**UNIVERSITY OF CAPE COAST**

COLLEGE OF HEALTH AND ALLIED SCIENCE

SCHOOL OF ALLIED HEALTH

DEPARTMENT OF BIOMEDICAL SCIENCE

**COURSE CODE & TITLE**

:

BMD 314

-

BIOMEDICAL STATISTICS

**GROUP**

**1D**

**MINI**

**–**

**PROJECT**

**DATE**

2023

AUGUST,

:

**PARTICIPATING INDEX NUMBERS**

**:**

AH/BMS/20/

0050

,

AH/BMS/20/0062

,

AH/BMS/20/0086

,

AH/BMS/20/0101

,

AH/BMS/20/01

64

***RESEARCH TOPIC***

*:*

*PHYSICAL ACTIVITY AND BMI*



### Abstract

World Health Organization's (WHO) advice on BMI and physical activity, provides a thorough viewpoint on maintaining a healthy body weight. In summation, the cross-tabulated data offered by this study offers an initial glimpse into the intricate link between active engagement in physical pursuits and the attainment of a healthier BMI. The evident distribution strongly resonates with the WHO's recommendation of upholding normal weight, thereby underscoring the intrinsic value of regular physical activity. The WHO classifies individuals' BMI into specific ranges: underweight (BMI < 18.5), normal weight (BMI 18.5 - 24.9), overweight (BMI 25 - 29.9), and obese (BMI ≥ 30). However, the journey toward comprehensive comprehension demands extensive research to establish causality, dissect influencing components, and ultimately attain a holistic understanding of this complex interplay.

i

### Table of Contents

[**Chapter 2: Introduction** 1](#_Toc15511)

[1.1: Background 1](#_Toc15512)

[1.2.: Aim 2](#_Toc15515)

[1.3: Specific Objectives 2](#_Toc15516)

[**Chapter 3: Methodology** 3](#_Toc15518)

[3.1: Study Design and Sample Size Determination 3](#_Toc15519)

[3.2: Questionnaire Design and Development 3](#_Toc15520)

[3.3: Participant Selection 4](#_Toc15521)

[3.4: Data Collection 4](#_Toc15522)

[3.5: Ethical Considerations 4](#_Toc15523)

[**Chapter 4: Results**…………………………………………………………………………………………………………………………5](#_Toc15524)

[4.1: Analysis of the Results 15](#_Toc15525)

[**Chapter 5: Discussion, Conclusion, Recommendations and Limitations** 16](#_Toc15526)

[5.1: Discussion 16](#_Toc15527)

[5.2: Conclusion: 17](#_Toc15528)

[5.3: Limitations: 18](#_Toc15530)

[**References** 19](#_Toc15531)

ii

.

# Chapter 1.: INTRODUCTION

# 1.1: Background

The connection between physical activity and Body Mass Index (BMI) has drawn considerable attention in an era characterized by sedentary lifestyles and a growing concern for general health. The widely-used metric of BMI acts as a gauge of a person's body composition and offers important health-related information. The interaction between these variables, along with the World Health Organization's (WHO) advice on BMI and physical activity, provides a thorough viewpoint on maintaining a healthy body weight. BMI classifies people into ranges of underweight, normal weight, overweight, and obese by dividing their weight in kilograms by the square of their height in meters. Despite its simplicity, BMI provides a rapid and convenient evaluation of a person's risk for a number of medical disorders, such as cardiovascular disease, diabetes, and several malignancies. WHO has set BMI cutoff points to help both individuals and healthcare professionals recognize their health concerns BMI levels within the 18.5-24.9 range are regarded as normal, while those outside of this range are indicative of underweight or overweight problems, respectively, BMI classifications offer a foundation for developing individualized health strategies and a starting point for discussions on weight management.

According to WHO’s recommendations, frequent physical activity can help prevent weight gain and improve general wellbeing. The regulation of energy balance, the preservation of muscle mass, and the enhancement of metabolic health are all aided by physical activity, which includes a spectrum of motions from scheduled exercise routines to daily activities. According to the organization, people should engage in at least 75 minutes of strenuous exercise or 150 minutes of moderate exercise per week, along with muscle-strengthening exercises on two or more days. But to really grasp this intricate link, one must delve into not only the WHO recommendations but also the numerous variables that might affect a person's BMI. For instance, a person's propensity for weight growth or decrease is greatly influenced by genetics, dietary practices, including calorie intake, nutritional composition, and eating patterns, also have a big impact on BMI. An individual's level of physical activity and eating habits, as well as cultural norms and psychological issues, might have an impact on their BMI. In this investigation, the basics of BMI, the WHO's recommendations for BMI and physical activity, and the different intrinsic and extrinsic factors that might affect a person's BMI will be delve into. By doing this, we are better able to understand the value of keeping an active lifestyle and a healthy weight in order to achieve optimal health. We acquire useful insights towards promoting healthier lives and reducing the risks associated with weight-related health issues as we untangle the complex web of factors that affect a person's BMI.

