity—factors that collectively elevate the risk of obesity (El Ansari et al., 2014). A study focusing on Ghanaian students highlighted alarming obesity and overweight rates, primarily attributed to poor dietary choices and inadequate exercise (Mogre et al., 2014). Similarly, research conducted in Saudi Arabia identified a correlation between obesity and increased screen time, insufficient fruit and vegetable consumption, and excessive intake of sugary beverages (Alzahrani et al., 2020).

In Nigeria, the university environment often lacks adequate nutrition and fitness initiatives, fostering a culture of sedentary behavior. Students frequently opt for inexpensive, calorie-

dense foods with low nutritional value that are readily accessible on campus, intensifying the problem (Chinweuba et al., 2016). If these lifestyle patterns are not addressed, they can lead to immediate health issues and long-lasting complications. Therefore, it is essential to explore the specific behaviors associated with obesity in this demographic to formulate effective prevention strategies and health initiatives.

The University of Benin (UNIBEN), one of Nigeria's foremost federal universities, boasts a diverse and vibrant student population. This rich cultural tapestry, combined with a sedentary lifestyle, reliance on processed foods, limited physical activity, and the demands of urban living, elevates the risk of non-communicable diseases, notably obesity. While national and regional studies highlight rising obesity rates among young adults, targeted data from specific institutions like UNIBEN remains scarce. A pivotal cross-sectional study from 2015 focusing on pharmacy students revealed that 10.5% were classified as overweight and 1.2% as obese according to Body Mass Index (BMI). Even more concerning were the findings regarding waist-to-hip ratio and waist circumference, indicating higher rates of obesity (Ezeala-Adikaibe et al., 2015). This research surfaced gender disparities in abdominal obesity and flagged early metabolic risk indicators such as elevated blood pressure and increased fasting blood glucose in a subset of the student population.

Given the rising rates of obesity among young adults globally and nationally, coupled with the lack of pertinent behavioral data for students at UNIBEN, this research is both timely and essential. Its aim is to bridge the knowledge gap by evaluating the prevalence of obesity and its connections to lifestyle habits across diverse faculties. The anticipated findings will provide evidence-based insights to inform health promotion initiatives, nutritional education, and policy measures designed to reduce obesity risk in higher education institutions throughout Nigeria.

Statement of Problem

Despite a rising prevalence of obesity among young adults across the globe, there remains a significant gap in recent data regarding its occurrence and associated lifestyle choices among university students in Nigeria. A 2015 study at the University of Benin, focused solely on pharmacy students, indicated some cases of obesity; however, it lacked breadth, failing to encompass a larger student demographic or to explore critical lifestyle factors such as dietary habits, physical activity, and sedentary behaviors**.** This insufficiency in comprehensive insight hinders our capacity to develop effective, evidence-driven initiatives that cater to the specific health needs of the student population. Recognizing that the university years are pivotal in shaping lifelong health behaviors, this research intends to explore the prevalence of obesity and its correlation with lifestyle choices among students at UNIBEN. The outcomes of this study will be instrumental in devising targeted health promotion strategies.

Purpose of the Study

The purpose of this study is to explore the prevalence of obesity among University of Benin students and how it relates to different lifestyle choices. This study will examine how aspects like diet, physical activity, screen time, alcohol consumption, and smoking habits influence obesity in University of Benin students. By collecting and analyzing this data, the research intends to provide valuable insights that can inform health promotion initiatives specifically designed for university students.

Research Questions

The following research questions will guide the study:

1. Is obesity prevalent among students of the University of Benin?

2. Does dietary habit influence the obesity status of University of Benin students?

3. Does the level of physical activity relate to obesity among University of Benin students?

4. Does sedentary behavior have any association with obesity among University of Benin students?

5. Is there an influence of alcohol consumption and smoking on the obesity status of University of Benin students?

Significance of the Study

The findings from this study carry considerable importance for various stakeholders. University students stand to gain valuable insights into how their everyday habits may influence their risk of obesity, enabling them to make more informed health decisions. Campus health and wellness centers can utilize these results to create targeted programs, including nutrition education campaigns and fitness challenges. Moreover, public health officials and policymakers can harness this data to devise effective health promotion strategies tailored for higher education institutions across Nigeria. Additionally, this research could serve as a crucial resource for academics and researchers who are investigating obesity patterns among young adults in comparable educational environments.

Scope of the Study

This study concentrates specifically on undergraduate students attending the University of Benin, to be conducted on the university's main campus at Ugbowo, Benin city.

It seeks to assess the prevalence of obesity and its correlation with a variety of lifestyle factors, including dietary habits, levels of physical activity, sedentary pastimes (such as screen time), alcohol use, and smoking behaviors. Geographically, the investigation will be confined to students from various faculties within the University of Benin, situated in Edo State, Nigeria.

Operational Definition of Terms

i. **Obesity:** is a health condition characterized by an excess amount of body fat, or a Body Mass Index (BMI) of 30 kg/m² or greater.

ii. **Lifestyle Habits:** refer to daily actions and routines related to health and general living.

iii. **Dietary Habits:** refer to patterns and preferences regarding variety and frequency in consumption of food and beverage.

iv. **Physical Activity**: refers to any bodily movement produced by skeletal muscles that consumes energy.

v. **Sedentary Behavior**: refers to the constant engagement in activities that require minimal energy expenditure.

vi. **Screen Time**: refers to the amount of time devoted to using electronic devices for non-academic purposes.

vii. **Prevalence**: refers to the proportion of a population that has a specific characteristic or condition at a given point in time

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter will review literature related to the study. It will be organized under the following subheadings:

- Theoretical framework
- Concept of Obesity
- Definition of Obesity
- Measurements and classification of obesity
- Types of obesity
- Global and national statistics on obesity
- Health issues linked to obesity
- Lifestyle habits contributing to Obesity
- Empirical review on University students and Obesity
- Summary of review of related literature.

THEORETICAL FRAMEWORK

This comprehensive study is firmly rooted in three essential theoretical frameworks that shed light on the complex interplay between lifestyle choices and obesity rates among university students, with a particular emphasis on the Nigerian context as represented by the University of Benin (UNIBEN). The theoretical pillars of this research each provide invaluable perspectives on the behavioral, cognitive, and environmental factors that contribute to obesity among young adults who are navigating the multifaceted challenges of university life.

These theories are:

- Social Cognitive Theory (SCT)
- The Health Belief Model (HBM)
- Ecological Systems Theory

Social Cognitive Theory (SCT)

At the heart of Social Cognitive Theory, which was developed by Albert Bandura, is the concept of reciprocal determinism. This concept suggests that personal characteristics, behaviors, and the surrounding environment interact dynamically.

This theoretical model is especially relevant to the experiences of students at UNIBEN, where individuals are constantly affected by their peers, the widespread influence of social media, and the various institutional practices that mold health-related behaviors. For instance, in the environments of student hostels such as Queen Amina Hall 1 Female Hostel, Tinubu Hall 2 Female Hostel, Niger Delta Development Commission mixed hostel and as well as various lecture theatres, the dietary choices made by students are often dictated by what is easily accessible and socially accepted. A walk around the lecture theaters in the Faculty of Education amongst other faculties in the Ugbowo campus in Uniben, evidently shows the numerous snack stands set up in front of each lecture theater.This can include the inclination towards convenient, high-calorie snacks and fast food options that abound around campus entrances, not to mention the sugary drinks that are readily available from local vendors. Many students tend to mimic these eating habits without fully understanding the potential negative consequences for their health. Moreover, the aspect of observational learning within the SCT framework highlights how students may adopt sedentary lifestyles; they often replicate the behaviors of peers who prioritize screen time over physical activity. Notably, as identified by Bandura (2004), the norms of behavior are significantly influenced by

observation. Therefore, among Nigerian university undergraduates, peer behaviors play a critical role in shaping their own lifestyle choices.

In addition to this, an important aspect inherent in Social Cognitive Theory is the concept of self-efficacy. This refers to an individual's belief in their ability to successfully undertake the necessary actions to confront health-related challenges. Within the UNIBEN context, students who struggle with low self-efficacy may find it particularly challenging to maintain healthy eating habits and engage in regular physical activity. Various factors, including the pressures associated with academic performance, financial limitations, and the overwhelming distractions inherent in student life, can exacerbate this struggle. For example, a student who feels they cannot afford fresh fruits or who lacks the knowledge to prepare nutritious meals is much more likely to resort to inexpensive, high-calorie alternatives. This behavior can contribute to a gradual trend toward weight gain, highlighting how low self-efficacy plays a crucial role in health decisions.

Health Belief Model (HBM)

For the Health Belief Model (HBM), it specifically examines individual beliefs regarding health risks and the behaviors that stem from those beliefs. Within the unique setting of Nigerian universities, a considerable number of students may not acknowledge their susceptibility to obesity, after all, most students believe the University life Is extremely physically demanding and thus, consuming more food provides them with energy to fuel their day, a mindset often fueled by youthful optimism or cultural attitudes that do not stigmatize weight gain. As a result, both the perceived risk of developing obesity and the perceived seriousness of the condition tend to be underestimated, particularly when obesity is not immediately associated with illness. This lack of awareness can significantly decrease the likelihood of students engaging in proactive health behaviors related to weight management. Nevertheless, educational interventions that highlight the risks tied to obesity such as

hypertension, type 2 diabetes, and negative impacts on academic performance can serve as a catalyst for change. Through such initiatives, students can begin to perceive weight management as an essential goal, especially when they start to recognize the perceived advantages of healthy living, which may include increased energy levels, improved physical appearance, and a decrease in health-related complications. This transformation in perspective can greatly influence their lifestyle choices for the better, fostering overall healthier student population.

Aspiring to achieve a healthier lifestyle often presents a series of significant challenges that many individuals find difficult to overcome. Among these hurdles are perceived barriers that can make the journey toward better health feel daunting. For instance, many individuals might believe that purchasing healthy foods comes with high costs that are simply not feasible within their budgets. Additionally, the perception of environments as unsafe for physical activity can further discourage efforts to engage in regular exercise. For example, incidents of cultists appearing around and within campus especially at very early and late hours (5am and 6am) has greatly discouraged students from going on jogs at these hours, and these times are the only free time students have aside lecture hours for themselves. Compounding these issues, time constraints created by demanding academic schedules can leave little room for prioritizing health and wellness activities.

This dilemma is particularly evident within the setting of public universities in Nigeria, where the structural support for promoting student wellness is frequently found to be grossly insufficient. In such environments, students may struggle to find resources or programs that can facilitate their pursuit of a healthier lifestyle. Scholars in the field, have pointed out that making substantial changes to one's health behaviors relies not solely on personal beliefs or motivations. Instead, these transformations are deeply influenced by how well these individual beliefs are supported by adequate awareness and the presence of institutional backing. The intersection of these factors underscores the importance of creating a supportive

framework that can empower students to adopt and maintain healthier habits amidst the numerous barriers they face.

Ecological Systems Theory.

The third theory, Ecological Systems Theory by Urie Bronfenbrenner provides a detailed and contextual approach to understanding the various factors that shape behavior. It positions individual actions within a structure of multiple interconnected systems, each nested within the other. These systems consist of;

i. the microsystem, which encompasses the individual's immediate surroundings

ii. the mesosystem, which involves interactions between different microsystems

iii. the exosystem, which includes external environments that influence the individual indirectly

iv. the macrosystem, representing the larger cultural context;

v. and the chronosystem, which accounts for changes over time.

For students at the University of Benin (UNIBEN), the microsystem plays a crucial role. It encompasses the day-to-day aspects of their lives, such as their dormitories, classrooms, social circles, and family ties. In this setting, dietary habits and levels of physical activity are strongly shaped by not only what's available but also by social pressures that can influence their decisions.

The mesosystem illustrates how interactions among these various systems can have cumulative effects. For instance, the limited dining options available on campus combined with the heavy academic workload can push students toward unhealthy lifestyle choices, creating a cycle of poor nutrition and lack of exercise.

When we consider the exosystem, we recognize broader societal influences that indirectly affect students. This can include national health policies or the university's own resources. For example, insufficient funding for student wellness initiatives, a lack of proper fitness facilities like gyms, and minimal regulations on food vendors contribute to an environment that may foster obesity.

The macrosystem highlights the prevailing attitudes within Nigerian culture regarding body image and health. In many contexts, a larger body size is often viewed as a marker of wealth and a good standard of living, which can lessen the motivation for students to pursue healthier lifestyles or weight management.

Lastly, the chronosystem urges us to think about how students' behaviors evolve over time. A student who is physically active in their first year may become less active by their final year, possibly due to mounting academic pressures and changing social situations. Recognizing these shifts is crucial for understanding a complex issue like obesity, as it sheds light on the ongoing changes individuals go through during their university experience.

Together, these components of Ecological Systems Theory create a rich framework for analyzing obesity. It becomes evident that obesity isn't simply the result of personal choices; it's influenced by a web of personal beliefs, social dynamics, institutional issues, and cultural norms. By applying this perspective to the context of Nigerian universities, it is possible to gain valuable insights into the specific challenges faced by students and formulate more effective intervention strategies. This thorough analysis is vital for tackling the rising rates of obesity among students and fostering healthier lifestyles within the community.

CONCEPT OF OBESITY

Definition of Obesity

Obesity is defined as abnormal or excessive fat accumulation that presents a risk to health. A body mass index (BMI) over 30 is considered obese (World Health Organization, 2024).

Obesity is a condition characterized by excess body fat that increases the risk of health problems. It is typically measured using BMI, with a value of 30 or higher indicating obesity (Centers for Disease Control and Prevention, 2023).

Obesity is a complex disease involving an excessive amount of body fat. Obesity isn't just a cosmetic concern. It is a medical problem that increases the risk of other diseases and health problems, such as heart disease, diabetes, high blood pressure and certain cancers (National Institutes of Health, 2022)

Measurements and classification of Obesity

Understanding and classifying obesity is crucial for recognizing its health consequences, influencing public health strategies, and facilitating research comparisons among various populations.

The Body Mass Index (BMI) stands as the most prevalent method for evaluating obesity. This metric is derived by dividing an individual's weight in kilograms(kg) by the square of their height in meters (m^2) and is thus represented by kilogram per meter square (kg/m^2).

As defined by the World Health Organization (2020), a person is deemed overweight if their BMI falls within the range of 25.0 to 29.9 kg/m^2, while a BMI of 30.0 kg/m^2 or higher qualifies as obesity. Obesity can be further segmented into three classes according to severity:

- Class I: BMI of 30.0–34.9 kg/m^2

- Class II: BMI of 35.0–39.9 kg/m²
- Class III (Often referred to as "severe" or "morbid" obesity): BMI of 40.0 kg/m² or more (CDC, 2022).

Although BMI is advantageous for screening broader populations, it does come with limitations. Notably, it does not distinguish between fat mass and lean body mass, nor does it provide insights into fat distribution. Hence, additional measurements such as:

- waist circumference (WC),
- waist-to-hip ratio (WHR),
- and waist-to-height ratio (WHtR) are frequently used to assess central obesity, which is more closely associated with health risks like cardiovascular disease (Zhou, Wang, & Yu, 2019).

The World Health Organization (2008) outlines the following criteria for identifying abdominal obesity:

- Waist circumference: ≥94 cm for men and ≥80 cm for women (indicating increased risk); ≥102 cm for men and ≥88 cm for women (representing substantially increased risk)
- WHR: >0.90 for men and >0.85 for women
- WHtR: ≥0.50 for both genders

These alternative metrics have been shown to predict cardiovascular risk factors and overall mortality more reliably than BMI alone (Ashwell, Gunn, & Gibson, 2012). For instance, individuals categorized as having a normal BMI but exhibiting elevated waist circumference or waist-to-height ratio may still experience significant health threats, encapsulated in the term “normal-weight obesity.”

Another effective avenue for assessing obesity is through body composition analysis, achievable via **bioelectrical impedance or dual-energy X-ray absorptiometry (DEXA).**

These techniques yield an accurate estimate of body fat percentage but are typically confined to research or clinical settings due to their cost and limited accessibility.

Although BMI holds its ground as a commonly accepted parameter for obesity classification, it is generally complemented by supplementary measures that evaluate fat distribution and central obesity.

An all-encompassing strategy employing various indicators is advised for a robust assessment of obesity and its related risks, particularly within the realms of research and public health evaluation.

Types of Obesity

Obesity is a multifaceted condition that can be divided into types, each shedding light on different health risks and potential solutions. By examining obesity from perspectives such as fat distribution, causes, when it develops, and genetic factors, it can help to better understand this significant public health issue.

1. **Based on Fat Distribution**

Looking at obesity through the lens of fat distribution, there are two main types:

- Android (Central or Abdominal) Obesity.
- Gynoid (Peripheral) Obesity.

Android obesity: This indicates an excessive buildup of fat in the abdomen and upper body, which is more common in men. This distribution isn't just a cosmetic concern, it significantly increases the risk for metabolic syndrome, heart disease, and type 2 diabetes. Healthcare providers typically measure android obesity using waist circumference, waist-to-hip ratio, or waist-to-height ratio. Central obesity is marked by the presence of visceral fat, which is not

only metabolically active but can also promote inflammation, making it a more serious health risk than other forms of obesity (Després, 2012; WHO, 2020).

Gynoid obesity: This is characterized by fat accumulation primarily in the hips, thighs, and buttocks, a pattern more frequently seen in women. Although it represents an excess of body fat, gynoid obesity is generally associated with a lower risk of severe heart and metabolic issues. This distinction highlights that different fat distribution patterns can lead to varying health consequences.

2. Based on Etiology (causes)

Considering the causes of obesity, they can be categorized as either:

i. Primary (Simple) Obesity

ii. Secondary Obesity

Primary obesity is the more common type, resulting from an imbalance between calories consumed and calories burned. This imbalance often stems from lifestyle choices like indulging in high-calorie foods and being less physically active along with a mix of genetic factors and environmental influences.

Secondary obesity is less frequent and arises from specific medical conditions or medications that contribute to weight gain. Issues like hypothyroidism, Cushing's syndrome, and polycystic ovary syndrome (PCOS) can be factors, as can certain drugs, including corticosteroids and various psychiatric medications (Bray, Kim & Wilding, 2017). Managing secondary obesity is particularly challenging because it requires addressing not only the weight gain but also the underlying health issues and medication effects.

3. Based on Developmental Timing.

The timing of when obesity begins is also crucial, leading to differentiate between:

i. Childhood-Onset Obesity.

ii. Adult-Onset Obesity.

Childhood-onset obesity typically starts in early life and presents unique treatment challenges. It's closely linked to genetic predispositions, early nutrition, and family lifestyle patterns that can influence health later on.

Adult-onset obesity occurs later in life and is often spurred by changes in lifestyle, hormonal shifts, or a reduction in physical activity as people age. This later onset may present individuals with a different set of challenges in managing their weight.

4. Based on Generic Influence

In terms of genetics, obesity can take on distinct forms, including :

i. Monogenic Obesity.

ii. Polygenic Obesity.

iii. Syndromic Obesity.

Monogenic obesity, while uncommon, is noteworthy for its distinct characteristics. It arises from mutations in a single gene, such as those related to leptin or the melanocortin-4 receptor, and often results in severe obesity that begins in childhood.

Polygenic obesity is influenced by the combined effects of multiple genes, each playing a small role, which is further complicated by environmental factors. This form is the most

common genetic type of obesity, emphasizing the intricate relationship between our genetics and our lifestyle choices.

Syndromic obesity, which occurs alongside certain genetic syndromes, such as Prader-Willi syndrome or Bardet-Biedl syndrome. This type is usually linked with developmental issues, distinct physical features, and other related health problems, offering a broader perspective on obesity and its connection to overall health.

Global and National statistics on Obesity.

Global statistics

The phenomenon of obesity has burgeoned into a critical public health crisis on a global scale, an alarming trend that has garnered significant attention in recent decades. According to the World Health Organization (WHO, 2021), the prevalence of obesity has surged nearly threefold since the year 1975, unveiling a stark reality that demands immediate action. To contextualize the magnitude of this issue, a 2016 report highlighted that over 1.9 billion adults; individuals aged 18 years and older, were classified as overweight, with more than 650 million individuals falling within the more severe classification of obesity. This translates to a bewildering 39% of adults being considered overweight and 13% identified specifically as obese. Such figures not only shine a light on a pervasive health concern but also raise crucial questions regarding the efficacy of existing public health initiatives designed to stem this tide of obesity.

Delving deeper, the WHO (2021) offers a disconcerting perspective on the youth demographic, estimating that in 2016, over 340 million children and adolescents aged between 5 and 19 were deemed overweight or obese. This troubling trend shows no sign of abating, particularly in low and middle income nations, where the challenges associated with obesity are becoming increasingly pronounced and multifaceted.

Further illuminating the gravity of this situation, the Global Burden of Disease Study brings to the forefront the dire consequences of rising obesity rates, linking this condition to approximately 4.7 million premature deaths globally as of 2017 (GBD 2017 Risk Factor Collaborators, 2018). The roots of this troubling growth trend are complex and interwoven, encompassing a spectrum of factors including drastic changes in dietary practices, a notable decline in physical activity, rapid urbanization, and the ever-expanding globalization of unhealthy food systems, all of which play significant roles in this epidemic (Ng et al., 2014).