## 1.2: Aim

The goal of this study is to thoroughly examine the dynamic relationship between physical activity levels and Body Mass Index (BMI), examining how BMI is impacted by different levels and types of physical activity across a range of demographic groups. This research aims to provide a deeper understanding of the factors that contribute to weight management and overall health, contributing to the development of more effective strategies for promoting healthy lifestyles and mitigating the risks associated with weight-related health conditions. It does this by analyzing the complex interplay between physical activity behaviors and BMI outcomes.

## 1.3: Specific Objectives

The research seeks to attain these objectives:

* To quantify the relationship between physical activity and BMI.
* To examine the impact of different types of physical activity on BMI.
* Assess socio-demographic influences on the physical activity-BMI relationship.
* Identify mediating factors in the physical activity-BMI link.

# 

# Chapter 3: Methodology

## 3.1: Study Design and Sample Size Determination

This research employed a cross-sectional survey design to investigate the physical activity and body mass index of the Apewosika community. Questionnaire was selected as the primary data collection method due to its convenience, wider reach, and ability to ensure anonymity for participants. The minimum sample size of 150 participants was determined and accepted for the study.

## 3.2: Questionnaire Design and Development

The online questionnaire was developed following a comprehensive literature review of existing research on physical activity and BMI. The questionnaire was designed to collect both quantitative and qualitative data, with a focus on understanding participants' physical activities, how often they participated in those activities and their health status.

The questionnaire consisted of several sections, including:

* Demographic Information: Participants were asked to provide basic demographic details, including age, geographic location, ethnicity, religion, education level, marital status, employment status, and job type.
* Engagement in physical activities, the type of physical activity, how often they engage in these physical activities and their physical activity routine.
* Presence of any medical condition and the type of medical condition.
* The participants were asked whether they are currently trying to lose or gain weight, BMI history.
* The height and weight of participants were also taken.

## 3.3: Participant Selection

The target population for this study comprised members of the Apewosika Communtiy of Cape Coast. Participants were required to be at least 18 years old and mentally sound who can answer questions about their own self.

## 3.4: Data Collection

Data collection was conducted using a questionnaire which was administered on the field. Some of the participants answered the questions themselves whiles others because of illiteracy issues, they just answered the questions. The survey was active for a day to allow ample time for data entry.

## 3.5: Ethical Considerations

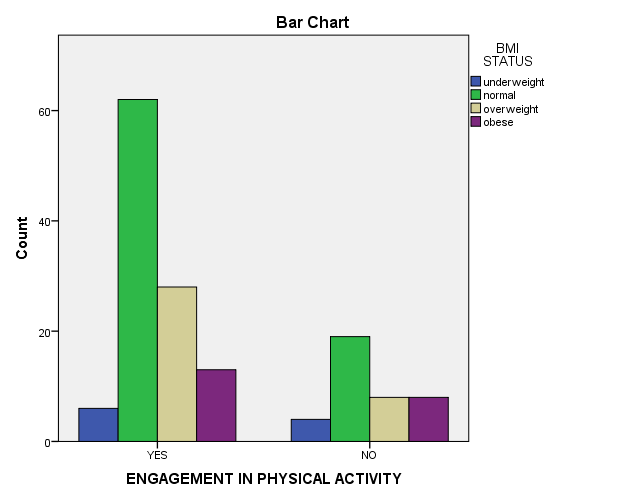
Ethical considerations were paramount throughout the data collection process. The online questionnaire began with an informed consent statement outlining the purpose of the study, voluntary participation, and confidentiality assurances. Participants were informed of their right to withdraw from the survey at any point without penalty.