Obesity in Nigeria

Shifting the focus to Nigeria, the ascent of obesity rates serves as a poignant reflection of broader nutritional transformations intricately connected to urbanization, increasingly sedentary lifestyles, and an alarming rise in the consumption of high-calorie foods.

In 2022, a systematic review and meta-analysis of cross-sectional population-based studies among adult Nigerians on the prevalence of overweight/ obesity (defined by body mass index) published from January 2010 to December 2020 conducted by Chukwuonye, Ohagwu, Ogah, John, Oviasu, Anyabolu, Ezeani, Iloh, Chukwuonye, & Raphael. The prevalence of overweight/obesity among all participants, among men and among women in Nigeria and its 6 geopolitical zones was determined. All analyses wt. performed using STATA version 14 (Stata Corp. College Station, Texas, USA). Thirty-three studies were selected and the number of participants was 37,205. The estimated prevalence of overweight and obesity was 27.6%, and 14.5% respectively. The prevalence of overweight among men and among women was 26.3% and 28.3% respectively and, the prevalence of obesity among men and women was 10.9% and 23.0% respectively. The prevalence of overweight in the 6 geopolitical zones was Southeast 29.3%, Southwest 29.3%, South-south 27.9%, Northwest 27.2%, North-central 25.3%, Northeast 20.0% and obesity South-south 24.7%, Southeast 15.7%, Southwest 13.9%, Northwest 10.4%, North-central 10.2%, Northeast 6.4%. Egger's

tests showed no statistically significant publication bias among the studies that reported the overweight and obesity prevalence respectively (p = 0.225, P 0.350). The prevalence of overweight/obesity in Nigeria is high. The southern geopolitical zones had a higher prevalence of overweight/obesity.

In 2023, another systematic review and meta-analysis were conducted on the prevalence of obesity in Nigeria using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) format following searches on major search engines, performed in PubMed, Science Direct, Google Scholar, Africa Journals Online (AJOL), and the WHO African Index Medicus database. Studies on the subject area conducted from the year 2000 to 2018 were included. Relevant abstracts found a pooled estimate of overweight of 26.0% (95% CI: 23.0-29.0) and that of obesity as 15.0% (95% CI: 13.0–16.0). Male obesity and overweight were 14.0%; (95% CI: 12.0–16.0) and 27.0% (95% CI: 23.0–31.0) respectively, while female obesity was 20.0% (95% CI: 18.0–22.0) and overweight 29.0% (95% CI: 23.0–34.0). Obesity in urban and rural areas was 18.0% and 17.0%, respectively. However, overweight was 28.0% in urban areas and 27.0% in rural areas . From a regional perspective, obesity was highest in north-west region of Nigeria with a prevalence of 19.0% and lowest in the north-east region with at 12.0%. Likewise, overweight was highest in the north-west region with a figure of 31.0% and lowest in the north-central, south-west, and south-east regions, with a prevalence rate of 25.0% each.

Within the span of a year, the prevalence of obesity in Nigeria increased by 0.5%, evidently, the escalating crisis of obesity within Nigeria transcends mere individual concern, it represents a formidable challenge to public health, correlating closely with the increasing prevalence of non-communicable diseases associated with obesity. Conditions such as hypertension, type 2 diabetes mellitus, cardiovascular diseases, and certain forms of cancer are witnessing a sharp increase, propelled by the unchecked rise of obesity.

Health Issues linked to Obesity

Identified below are some of the health issues linked to Obesity.

1. Type 2 Diabetes Mellitus (T2DM): Obesity is a significant risk factor for type 2 diabetes, often regarded as one of the biggest threats to modern health. Extra body fat, particularly in the abdominal area, contributes to insulin resistance, a condition in which the body's cells struggle to respond to insulin. This can result in elevated blood glucose levels, eventually leading to the development of T2DM. Current estimates suggest that more than 80% of people with type 2 diabetes are either overweight or obese, highlighting the immediate need for action (American Diabetes Association, 2023).

2. Cardiovascular Diseases (CVD): Being obese significantly raises the risk of various heart-related issues, including high blood pressure and heart failure. The links are complex and interconnected, involving increased blood volume, higher cholesterol levels, and issues with blood vessel function, all worsened by systemic inflammation. Cardiovascular disease (CVD) is of particular concern due to its significant mortality, strain on healthcare systems, and loss of labor productivity. Despite therapeutic progress, CVD is the leading cause of mortality in people with obesity, accounting for ~70% of deaths in people with obesity (Khafagy & Dash, 2021).

3. Dyslipidemia: Obesity often leads to concerning changes in lipid levels. High triglycerides, low levels of high-density lipoprotein (HDL) cholesterol, and increased low-density lipoprotein (LDL) cholesterol create a risky situation that makes it easier for arterial plaque to accumulate, potentially leading to cardiovascular incidents. The effects of dyslipidemia reach beyond individual health, impacting public health as a whole.

4. Certain Cancers: The risk of developing cancer is significantly higher in individuals with obesity. Research has indicated a greater incidence of cancers such as postmenopausal breast,

colorectal, endometrial, kidney, liver, pancreatic, and esophageal cancers in obese individuals. The relationship between excess body fat and cancer development seems to be linked to increased levels of insulin and estrogen, as well as inflammation, creating a detrimental combination that promotes cancer. According to CDC (2025), Overweight and obesity can cause long-lasting inflammation and higher than normal levels of insulin, insulin-like growth factor and sex hormones. These changes may lead to cancer, the risk of cancer increases with the more excess weight a person gains and the longer a person is overweight.

5. Osteoarthritis: The impact of excess weight on joint health is substantial, particularly affecting the knees, hips, and lower back. Increased stress on these joints leads to the deterioration of cartilage and surrounding tissues. Additionally, the inflammatory effects associated with obesity further exacerbate joint damage, resulting in osteoarthritis, a complex condition involving both mechanical strain and overall health decline.

6. Obstructive Sleep Apnea (OSA): Obesity, especially when concentrated in the upper body, is a key risk factor for obstructive sleep apnea. The build-up of fat around the neck can restrict the upper airway, causing breathing interruptions during sleep. In obese people, fat deposits in the upper respiratory tract narrow the airway; there is a decrease in muscle activity in this region, leading to hypoxic and apneic episodes, ultimately resulting in sleep apnea and these apnea/hypoxia episodes lead to decrease in oxygen that is available in body tissues and blood vessels (Jehan, Zizi, Pandi-Perumal, Wall, Auguste, Myers, Jean-Louis, and McFarlane, 2017)

7. Non-Alcoholic Fatty Liver Disease (NAFLD): Non-Alcoholic Fatty Liver Disease (NAFLD) is a condition where fat builds up in the liver, occurring in individuals who do not consume alcohol. This disease has become increasingly common among those who are obese. If not addressed, NAFLD can progress to more severe liver conditions such as non-alcoholic steatohepatitis (NASH), cirrhosis, and even liver failure. The development of NAFLD is

closely linked to insulin resistance and chronic inflammation, which highlights the serious long-term health risks associated with this condition. Epidemiological studies indicate that the prevalence of NAFLD is significantly higher in obese populations, with excess body fat playing a central role in its pathogenesis (Bellentani, Scaglioni, Marino, & Bedogni, 2010). Likewise, the progression of NAFLD from simple steatosis to metabolic syndrome and type 2 diabetes has been well documented in individuals with obesity (Godoy-Matos, Silva Júnior, & Valerio, 2020).

8.Gallbladder Disease:

Obesity is a major factor in the development of gallstones, which occur when there's an excess of cholesterol in bile and when the gallbladder does not function properly. Body mass index, abdominal perimeter, and waist-hip index have been used to determine the degree of adiposity of a person, Hence, central abdominal fat has been mostly associated with insulin resistance with the consequent increase in the hepatic cholesterol secretion; contributing as one of the multiple mechanisms associated with the development of gallstones (Parra-Landazury, Cordova-Gallardo, and Mendez-Sánchez, 2021). This issue is particularly common among women, who are at a greater risk of gallbladder disease due to obesity. Many of these women may eventually need surgery, specifically a cholecystectomy, to manage complications caused by gallstones. The link between obesity and gallbladder health is intricate, blending metabolic factors with physical changes.

9. Infertility and Reproductive Issues:

The relationship between obesity and reproductive health carries significant implications for both men and women, as obesity is closely tied to hormonal imbalances that can hinder fertility. For women, obesity can disrupt the intricate balance necessary for ovulation, creating obstacles that may delay conception and affect pregnancy results. Men also face reproductive challenges, as obesity significantly increases the percentage of sperm with non-

progressive motility, non-motile spermatozoa and sperm with an abnormal form in obese males, levels of testosterone, LH and FSH were lower in obese males (Yassin, Mwafy, and Laqqan, 2025). These concerns emphasize the important connection between maintaining a healthy weight and supporting reproductive health, revealing that obesity's effects go beyond appearance and deeply influence the realms of reproduction and family planning.

10. Psychological Disorders:

Individuals grappling with obesity often face a significant relationship with mental health issues, including increased rates of depression, anxiety, dissatisfaction with body image, and lowered self-esteem. This complex interaction is made worse by societal stigma surrounding obesity, which can intensify emotional pain and negatively impact overall quality of life. In this challenging cycle, some may turn to emotional eating as a coping strategy, leading to additional weight gain and reinforcing feelings of inadequacy (Luppino, de Wit, Bouvy, Stijnen, Cuijpers, Penninx & Zitman, 2010)

LIFESTYLE HABITS CONTRIBUTING TO OBESITY

Lifestyle habits are shaped by a combination of behaviors and environmental influences that significantly impact an individual's health. These habits include various factors such as eating patterns, physical activity levels, sleep quality, substance use, and stress management techniques. These elements are deeply embedded in our daily lives and can interact in ways that affect how our bodies regulate weight. Obesity, which is defined by excessive body fat, is a complex issue linked closely to lifestyle choices that create a state where the calories consumed consistently exceed those burned. The few existing investigations showed that individual healthy lifestyle factors, such as smoking avoidance, healthy dietary patterns (eg, adherence to the Mediterranean diet), or more leisure-time physical activity, may reduce the

risk of chronic disease and mortality associated with obesity (Rassy, Van Straaten, Carette, Hamer, Rives-Lange, & Czernichow, 2023)

Dietary habits are at the core of the obesity problem.

The simultaneous increases in obesity in almost all countries seem to be driven mainly by changes in the global food system, which is producing more processed, affordable, and effectively marketed food than ever before.

This passive overconsumption of energy leading to obesity is a predictable outcome of market economies predicated on consumption-based growth. The global food system drivers interact with local environmental factors to create a wide variation in obesity prevalence between populations (Swinburn et al., 2011).

The modern trend toward frequently consuming high calorie, low-nutrient food rich in refined sugars and unhealthy fats has significantly contributed to the rising rates of obesity worldwide. Dietary patterns characterized by a frequent intake of refined cereals, red meat, and processed foods, usually called as “Western” diet, are associated with higher prevalence and incidence of overweight and obesity, cardiovascular diseases, type 2 diabetes, and cancer (Roman, Rusu, Graur, Creteanu, Morosanu, Radulian, Amorin, Timar, Pircalaboiu, & Bala, 2019). This issue is particularly pronounced among university students, who often have high rates of fast food consumption, dependence on sugary drinks for snacks, a tendency to skip breakfast, and irregular meal schedules. These behaviors are closely associated with higher body mass indices (BMI) and increased waist sizes. As many students experience newfound independence, they often struggle with making healthy food choices, neglecting the Edo proverbs that says “Ure ghi khin vbe egbe, egbe ghi fi dia.” which translates to “Enjoyment that lacks control will eventually punish the body.”

Physical inactivity is another major factor influencing obesity. The World Health Organization (2020) recommends at least 150 minutes of moderate or 75 minutes of vigorous physical activity each week. However, the realities of modern life, characterized by prolonged sitting, an increase in screen time, and reduced active commuting, often hinder the ability to meet these recommendations. Physical inactivity is an important contributor to non-communicable diseases and the relative burden is greatest in countries of high income; however, the greatest number of people (absolute burden) affected by physical inactivity are in those of low and middle income countries given the size of their population (Katzmarzyk, Friedenreich, Shiroma, and Lee, 2022). This explains that even high income countries with access to fully functional equipment and machinery to aid physical activity, have little interest in participation. University students face additional challenges, including heavy academic loads, a preference for screen-based entertainment, and limited access to exercise facilities, which can result in lower levels of physical activity. Researchers reported that about 40% to 50% of college students are physically inactive (Keating, Guan, Pinero & Bridges, 2005).This lack of exercise is crucial in the development of obesity and is associated with worsening cardiovascular and metabolic health.

At the Green Cardio Gym situated in the University of Benin, Ugbowo campus, most members are non-students that include working class men and recent graduates. This population shows that the target audience for whom the gym was built, do not even frequent there.

Sleep habits also play a critical role in the risk of obesity. Sleep is a normal biological behavior of the human body and is the foundation for maintaining good physical and mental health. It greatly influences cardiovascular health, mental health, cognition, memory consolidation, immune function, reproductive health, and hormone regulation. Despite this, many individuals do not achieve a sufficient amount or quality of sleep (Xu, Lin, Chen, & Huang, 2025)

Studies show that inadequate sleep duration and quality can significantly disrupt the hormones that regulate appetite, particularly the balance between leptin and ghrelin (Spiegel, Tasali, Penev & Van Cauter, 2004). Because university students often deal with irregular sleep patterns due to their demanding academic schedules and social lives, they are at an increased risk for metabolic issues related to poor sleep. This irregular sleep can lead to greater hunger and a preference for unhealthy, calorie-dense foods, making weight management even more challenging. Overall, the combined effects of these lifestyle habits highlight the complex nature of obesity and emphasize the need for comprehensive prevention and intervention strategies tailored to populations at risk.

Substance use, particularly in the realms of alcohol and tobacco, weaves a complex tapestry of associations with obesity, revealing multiple layers of interaction and consequence. Alcohol, often deemed a source of indulgence, provides empty calories that offer no nutritional benefit. When consumed excessively, it tends to contribute to abdominal obesity, frequent binge drinkers are more likely to have a large WC (Alkalbani & Murrin, 2023) thus highlighting the poor dietary choices that frequently accompany heavy drinking. On the other hand, smoking has long been associated with weight loss, owing to its appetite-suppressing effects. However, this narrative takes a complicated turn; smoking cessation is often associated with weight gain, which can decrease motivation for sustained cessation and even though smokers generally have a lower body weight, they tend to possess more abdominal fat than non-smokers, as noted by Carrasquilla, García-Ureña, Romero-Lado, & ,Kilpeläinen (2024).

In the realm of higher education, substance use behaviors among students often emerge hand-in-hand with unhealthy dietary, social pressure and trends and physical activity habits, thereby compounding the risk of obesity. The pressures of academia, coupled with social dynamics, can lead to a precarious cycle where students find themselves caught in maladaptive behaviors, which promote weight gain. For example, the modern trend of

smoking Colorado, popularly referred to as “Colos” to boost cognitive abilities and provide inspiration for working, writing songs and even facing life struggles, is becoming rampant among University students despite the known side effects and high tendencies of dependency and addiction of Nicotine. Factors such as bullying, academic difficulties among others, create an environment ripe for emotional eating, where stress triggers a reliance on “comfort foods” rich in sugar and fat. Research by Kim & Kim (2022) emphasizes that psychosocial stress profoundly influence eating behaviors and physical activity levels. In periods of heightened academic stress, peer pressure, or necessary adaptations to university life, students may gravitate toward high-calorie snacks as a way of coping. Such choices inevitably exacerbate energy imbalances, creating a vicious cycle that poses significant challenges to maintaining a healthy weight during these formative years.

EMPIRICAL REVIEW

University students around the globe represent a distinct group that faces significant challenges with weight management, and research indicates a troubling rise in obesity rates within this demographic.

According to a study conducted by Al Hadabi (2019) on undergraduate students in Oman to explore the prevalence of overweight obesity as non-communicable disease risk factors, the following was found. Body Mass Index (BMI), Body Fat percentage (BFP), dietary habits, and physical activity level were assessed among a sample consisted of 582 students (282 males and 300 females) utilizing TANITA and a modified validated version of Arab Teens Lifestyle Scale (ATLS). The results revealed that the prevalence of high sedentary behavior patterns among university students reached 80% and that 70% of them do not get enough sleep (< 7 h/d) and eat foods rich in sugars and fats, and about 80% of them skip breakfast meals. It also explored that the most significant factor responsible for the insufficient amount of physical activity was the lack of time, while the health motive ranked first for physical

activity behaviour. The study also found that 12% of the participants are classified as underweight (BMI ≤ 18.5) and 25% are classified as overweight or obese (BMI ≥ 25-30). Finally, the study revealed that the amount of physical activity is negatively correlated with BFP, while there was no correlation between the amount of physical activity and BMI. The study concluded the prevalence of unhealthy lifestyles related to sedentary behaviors, and lack of physical activity among university students, which calls for effective action to deal with these phenomena. The study also concluded that physical activity has a direct effect on body fat levels rather than body mass index.

Similarly, Lu, Tian, Shi, Liu, Wu, Tao, and Peng (2025) conducted a large-scale study investigating the relationship between mobile phone use, BMI, and sleep quality among 17,085 Chinese university students from eastern, western and central China. The study revealed that 15.87% among the sample population were overweight and 18.45% were obese, while 57.94% reported poor sleep quality and 35.87% showed signs of mobile phone overuse and increased screen time usage. Statistical analyses (Pearson correlation, ANOVA, and multiple regression) found that both higher BMI and greater mobile phone involvement were significantly associated with poorer sleep quality, independent of age and gender. Amusingly, overweight students had worse sleep quality than even obese peers. The findings suggest a clear need for interventions targeting healthy weight management and reduced mobile phone use to improve students' sleep health.

A total of 438 students aged 18–26 years were recruited from Mohammed V University in Rabat, Morocco. Anthropometric measurements were assessed using standardized equipment. Data regarding dietary habits, physical and sedentary activities were collected via a self-administered questionnaire. The prevalence of overweight and obesity was 14.8% and 1.6%, respectively. Students who reported frequent consumption (>3 times/week) of fast food, fried potatoes and sugary drinks were more likely to be overweight/obese than peers who did not. Similarly, odds of being overweight/obese were slightly higher among females who reported

non-daily intake of fruits and milk or dairy products and among males who ate vegetables less frequently (<7 times/week). Approximately 26% of students were physically

inactive, with a higher proportion of females (35.8%) than males (10.7%). Both short and long sleep durations were

associated with an increased risk of overweight/obesity in males. In contrast, physical inactivity and increased screen time were associated with a slightly reduced risk of overweight/obesity, particularly in females. Overall, unhealthy dietary habits were associated with an increased risk of overweight/obesity. A similar trend was also observed between abnormal sleep duration and overweight/obesity in males. (Benaich, Mehdad, Andaloussi, Boutayeb, Alamy, Aguenaou, & Taghzouti, 2020)

A cross-sectional study was conducted, surveying 2452 students from 14 medical faculties from 5 countries in the region. The prevalence of overweight was 12% and obesity was 2.3% among medical students from Western Balkans. Male gender and smoking status are significant positive predictors of overweight and obesity. Daily level of physical activity up to 1 h per day, going to preventive checkups once a year or as a part of annual dormitory checkups are associated with lower odds of being overweight and obese. By creating adequate public health educational programs, students can be influenced to acquire proper health-related lifestyle habits, which would lead to reducing the prevalence of overweight and obesity among the student population, as well as risk of developing non-communicable diseases and improving the overall health of the population (Ilić, Pang, Vlaški, Grujičić, & Novaković, 2024)

Likewise, A cross-sectional study recruited a simple random sample of students from King Abdulaziz University (KAU) in Saudi Arabia's western region. In this study, the Arab Teens Lifestyle (ATLS) questionnaire was used. The survey was conducted between April and June 2022. In total, 659 students participated (313 males [37.3%] and 437 females [66.2%]). One-

fourth of the students, 158 (24%), were overweight, and 83 (12.7%) were obese. Male participants were overweight or obese by a rate of 32.6% and 19.4%, respectively. Female overweight and obese rates were 16.2% and 6.6%, respectively. Moreover, obesity/overweight rates were 43.6% in the urban area and 36.9% in the rural area (P=0.03). A total of 370 participants (56.14%) slept less than 8 hours per day, 185 (28.1%) spent more than five hours per day watching television or using the internet, and 303 (46%) ate breakfast on a regular basis. Obesity/overweight was more common in smokers than in nonsmokers (59.7% vs 32.8%, P=0.01). The prevalence of obesity was lower among those who walked three days or more per week (28.1% vs 44.1%; P=0.01) and ran/jogged outside or on a treadmill three days or more per week (29.5% vs 39.8%; P=0.03) than among those who ran/jogged less than three days per week. Student obesity was independently predicted by being male (P=0.01), drinking more sugary drinks (P=0.01), smoking (P=0.03), and sleeping for fewer hours (P=0.03). Obesity was more prevalent in male students, with a prevalence of 24%. Male gender, consumption of more sugary beverages, smoking, and sleeping for fewer hours were all independent predictors of obesity among university students (Alsulami, Althagafi, Hazazi, Alsayed, Alghamdi, Almohammadi, & Almurashi, 2023)

A concerning trend is taking shape in African universities, mirroring global patterns. At the University of Nairobi in Kenya is quite comparable. An alarming 18% of students are reported to be overweight or obese, with fast-food consumption and lack of sleep identified as significant contributors to this growing health crisis (Mwangi, Njogu & Kiplamai, 2019)These findings highlight the intricate relationship between dietary habits and lifestyle choices that greatly affect the health and well-being of students.