# 

# Chapter 4: Results

FREQUENCIES

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | |
|  | | GENDER | age of study partcipant | level of education of study participant | RELIGION | ETHNICITY | MARITAL STATUS | EMPLOYMENT STATUS |
| N | Valid | 145 | 145 | 147 | 148 | 149 | 146 | 146 |
| Missing | 6 | 6 | 4 | 3 | 2 | 5 | 5 |
| Mean | | .51 | .90 | 1.62 | .10 | 1.00 | 1.03 | .30 |
| Median | | 1.00 | .00 | 2.00 | .00 | .00 | 1.00 | .00 |
| Mode | | 1 | 0 | 2 | 0 | 0 | 1 | 0 |
|  | |  |  |  |  |  |  |  |
| Std. Deviation | | .502 | 1.363 | .734 | .303 | 1.956 | .791 | .460 |
| Skewness | | -.042 | 1.375 | -1.053 | 2.669 | 1.874 | 2.224 | .875 |
| Std.Error of Skewness | | .201 | .201 | .200 | .199 | .199 | .201 | .201 |



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ENGAGEMENT IN PHYSICAL ACTIVITY x BMI STATUS**  **Crosstabulation** | | | | | | |
| Count | | | | | | |
|  | | BMI STATUS | | | | Total |
| underweight | normal | overweight | obese |
| ENGAGEMENT IN PHYSICAL ACTIVITY | YES | 6 | 62 | 28 | 13 | 109 |
| NO | 4 | 19 | 8 | 8 | 39 |
| Total | | 10 | 81 | 36 | 21 | 148 |

## 4.1: Analysis of the Results

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Statistics** | | | | | | | | |
|  | | GENDER | age of study partcipants | level of education of study participant | RELIGION | ETHNICITY | MARITAL STATUS | EMPLOYMENT STATUS |
| N | Valid | 145 | 145 | 147 | 148 | 149 | 146 | 146 |
| Missing | 6 | 6 | 4 | 3 | 2 | 5 | 5 |
| Mean | | .51 | .90 | 1.62 | .10 | 1.00 | 1.03 | .30 |
| Median | | 1.00 | .00 | 2.00 | .00 | .00 | 1.00 | .00 |
| Mode | | 1 | 0 | 2 | 0 | 0 | 1 | 0 |
| Std. Deviation | | .502 | 1.363 | .734 | .303 | 1.956 | .791 | .460 |
| Skewness | | -.042 | 1.375 | -1.053 | 2.669 | 1.874 | 2.224 | .875 |
| Std. Error of Skewness | | .201 | .201 | .200 | .199 | .199 | .201 | .201 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **GENDER OF PARTICIPANT** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Males | 71 | 47.0 | 49.0 | 49.0 |
| Females | 74 | 49.0 | 51.0 | 100.0 |
| Total | 145 | 96.0 | 100.0 |  |
| Missing | System | 6 | 4.0 |  |  |
| Total | | 151 | 100.0 |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Age Of Study Participant** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 18-24 | 87 | 57.6 | 60.0 | 60.0 |
| 25-29 | 25 | 16.6 | 17.2 | 77.2 |
| 30-34 | 10 | 6.6 | 6.9 | 84.1 |
| 35-39 | 7 | 4.6 | 4.8 | 89.0 |
| >40 | 16 | 10.6 | 11.0 | 100.0 |
| Total | 145 | 96.0 | 100.0 |  |
| Missing | System | 6 | 4.0 |  |  |
| Total | | 151 | 100.0 |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Level of Education of Study Participant** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Basic | 17 | 11.3 | 11.6 | 11.6 |
| SHS/SHTS | 27 | 17.9 | 18.4 | 29.9 |
| Tertiary | 98 | 64.9 | 66.7 | 96.6 |
| No formal education | 5 | 3.3 | 3.4 | 100.0 |
| Total | 147 | 97.4 | 100.0 |  |
| Missing | System | 4 | 2.6 |  |  |
| Total | | 151 | 100.0 |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **RELIGION** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Christian | 133 | 88.1 | 89.9 | 89.9 |
| Muslim | 15 | 9.9 | 10.1 | 100.0 |
| Total | 148 | 98.0 | 100.0 |  |
| Missing | System | 3 | 2.0 |  |  |
| Total | | 151 | 100.0 |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ETHNICITY** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | AKAN | 105 | 69.5 | 70.5 | 70.5 |
| EWE | 17 | 11.3 | 11.4 | 81.9 |
| GUAN | 1 | .7 | .7 | 82.6 |
| GA-ADANGBE | 7 | 4.6 | 4.7 | 87.2 |
| HAWUSA | 1 | .7 | .7 | 87.9 |
| MOLE DAGBANI | 3 | 2.0 | 2.0 | 89.9 |
| OTHER NORTHERN | 15 | 9.9 | 10.1 | 100.0 |
| Total | 149 | 98.7 | 100.0 |  |
| Missing | System | 2 | 1.3 |  |  |
| Total | | 151 | 100.0 |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MARITAL STATUS OF STUDY PARTICIPANTS** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | MARRIED | 22 | 14.6 | 15.1 | 15.1 |
| SINGLE | 112 | 74.2 | 76.7 | 91.8 |
| COHABATING | 3 | 2.0 | 2.1 | 93.8 |
| DIVORSED | 3 | 2.0 | 2.1 | 95.9 |
| WIDOWED | 6 | 4.0 | 4.1 | 100.0 |
| Total | 146 | 96.7 | 100.0 |  |
| Missing | System | 5 | 3.3 |  |  |
| Total | | 151 | 100.0 |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **EMPLOYMENT STATUS OF STUDY PARTICIPANTS** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | UNEMPLOYED | 102 | 67.5 | 69.9 | 69.9 |
| EMPLOYED | 44 | 29.1 | 30.1 | 100.0 |
| Total | 146 | 96.7 | 100.0 |  |
| Missing | System | 5 | 3.3 |  |  |
| Total | | 151 | 100.0 |  |  |