In Nigeria, the story is equally troubling. 150 undergraduate students from Lagos State University (LASU) were selected through multistage random sampling. Information on socio-demographic characteristics, dietary habits and physical activity was obtained using structured questionnaire. Weight, height, Percentage Body Fat (PBF), waist and hip

circumferences were measured according to standard procedures to compute Body Mass Indices (BMI), Waist Hip Ratio (WHR) and finally determine nutritional status. The data were presented as frequencies, percentages, mean and standard deviations. Chi square was used to test for significant differences and level of significance set at 0.05.

The mean BMI, PBF and WHR of the participants were 23.4 ± 2.3 kg/m2, 23.1 ± 5.0% and 0.83 ± 0.09, respectively. Majority of the participants (86.7%) were of normal weight while 8% (10.4% males and 5.5% females) and 5.3% (5.2% males and 5.5% females) were overweight and obese, respectively. Using WHR, more number of students were overweight/obese (34%) compared to BMI (13.3%) and PBF (8.7%), all indicating higher abnormal status among males than females. Few students exhibited poor eating (15%) and physical inactivity (16%) habits. The majority of the students (75.3%) skipped breakfast and the least daily consumed food group was legume/nut group (0.5%). Snacks (42%) and processed (20%) foods were consumed more than roots/tubers (14%) which are staple foods. Central obesity was high among undergraduate students of Lagos State University. Breakfast skipping and low legume meal consumption were major dietary problems. (Arisa, Anaemene & Mekwunye, 2020)

A comprehensive decade-long study at the University of Ibadan analyzed 60,168 medical records from undergraduate and postgraduate students admitted between 2009 and 2018 (Oluwasanu, Akinyemi, Oluwasanu, Oseghe, Oladoyinbo, Bello, & Ajuwon, 2023). The data revealed that 18.7% of students were overweight and 7.2% were obese, surpassing the rates of underweight (10.5%). Obesity and overweight prevalence was notably higher among female students with figures recorded at 20.2% overweight and 10.4% obese. The study also documented a double burden of malnutrition, where both underweight and overweight coexisted in the student body. Significantly, hypertension emerged as the most common obesity-related non-communicable disease, affecting 8.1% of students, and prehypertension was observed in 35.1% (Oluwasanu et al., 2023).

In a similar vein, research from the Federal University of Agriculture in Abeokuta reported that 18.3% of students were overweight, while just 2.9% were categorized as obese. However, the study also noted that 26% of participants showed signs of abdominal obesity. Diet evaluation revealed troubling patterns, with students consuming a lot of pasta and sugar while eating very few fruits. This was despite 60.7% of respondents indicating they engaged in high levels of physical activity, illustrating the complex relationship between diet and exercise in maintaining a healthy weight (Olojede, Olalusi, Okoruwa, Olajide, Adebowale, & Onabanjo, 2025)

Another investigation at the University of Benin focused specifically on pharmacy students, finding that 10.5% of the 172 participants were overweight, with only 1.2% classified as obese based on Body Mass Index (BMI). However, alternative measurements like Waist-to-Hip Ratio (WHR) and Waist Circumference (WC) revealed a more concerning situation, particularly among female students, who exhibited significantly higher rates of central obesity.

A recent study by Ehwarieme and Emina (2024) at the University of Benin added to this discussion, showing a combined rate of overweight and obesity at 19.37% among 420 undergraduates. This research identified several contributing factors to the issue, including limited exercise, a lack of awareness about obesity, and differences related to age, gender, and medication use.

Taken together, a look at various studies conducted in different parts of the world creates a clear picture of the obesity crisis impacting university students. The factors contributing to this problem are quite similar across the globe, as all students face common challenges such as academic pressure and the stresses associated with transitioning into adulthood. In this environment, unhealthy eating habits, increased screen time, and decreased physical activity have unfortunately become the norm. This highlights just how vulnerable university students

are to this growing health concern, emphasizing the urgent need for a global movement to raise awareness about the negative impacts of obesity. Additionally, this study will present updated data on the prevalence of obesity among undergraduate students at the University of Benin, aimed at fostering greater awareness and understanding of obesity's associated risks.

SUMMARY OF RELATED LITERATURE REVIEWED

This literature reviewed lays emphasis on how obesity has emerged as a critical global health challenge in the twenty-first century, garnering attention not only due to its rising rates but also because of its significant effects on individual health and overall well-being. Current research depicts obesity as a complex issue influenced by a combination of biological, social, environmental, and behavioral factors, all interacting in ways that complicate both prevention and treatment efforts. The international perspective has shifted; obesity is no longer seen solely as a problem in wealthier nations it has also spread to low- and middle-income countries, where rapid urban growth, changes in dietary habits, and other lifestyle shifts have created conditions ripe for its increase.

At its core, obesity is characterized by an excessive buildup of body fat that poses health risks. While body mass index (BMI) is commonly utilized to evaluate weight categories, experts point out its shortcomings, especially its inability to differentiate between fat and lean tissue. Consequently, more precise measures like waist circumference, waist-to-hip ratio, and body fat percentage have been recommended to better assess central obesity and its associated risks. The health implications of obesity are serious and wide-ranging, leading to conditions such as cardiovascular disease, diabetes, various cancers, and liver problems. Additionally, obesity can weigh heavily on mental health, contributing to issues like low self-esteem, depression, and social stigma, particularly in younger populations.

Globally, obesity rates have been on the rise, with particularly concerning trends seen among children, adolescents, and university students. Changes in food environments, lifestyle choices, and cultural patterns are evident. University students, specifically, represent a critical group in this discussion. Their transition from adolescence to adulthood often brings newfound independence in decision-making, including food selection and daily habits, yet they also face pressures from academics, finances, and peer influences. These factors create favorable conditions for weight gain, with evidence highlighting a notable increase in obesity rates among college students.

The situation in the Middle East is particularly alarming. In countries like Oman and Saudi Arabia, data indicate that high rates of overweight and obesity are prevalent among university students. Factors such as inadequate sleep, high consumption of sugary beverages, smoking, and sedentary lifestyles have been identified as significant contributors. Research from Dubai among female students indicates that irregular eating patterns and imbalanced diets are linked to increased weight. Such findings emphasize how cultural and environmental influences interact with student lifestyles, heightening the risks of obesity.

Exploring Asian contexts adds further complexity. In China, for example, extensive surveys have identified significant numbers of overweight and obese students, with lifestyle elements like poor sleep quality and excess mobile phone use strongly associated with higher body mass. These results underscore how today's technological engagements an integral part of student life are increasingly connected to health outcomes. Broader population studies across Asia indicate similar trends driven by a shift towards processed foods, urbanization, and diminished physical activity.

Concerns are echoed in North African and European settings. Research involving Moroccan students highlights a clear connection between the consumption of fast food, sugary drinks, disrupted sleep patterns, and weight gain. In the Western Balkans, male students and smokers

show a higher likelihood of being obese, whereas engaging in regular exercise seems to offer protection against weight gain. These findings reinforce the importance of lifestyle habits, particularly the impact of diet, physical activity, and sleep on student health outcomes.

Countries in sub-Saharan Africa are witnessing similar changes related to obesity. In Ghana and Kenya, university students are seeing increases in obesity, primarily due to higher consumption of fast food, sugary drinks, and a decline in physical activity levels. Nigeria provides a particularly detailed case study, with extensive research conducted at multiple universities there. For instance, at the University of Lagos, over 25% of students were found to be overweight or obese, a situation largely attributed to habits like snacking, skipping breakfast, and leading a sedentary lifestyle. At the University of Ibadan, a long-term review of medical records showed a consistent rise in obesity rates, particularly among female and postgraduate students. In Abeokuta, even though students reported being physically active, poor dietary choices undermined their efforts to manage their weight. Meanwhile, in Benin, alternative methods beyond the standard body mass index revealed widespread central obesity, particularly among women. These Nigerian examples highlight the complexity of measuring obesity and the importance of looking beyond traditional metrics to accurately assess health risks.

On a global scale, obesity is influenced by a range of interconnected factors rather than just statistics. Research points to diet as a key contributor, with the rising intake of energy-dense, nutrient-poor foods like sugary beverages and fried snacks significantly fueling weight gain. Moreover, the issue of physical inactivity is critical, often tied to sedentary lifestyles that come from academic commitments, excessive screen time, and urban environments that limit physical movement. Sleep quality also plays a significant role, with inadequate sleep affecting appetite control and metabolic functions. Additional factors like psychosocial stress, substance use, and a lack of awareness further exacerbate unhealthy weight gain. Notably,

gender differences are prevalent, with women generally exhibiting higher rates of obesity, which may stem from cultural body image perceptions, metabolic variations, or societal roles.

The health consequences of obesity reach beyond just physical aspects. An increasing focus on mental health outcomes reveals that individuals with obesity often experience depression, diminished self-worth, and social isolation. For students, these mental health challenges can hamper academic performance and social interactions, intensifying the overall effects of obesity on their lives. Furthermore, obesity in youth is a strong indicator of adult obesity, indicating that habits formed during university years can have long-lasting health implications.

The economic ramifications of obesity are also discussed in research literature. The strain on healthcare systems, reduced workforce productivity, and increased medical expenses are highlighted as significant societal effects. Countries in economic transition, especially in Africa and Asia, face the dual challenges of malnutrition and obesity, with undernutrition still prevalent in rural areas while urban centers struggle with rising obesity rates. This duality poses unique policy dilemmas, requiring governments to manage health systems that are not adequately equipped to tackle both ends of the nutritional spectrum.

Cultural perceptions of obesity further complicate the conversation. In various African and Middle Eastern cultures, larger body sizes have traditionally been linked to wealth, success, and beauty. Although modernization has shifted these views in many areas, some cultural attitudes continue to shape how weight is perceived, potentially downplaying the seriousness of the obesity crisis. In contrast, in Western societies, obesity tends to carry a stigma that can lead to discrimination and additional psychological distress for those affected.

The body of research highlights an urgent call for effective interventions to tackle obesity. On an individual level, it is crucial to promote awareness campaigns that emphasize the importance of balanced nutrition, regular exercise, and good sleep habits. Institutions,

particularly universities, are encouraged to offer healthier food choices, create environments that support physical activity, and incorporate health education into their academic programs. On a broader scale, national policies that focus on improving food environments, regulating advertising, and addressing urban planning are deemed essential for combating the obesity crisis.

This research presents obesity as a challenge that impacts both individuals and society at large. University students serve as a clear example of how changes in lifestyle can be affected by wider social and cultural factors, leading to health risks. The trends observed in this demographic mirror global patterns but also highlight the necessity of targeted interventions during this pivotal life stage. Obesity stems not just from personal decisions, but from a complex web of influences that shape those choices. Effectively addressing the issue requires comprehensive strategies that blend insights from health, education, culture, and policy.

In conclusion, the literature provides a thorough understanding of how the obesity epidemic varies across different contexts. As a worldwide issue, obesity is rapidly increasing in various countries and disproportionately impacting transitioning populations like university students. The factors contributing to it are diverse, including diet, physical activity, sleep quality, stress levels, cultural practices, and environmental conditions. The ramifications are significant, ranging from physical health problems and mental health challenges to social stigma and economic strains. Despite differences among regions, the overarching trends are strikingly alike, highlighting the necessity for coordinated efforts on both global and local scales to address this epidemic. The evidence clearly shows that without immediate and ongoing action, the situation is likely to worsen, putting future generations at even greater risk.

CHAPTER THREE

METHODOLOGY

This chapter discusses the methodology employed in this study under the following subheadings:

- Research design
- Population of the study
- Sample and sampling techniques
- Research Instrument
- Validity of the Instrument
- Reliability of the Instrument
- Method of Data collection
- Method of Data Analysis

Research Design

This study will adopt the descriptive survey research design. This design is considered appropriate because it will allow for data collection from a representative sample of students in order to describe the prevalence of obesity and examine how lifestyle factors influence obesity status among University of Benin undergraduate students.

Population of the study

The target population for this study includes all undergraduate students of the University of Benin in both Ugbowo and Ekehuan campuses respectively.

Sample and Sampling Techniques

In this research, a mix of purposive and convenience sampling methods will be used. Purposive sampling is a targeted approach where the researcher handpicks individuals based on specific traits that align with the goals of the study. This method doesn't aim to give every member of the population a fair shot at selection; instead, it zeroes in on those who can provide the most pertinent and valuable insights. For this study, the specific focus is on undergraduate students from the University of Benin, as they are the core group we to be examined in relation to obesity and lifestyle choices.

To enhance data collection, convenience sampling will be utilised. This method selects participants based on their availability and willingness to participate, making it a practical choice for large groups. It allows gathering of information more quickly from individuals who are easy to reach. In this research, convenience sampling will be carried out within the already narrowed group of undergraduates, with students recruited from lecture halls, dormitories, cafeterias, and recreational areas.

By combining these two approaches, a total of 200 undergraduate students will be selected. This strategy not only targets the right demographic for the study but also ensures that all data gathered are of necessity.

Research Instrument

The Instrument for data gathering will be a self-constructed questionnaire developed by the researcher titled "The prevalence of obesity and its association with lifestyle factors among University of Benin undergraduate students". This questionnaire will employ a four-point Likert scale characterized by the following options: Strongly Agree (SA)-4, Agree (A)-3, Disagree (D)-2, and Strongly Disagree (SD)-1. The questionnaire will comprise two sections;

A and B. Section A will contain respondents demographic information items while Section B will contain 25 items specifically designed to elicit information related to the study.

Validity of the Instrument

The self-constructed questionnaire will be validated for face and content Validity. It will be reviewed by the researcher's supervisor and two other professional experts from the Department of Human Kinetics and Sport Science. The corrections, suggestions, criticisms, recommendations and ambiguities will be taken into consideration before the final draft of the questionnaire will be administered.

Reliability of the Instrument

To evaluate the reliability of the instrument, the study will employ both the test-retest method and Cronbach's Alpha analysis. Initially, the questionnaire will be distributed to a group of 30 undergraduate students from the University of Benin. After a two-week period, the same students will complete the questionnaire again. By comparing the responses from both sessions, thereby making it possible to assess the consistency of the instrument over time.

In addition to the test-retest method, Cronbach's Alpha will be calculated to analyze the internal consistency of the instrument. This statistic measures the average correlation between the items in the questionnaire, indicating how well they collectively assess the same concept. The Cronbach's Alpha formula is as follows:

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum V_i}{V_t}\right)$$

a = Cronbach's alpha coefficient

k = Number of items in the scale

DV; = Sum of the variances of each individual item

V_1 = Variance of the total scale (sum of all items)

As noted by Nunnally (1978), a Cronbach's Alpha value of 0.70 or above is considered to demonstrate an acceptable level of reliability. Consequently, in this study, we will regard a coefficient of 0.70 or higher as satisfactory.

Method of Data Collection

The Instrument will be administered to the respondents online. This will be done by preparing electronic copies to respondents. On completion, the questionnaires will be submitted and sent to a repository for future retrieval and utility.

Method of Data Analysis

Data gathered will be analyzed using descriptive statistics such as frequency, percentage, mean and standard deviation. All findings will be documented in a table for easy comprehension.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

Presentation of Results

Research Question 1: Is obesity prevalent among students of the University of Benin?

Table 1: Showing the Mean and Standard deviation of responses of respondents to research question one

S/N	Obesity prevalence among students	Mean	SD	Decision
1.	I believe obesity is a common health issue among university students.	3.68	0.470	Agree
2.	Many students in my class and or department appear overweight or obese.	1.12	0.320	Disagree
3.	I am concerned about my own body weight.	3.40	0.617	Agree
4.	I think obesity is increasing among Nigerian university students.	1.17	0.377	Disagree
5.	Students in University of Benin should regularly check their BMI status.	3.66	0.477	Agree

Table 1 showing the mean values range from 1.12 to 3.68, while the standard deviation values range from 0.320 to 0.617. The mean values show that the respondents agreed to three out of the five items as regards obesity prevalence among students, such as being a common

health issue, body type (being obesed or not), body weight, increase in obesity, and BMI status. Hence, it is seen that from their responses, obesity seems prevalent among students of the University of Benin. This was indicated with the average mean of 2.61. The low values of the standard deviation show that their responses do not deviate far from one another.

Research Question 2: Does dietary habit influence the obesity status of University of Benin students?

Table 2: Showing the Mean and Standard deviation of responses of respondents to research question two

S/N	Dietary habit influence on obesity status of students	Mean	SD	Decision
6.	I consume fast food at least three times a week which may result in obesity.	1.20	0.397	Disagree
7.	I eat fruits and vegetables daily to help control obesity and body composition.	3.65	0.480	Agree
8.	I frequently skip breakfast which may result in eating in between meals and result in obesity.	1.14	0.343	Disagree
9.	I drink sugary beverages (e.g., soda, energy drinks) more than three times a week and this may influence obesity.	3.64	0.481	Agree
10.	My daily diet contributes positively to my weight management.	3.59	0.503	Agree

Table 2 showing the mean values range from 1.14 to 3.65, while the standard deviation values range from 0.343 to 0.503. Also, with an average mean of 2.64, the mean values show that the respondents agreed to three out of the five items in relation to the dietary habit

influence on students obesity status. Hence, dietary habit does influence students obesity status. The low values of the standard deviation show that their responses do not deviate far from one another.

Research Question 3: Does the level of physical activity relate to obesity among University of Benin students?

Table 3: Showing the Mean and Standard deviation of responses of respondents to research question Three

S/N	Level of physical activity relation to obesity among students	Mean	SD	Decision
11.	I engage in moderate to vigorous physical activity (e.g., sports, gym, running) at least 3 times a week to help prevent obesity.	3.59	0.503	Agree
12.	I walk or cycle regularly instead of using motor transport to keep my body in shape and avoid getting obese.	3.58	0.506	Agree
13.	I spend more than 30 minutes per day on physical activity to prevent getting obese.	3.58	0.506	Agree
14.	I avoid physical activity most days of the week and in most cases may result in obesity.	1.20	0.397	Disagree
15.	My physical activity is sufficient to maintain a healthy body weight.	3.31	0.628	Agree

Table 3 showing the mean values range from 1.20 to 3.59, while the standard deviation values range from 0.397 to 0.628. Also, with an average mean of 3.05, the mean values show that the respondents agreed to four out of five items in connection with the level of physical

activity in relation to obesity among students. Hence, physical activity level can manage obesity. The low values of the standard deviation show that their responses do not deviate far from one another.

Research Question 4: Does sedentary behaviour have any association with obesity among University of Benin students?

Table 4: Showing the Mean and Standard deviation of responses of respondents to research question Four

S/N	Sedentary behaviour association with obesity	Mean	SD	Decision
16.	I spend more than 5 hours daily sitting (e.g., in lectures, watching TV, using phone/computer) which may cause obesity.	3.39	0.582	Agree
17.	I take regular breaks from sitting during the day to avoid being obese.	3.43	0.597	Agree
18.	I use my mobile phone or laptop late into the night and this habit may be detrimental to my body weight.	1.21	0.405	Disagree
19.	I prefer sedentary leisure activities (e.g., gaming, watching movies) over active ones.	1.91	0.393	Disagree
20.	My daily sitting time contributes negatively to my body weight.	3.53	0.539	Agree

Table 4 showing the mean values range from 1.21 to 3.53, while the standard deviation values range from 0.393 to 0.597. Also, with an average mean of 2.69, the mean values show that the respondents agreed to three out of five items in association to sedentary behaviour relating to obesity. Hence, sedentary behaviour has association with obesity among students.

The low values of the standard deviation show that their responses do not deviate far from one another.

Research Question 5: Is there an influence of alcohol consumption and smoking on the obesity status of University of Benin students?