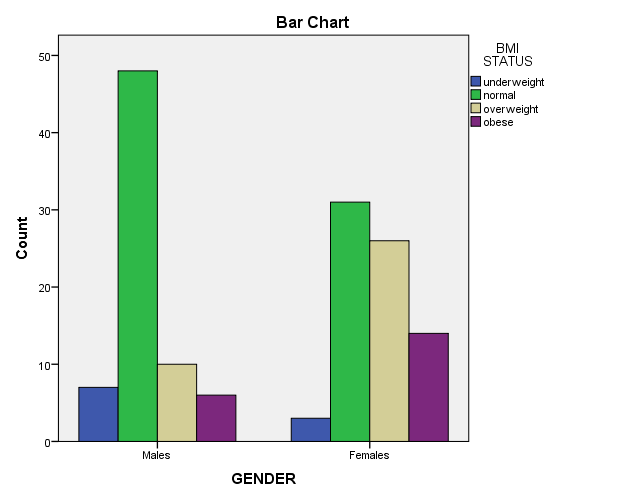
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Case Processing Summary** | | | | | | |
|  | Cases | | | | | |
| Valid | | Missing | | Total | |
| N | Percent | N | Percent | N | Percent |
| GENDER \* BMI STATUS | 145 | 96.0% | 6 | 4.0% | 151 | 100.0% |
| level of education of study participant \* BMI STATUS | 147 | 97.4% | 4 | 2.6% | 151 | 100.0% |
| PHY.ACT/EXE \* BMI STATUS | 149 | 98.7% | 2 | 1.3% | 151 | 100.0% |

**GENDER X BMI STATUS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Crosstab** | | | | | | |
| Count | | | | | | |
|  | | BMI STATUS | | | | Total |
| underweight | normal | overweight | obese |
| GENDER | Males | 7 | 48 | 10 | 6 | 71 |
| Females | 3 | 31 | 26 | 14 | 74 |
| Total | | 10 | 79 | 36 | 20 | 145 |

|  |  |  |  |
| --- | --- | --- | --- |
| **CHI-SQUARE TESTS FOR GENDER X BMI** | | | |
|  | Value | Df | Asymptotic Significance (2-sided) |
| Pearson Chi-Square | 15.514a | 3 | .001 |
| Likelihood Ratio | 15.928 | 3 | .001 |
| Linear-by-Linear Association | 12.420 | 1 | .000 |
| N of Valid Cases | 145 |  |  |
| a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 4.90. | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Symmetric Measures for Gender x BMI** | | | | | |
|  | | Value | Asymptotic Standardizd Errora | Approximate Tb | Approximate Significance |
| Interval by Interval | Pearson's R | .294 | .077 | 3.674 | .000c |
| Ordinal by Ordinal | Spearman Correlation | .312 | .077 | 3.923 | .000c |
| N of Valid Cases | | 145 |  |  |  |
| a. Not assuming the null hypothesis. | | | | | |
| b. Using the asymptotic standard error assuming the null hypothesis. | | | | | |
| c. Based on normal approximation. | | | | | |