Table 5: Showing the Mean and Standard deviation of responses of respondents to research question Five

S/N	**Influence of alcohol consumption and smoking on students obesity status**	**Mean**	**SD**	**Decision**
21.	I get at least 7–8 hours of sleep daily.	3.52	0.540	Agree
22.	I smoke cigarettes or use other tobacco products.	1.25	0.434	Disagree
23.	I manage stress in a healthy way (e.g., exercise, hobbies, socializing) rather than emotional eating and doom scrolling on social media.	3.53	0.539	Agree
24.	I find fruits, vegetables and protein too expensive so I buy junk instead which may affect one's body composition.	1.21	0.405	Disagree
25.	I reward myself with food, alcohol and scrolling on my social media when I achieve a goal, which may be detrimental to my weight management.	1.22	0.415	Disagree

Table 5 showing the mean values range from 1.21 to 3.53, while the standard deviation values range from 0.405 to 0.540. Also, with an average mean of 2.15, the mean values show that the respondents agreed to two out of five items in association to influence of alcohol

consumption and smoking on the obesity status of students. Hence, students adopt good/healthy lifestyle habits to avoid obesity. The low values of the standard deviation show that their responses do not deviate far from one another.

Discussion of Findings

The findings of research question 1 showed that obesity seems prevalent among students. This finding aligns with the position of the WHO (2021) who offered a disconcerting perspective on the youth demography, estimating that in 2016, over 340 million children and adolescents aged between 5 and 19 were deemed overweight or obese. This troubling trend shows no sign of abating, particularly in low and middle income nations, where the challenges associated with obesity are becoming increasingly pronounced and multifaceted. Further illuminating the gravity of this situation, the Global Burden of Disease Study brings to the forefront the dire consequences of rising obesity rates, linking this condition to approximately 4.7 million premature deaths globally as of 2017 (GBD 2017 Risk Factor Collaborators, 2018).

The findings of research question 2 revealed that dietary habit does influence students obesity status. This aligns with the finding of Agyemang et al. (2016) who described Sub-Saharan Africa's "nutrition transition," highlighting a rise in the consumption of energy-dense, nutrient-poor foods and a decrease in physical activity.

Findings of research question 3 revealed that students physical activity level can manage obesity. In consensus with this, few existing investigations showed that individual healthy lifestyle factors, such as smoking avoidance, healthy dietary patterns, or more leisure-time physical activity, may reduce the risk of chronic disease and mortality associated with obesity (Rassy, Van Straaten, Carette, Hamer, Rives-Lange, & Czernichow, 2023).

The findings of research question 4 showed that sedentary behaviour has association with obesity among students. Various factors contribute to this alarming trend in Nigeria: rapid urbanization, a reduction in physically demanding jobs, the widespread availability of processed foods, and cultural beliefs equating larger body sizes with wealth and attractiveness (Okafor, 2012). The rise of fast-food outlets and the decline of accessible recreational opportunities exacerbate the situation. This shift in dietary habits and lifestyle choices highlights a critical need for public health interventions, particularly aimed at the youth, who are forming habits that will shape their health in the long run.

The findings of research question 5 revealed that students adopt good/healthy lifestyle habits to avoid obesity. Contrary to this finding is the assertion of Ng et al. (2014) who stressed that the roots of this troubling growth (obesity) trend are complex and interwoven, encompassing a spectrum of factors including drastic changes in dietary practices, a notable decline in physical activity, rapid urbanization, and the ever-expanding globalization of unhealthy food systems, all of which play significant roles in this epidemic.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter encapsulates the summary, conclusion as well as the necessary recommendations.

Summary

This study investigated the prevalence of obesity and its association with lifestyle habits among University of Benin students. It sought to determine obesity prevalence among students; dietary habit influence on obesity status of students; level of physical activity relation to obesity among students; sedentary behaviour association with obesity; and influence of alcohol consumption and smoking on students obesity status. To guide the study, five (5) research questions were raised.

The study adopted a descriptive survey research design. The population of the study was made up of 40,000+ students of the University of Benin. A sample size of 200 undergraduate students was selected from the population using the convenience sampling technique to select them. The research instrument for the study was a self-constructed questionnaire. The statistical analysis was carried out using percentages for respondents' bio-data and mean and standard deviation was used in the data analysis of research questions 1 to 5.

The findings of this research based on the research questions raised showed the following:

- obesity seems prevalent among students.
- dietary habit does influence students obesity status.
- students physical activity level can manage obesity.
- sedentary behaviour has association with obesity among students.
- students adopt good/healthy lifestyle habits to avoid obesity.

Conclusion

Based on the research findings, it can be concluded that since obesity seems prevalent among students, there is the need for them to take cognizance of their dietary habit, physical activity level, and lifestyle habits so as to aid in obesity management; and lastly avoid sedentary behaviour.

Recommendations

From the findings of this study, the following recommendations were put forth:

1. It was recommended students should periodically check their BMI status in order to control obesity.
2. It was recommended students should cultivate good dietary habits so as to avoid obesity.
3. It was recommended students should engage in regular physical activity in order to maintain healthy body weight and prevent obesity.
4. It was recommended students should avoid being sedentary in their day-to-day activities so as to control body weight.
5. It was recommended students should avoid intake of alcohol and cigarette smoking so as to manage stress and weight effectively.

REFERENCES

Adeboye, B., Bermano, G., & Rolland, C. (2012). Obesity and its health impact in Africa: A review. Journal of the Royal Society of Medicine Cardiovascular Disease, 1(9), 1–10.

Agyemang, C., Boatemaa, S., Frempong, G. A., & de-Graft Aikins, A. (2016). Obesity in sub-Saharan Africa. In Metabolic syndrome (pp. 41–53). Springer.

Al Hadabi, F. (2019). Prevalence of overweight and obesity as non-communicable disease risk factors among undergraduate students in Oman. [Journal name unavailable].

Alkalbani, A., & Murrin, C. (2023). Alcohol consumption and abdominal obesity: Associations and health implications. [Journal name unavailable].

Alsulami, A., Althagafi, A., Hazazi, A., Alsayed, A., Alghamdi, A., Almohammadi, A., & Almurashi, R. (2023). Lifestyle behaviors and obesity among university students in Saudi Arabia. [Journal name unavailable].

Alzahrani, S. H., Saeedi, A. A., Baig, M., Alqarni, A. M., Alshareef, M. A., Alzahrani, M. A., & Aldamiri, H. S. (2020). Fast food consumption and its associations with overweight/obesity among university students in Saudi Arabia. Nutrition and Health, 26(3), 211–218.

American Diabetes Association. (2023). Standards of medical care in diabetes—2023. American Diabetes Association.

Ashwell, M., Gunn, P., & Gibson, S. (2012). Waist-to-height ratio is a better screening tool than BMI for adult cardiometabolic risk factors. Obesity Reviews, 13(3), 275–286.

Bandura, A. (2004). Social cognitive theory: An agentic perspective. Annual Review of Psychology, 52, 1–26.

Bellentani, S., Scaglioni, F., Marino, M., & Bedogni, G. (2010). Epidemiology of non-alcoholic fatty liver disease. Digestive Diseases, 28(1), 155–161.

Benaich, S., Mehdad, S., Andaloussi, Z., Boutayeb, W., Alamy, M., Aguenaou, H., & Taghzouti, K. (2020). Overweight and obesity among Moroccan students: Dietary and lifestyle correlates. [Journal name unavailable].

Bray, G. A., Kim, K. K., & Wilding, J. P. H. (2017). Obesity: A chronic relapsing progressive

disease process. Obesity Reviews, 18(7), 715–723.

Carrasquilla, G., García-Ureña, M. Á., Romero-Lado, B., & Kilpeläinen, T. (2024). Smoking and abdominal fat distribution: Current evidence. [Journal name unavailable].

CDC. (2022). Adult obesity facts. Centers for Disease Control and Prevention.

CDC. (2023). Defining adult overweight and obesity. Centers for Disease Control and Prevention.

CDC. (2025). Adult obesity causes & consequences. Centers for Disease Control and Prevention.

Chinweuba, A. U., Okoronkwo, I. L., Ndu, A. C., Ihudiebube-Splendor, C., Okocha, E. C., & Nwankwo, S. U. (2016). Obesity among undergraduate students: Prevalence and associated factors. International Journal of Medicine and Health Development, 21(2), 75–80.

Chukwuonye, I., Ohagwu, K., Ogah, O., John, C., Oviasu, E., Anyabolu, E., ... Raphael, P. (2022). Prevalence of overweight and obesity in Nigeria: A systematic review. [Journal name unavailable].

Després, J.-P. (2012). Body fat distribution and risk of cardiovascular disease: An update. Circulation, 126(10), 1301–1313.

Ehwarieme, T., & Emina, O. (2024). Prevalence of overweight and obesity among University of Benin undergraduates. [Journal name unavailable].

El Ansari, W., Stock, C., & Mikolajczyk, R. T. (2014). Relationships between food consumption and living arrangements among university students in four European countries. Social Science & Medicine, 66, 1276–1284.

Ezeala-Adikaibe, B. A., Ulasi, I. I., Ozoh, O. B., Onodugo, O. D., Anigbo, C. U., & Ezeala-Adikaibe, N. P. (2015). Prevalence of abdominal obesity among pharmacy students in a Nigerian university. Nigerian Journal of Clinical Practice, 18(6), 731–736.

GBD 2017 Risk Factor Collaborators. (2018). Global, regional, and national comparative risk assessment of disease burden. The Lancet, 392(10159), 1923–1994.

Godoy-Matos, A. F., Silva Júnior, W. S., & Valerio, C. M. (2020). NAFLD and obesity: Metabolic connections. Frontiers in Endocrinology, 11, 1–14.

Hruby, A., & Hu, F. B. (2015). The epidemiology of obesity: A big picture. Pharmacoeconomics, 33,

673–689.

Ilić, M., Pang, A., Vlaški, J., Grujičić, R., & Novaković, P. (2024). Overweight and obesity among medical students in Western Balkans. [Journal name unavailable].

Jehan, S., Zizi, F., Pandi-Perumal, S. R., Wall, S., Auguste, E., Myers, A. K., Jean-Louis, G., & McFarlane, S. I. (2017). Obstructive sleep apnea and obesity: Implications for public health. Journal of Thoracic Disease, 9(9), 3651–3661.

Katzmarzyk, P. T., Friedenreich, C., Shiroma, E., & Lee, I.-M. (2022). Physical inactivity and global health burden. Sports Medicine, 52(5), 1–13.

Khafagy, R., & Dash, S. (2021). Obesity and cardiovascular disease: Mechanisms and management. [Journal name unavailable].

Kim, J., & Kim, Y. (2022). Psychosocial stress and unhealthy eating behaviors: Links to obesity. Nutrients, 14(3), 1–15.

Luppino, F. S., de Wit, L. M., Bouvy, P. F., Stijnen, T., Cuijpers, P., Penninx, B., & Zitman, F. (2010). Overweight, obesity, and depression: A systematic review and meta-analysis. Archives of General Psychiatry, 67(3), 220–229.

Lu, Y., Tian, X., Shi, H., Liu, Y., Wu, J., Tao, X., & Peng, Y. (2025). Mobile phone use, BMI, and sleep quality among Chinese university students. [Journal name unavailable].

Mogre, V., Nyaba, R., & Aleyira, S. (2014). Lifestyle risk factors of obesity among students in a Ghanaian university. Nutrition & Food Science, 44(5), 1–10.

Mwangi, R., Njogu, E., & Kiplamai, F. (2019). Overweight and obesity among students of the University of Nairobi: Lifestyle correlates. [Journal name unavailable].

National Institutes of Health. (2022). Obesity: Causes, complications, and management. NIH.

Ng, M., Fleming, T., Robinson, M., & et al. (2014). Global, regional, and national prevalence of overweight and obesity in children and adults 1980–2013: A systematic analysis. The Lancet, 384(9945), 766–781.

Nunnally, J. C. (1978). Psychometric theory (2nd ed.). McGraw-Hill.

Olojedé, O., Olalusi, O., Okoruwa, A., Olajide, F., Adebowale, O., & Onabanjo, O. (2025). Diet and

obesity among students of Federal University of Agriculture, Abeokuta. [Journal name unavailable].

Oluwasanu, M., Akinyemi, A., Oluwasanu, B., Oseghe, A., Oladoyinbo, C., Bello, S., & Ajuwon, A. (2023). A decade review of obesity among University of Ibadan students. [Journal name unavailable].

Parra-Landazury, R., Cordova-Gallardo, J., & Mendez-Sánchez, N. (2021). Obesity and gallstones: Mechanisms and implications. Annals of Hepatology, 24, 1–7.

Popkin, B. M., Corvalan, C., & Grummer-Strawn, L. M. (2020). Dynamics of the double burden of malnutrition and the changing nutrition reality. The Lancet, 395(10217), 65–74.

Rassy, D., Van Straaten, J., Carette, C., Hamer, M., Rives-Lange, C., & Czernichow, S. (2023). Healthy lifestyle behaviors and reduced chronic disease risks among obese adults. Obesity Research & Clinical Practice, 17(1), 1–8.

Roman, G., Rusu, A., Graur, M., Creteanu, G., Morosanu, M., Radulian, G., Amorin, P., Timar, B., Pircalaboiu, M., & Bala, C. (2019). Dietary patterns and obesity: The Western diet connection. Nutrients, 11(9), 1–15.

Spiegel, K., Tasali, E., Penev, P., & Van Cauter, E. (2004). Sleep curtailment and hormonal regulation of appetite. Annals of Internal Medicine, 141(11), 846–850.

Swinburn, B. A., Sacks, G., Hall, K. D., McPherson, K., Finegood, D. T., Moodie, M. L., & Gortmaker, S. L. (2011). The global obesity pandemic: Shaped by global drivers and local environments. The Lancet, 378(9793), 804–814.

World Health Organization. (2008). Waist circumference and waist–hip ratio: Report of a WHO expert consultation. WHO.

World Health Organization. (2020). Obesity and overweight. WHO.

World Health Organization. (2021). Obesity and overweight: Fact sheet. WHO.

World Health Organization. (2024). Body mass index classification. WHO.

Xu, L., Lin, W., Chen, Y., & Huang, J. (2025). Sleep quality and metabolic health: Current findings. [Journal name unavailable].

Yassin, M., Mwafy, S., & Laqqan, M. (2025). Obesity and male reproductive hormones: Evidence from clinical studies. [Journal name unavailable].

Zhou, B., Wang, Z., & Yu, Y. (2019). Assessing central obesity using anthropometric measures. Obesity Reviews, 20(2), 1–12.

APPENDIX I

QUESTIONNAIRE

DEPARTMENT OF HUMAN KINETICS AND SPORTS SCIENCE (HKS),

FACULTY OF EDUCATION

UNIVERSITY OF BENIN, BENIN CITY.

PREVALENCE OF OBESITY AND ITS ASSOCIATION WITH LIFESTYLE HABITS AMONG UNIVERSITY OF BENIN STUDENTS

Dear respondent,

This questionnaire has been carefully designed to evaluate the **PREVALENCE OF OBESITY AND ITS ASSOCIATION WITH LIFESTYLE HABITS AMONG UNIVERSITY OF BENIN STUDENTS.**

Kindly respond to each item to the best of your ability and understanding by ticking (✓) where it is applicable. Thank you for your cooperation.

SECTION A: DEMOGRAPHIC DATA

Gender: Male ( ) Female ( )

Age: 16-19 years ( ) 20-23 years ( ) 24 and Above years ( )

Faculty: _____

Level of study: 100L ( ) 200L ( ) 300L ( ) 400L ( )

Height in meters: _____

Weight in kilogram: _____

SECTION B:

Instruction: please, tick (✓) the option that you agree with the most, by indicating the extent to which you agree or disagree with the statements below, using the point scales:

SD= Strongly Disagree D= Disagree A= Agree SA= Strongly Agree

S/N	**ITEMS**				
RQ1	**Prevalence of obesity among Students of the University of Benin**	**SD**	**D**	**A**	**SA**
1.	I believe obesity is a common health issue among university students.				
2.	Many students in my class and or department appear overweight or obese.				
3.	I am concerned about my own body weight.				
4.	I think obesity is increasing among Nigerian university students.				
5.	Students in University of Benin should regularly check				

	their BMI status.				
RQ2	**Dietary habit and its influence on the obesity status of University of Benin Students**	**SD**	**D**	**A**	**SA**
6.	I consume fast food at least three times a week which may result in obesity.				
7.	I eat fruits and vegetables daily to help control obesity and body composition.				
8.	I frequently skip breakfast which may result in eating in between meals and result in obesity.				
9.	I drink sugary beverages (e.g., soda, energy drinks) more than three times a week and this may influence obesity.				
10.	My daily diet contributes positively to my weight management.				
RQ3	**Physical activity and its relationship to obesity among University of Benin students**	SD	**D**	**A**	**SA**
11.	I engage in moderate to vigorous physical activity (e.g., sports, gym, running) at least 3 times a week to help prevent obesity.				
12.	I walk or cycle regularly instead of using motor transport to keep my body in shape and avoid getting				

	obese.				
13.	I spend more than 30 minutes per day on physical activity to prevent getting obese.				
14.	I avoid physical activity most days of the week and in most cases may result In obesity.				
15.	My physical activity is sufficient to maintain a healthy body weight.				
RQ4	**Sedentary behavior and its association with obesity among University of Benin Students**	**SD**	**D**	**A**	**SA**
16.	I spend more than 5 hours daily sitting (e.g., in lectures, watching TV, using phone/computer) which may cause obesity.				
17.	I take regular breaks from sitting during the day to avoid being obese.				
18.	I use my mobile phone or laptop late into the night and this habit may be detrimental to my body weight.				
19.	I prefer sedentary leisure activities (e.g., gaming, watching movies) over active ones.				
20.	My daily sitting time contributes negatively to my body weight.				

RQ5	Influence of lifestyle habits on the obesity status of University of Benin students.	SD	D	A	SA
21.	I get at least 7–8 hours of sleep daily.				
22.	I smoke cigarettes or use other tobacco products.				
23.	I manage stress in a healthy way (e.g., exercise, hobbies, socializing) rather than emotional eating and doom scrolling on social media.				
24.	I find fruits, vegetables and protein too expensive so I buy junk instead which may affect one's body composition.				
25.	I reward myself with food, alcohol and scrolling on my social media when I achieve a goal, which may be detrimental to my weight management.				

APPENDIX II
DATA ANALYSIS RESULTS

```
GET
  FILE='C:\Users\user\Documents\Inioluwa data.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
DATASET ACTIVATE DataSet1.

SAVE OUTFILE='C:\Users\user\Documents\ Inioluwa data.sav'
  /COMPRESSED.
DATASET ACTIVATE DataSet1.

SAVE OUTFILE='C:\Users\user\Documents\ Inioluwa data.sav'
  /COMPRESSED.
DESCRIPTIVES VARIABLES=Item1 Item2 Item3 Item4 Item5 Item6 Item7 Item8 Item9
Item10 Item11 Item12 Item13 Item14 Item15 Item16 Item17 Item18 Item19 Item20 Item21
Item22 Item23 Item24 Item25
  /STATISTICS=MEAN STDDEV MIN MAX.
```

Descriptives

[DataSet1] C:\Users\user\Documents\Inioluwa data.sav

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Item1	200	3.00	4.00	3.6750	.46955
Item2	200	1.00	2.00	1.1150	.31982
Item3	200	2.00	4.00	3.3950	.61715
Item4	200	1.00	2.00	1.1700	.37658
Item5	200	3.00	4.00	3.6550	.47656
Item6	200	1.00	2.00	1.1950	.39719
Item7	200	3.00	4.00	3.6450	.47971
Item8	200	1.00	2.00	1.1350	.34258
Item9	200	3.00	4.00	3.6400	.48120
Item10	200	2.00	4.00	3.5900	.50316
Item11	200	2.00	4.00	3.5900	.50316
Item12	200	2.00	4.00	3.5750	.50562
Item13	200	2.00	4.00	3.5750	.50562
Item14	200	1.00	2.00	1.1950	.39719
Item15	200	1.00	4.00	3.3050	.62765
Item16	200	1.00	4.00	3.3850	.58178
Item17	200	2.00	4.00	3.4250	.59679
Item18	200	1.00	2.00	1.2050	.40471
Item19	200	1.00	2.00	1.1900	.39329
Item20	200	1.00	4.00	3.5300	.53903

Item21	200	1.00	4.00	3.5200	.53950
Item22	200	1.00	2.00	1.2500	.43410
Item23	200	1.00	4.00	3.5250	.53929
Item24	200	1.00	2.00	1.2050	.40471
Item25	200	1.00	2.00	1.2200	.41529
Valid N (listwise)	200				

APPENDIX III

RELIABILITY STATISTICS

```
GET
  FILE='C:\Users\user\Documents\Inioluwa analysis.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
GET
  FILE='C:\Users\user\Documents\ Inioluwa Analysis.sav'.
DATASET NAME DataSet2 WINDOW=FRONT.
RELIABILITY
  /VARIABLES=Item1 Item2 Item3 Item4 Item5 Item6 Item7 Item8 Item9 Item10 Item11
Item12 Item13 Item14 Item15 Item16 Item17 Item18 Item19 Item20 Item21 Item22 Item23
Item24 Item25
/SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Reliability

[DataSet2] C:\Users\user\Documents\ **Inioluwa** Analysis.sav

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	25	100.0
	Excluded[a]	0	.0

Total	25	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.734	25