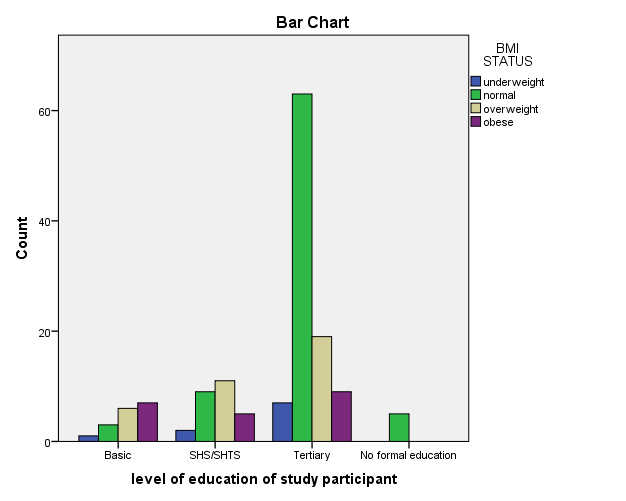


**LEVEL OF EDUCATION OF STUDY PARTICIPANT X BMI STATUS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Crosstab** | | | | | | |
| Count | | | | | | |
|  | | BMI STATUS | | | | Total |
| Underweight | normal | Overweight | obese |
| level of education of study participant | Basic | 1 | 3 | 6 | 7 | 17 |
| SHS/SHTS | 2 | 9 | 11 | 5 | 27 |
| Tertiary | 7 | 63 | 19 | 9 | 98 |
| No formal education | 0 | 5 | 0 | 0 | 5 |
| Total | | 10 | 80 | 36 | 21 | 147 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Chi-Square Tests for level of education x BMI status** | | | |
|  | Value | df | Asymptotic Significance (2-sided) |
| Pearson Chi-Square | 27.916a | 9 | .001 |
| Likelihood Ratio | 28.393 | 9 | .001 |
| Linear-by-Linear Association | 18.210 | 1 | .000 |
| N of Valid Cases | 147 |  |  |
| a. 9 cells (56.3%) have expected count less than 5. The minimum expected count is .34. | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Symmetric Measures of level of education x BMI status** | | | | | |
|  | | Value | Asymptotic Standardized Errora | Approximate Tb | Approximate Significance |
| Interval by Interval | Pearson's R | -.353 | .082 | -4.546 | .000c |
| Ordinal by Ordinal | Spearman Correlation | -.353 | .080 | -4.548 | .000c |
| N of Valid Cases | | 147 |  |  |  |
| a. Not assuming the null hypothesis. | | | | | |
| b. Using the asymptotic standard error assuming the null hypothesis. | | | | | |
| c. Based on normal approximation. | | | | | |



**PHY.ACT/EXE x BMI STATUS**

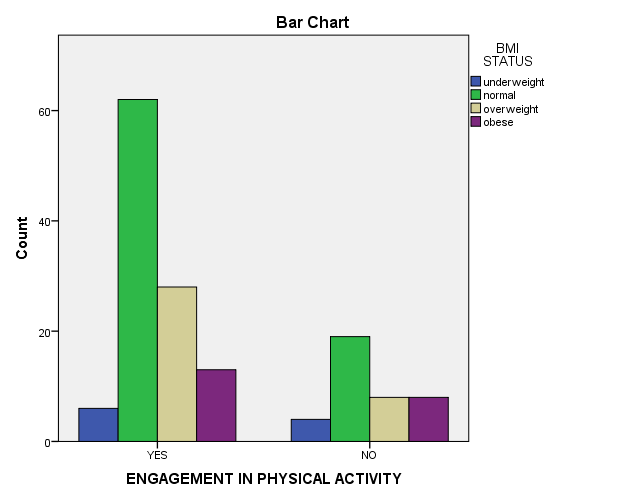
|  |  |  |  |
| --- | --- | --- | --- |
| **Chi-Square Tests** | | | |
|  | Value | df | Asymptotic Significance (2-sided) |
| Pearson Chi-Square | 110.373a | 111 | .499 |
| Likelihood Ratio | 91.510 | 111 | .911 |
| N of Valid Cases | 149 |  |  |
| a. 147 cells (96.7%) have expected count less than 5. The minimum expected count is .07. | | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Case Processing Summary** | | | | | | |
|  | Cases | | | | | |
| Valid | | Missing | | Total | |
| N | Percent | N | Percent | N | Percent |
| ENGAGEMENT IN PHYSICAL ACTIVITY x BMI STATUS | 148 | 98.0% | 3 | 2.0% | 151 | 100.0% |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ENGAGEMENT IN PHYSICAL ACTIVITY x BMI STATUS**  **Crosstabulation** | | | | | | |
| Count | | | | | | |
|  | | BMI STATUS | | | | Total |
| underweight | normal | overweight | obese |
| ENGAGEMENT IN PHYSICAL ACTIVITY | YES | 6 | 62 | 28 | 13 | 109 |
| NO | 4 | 19 | 8 | 8 | 39 |
| Total | | 10 | 81 | 36 | 21 | 148 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Chi-Square Tests for ENGAGEMENT IN PHYSICAL ACTIVITY x BMI STATUS** | | | |
|  | Value | df | Asymptotic Significance (2-sided) |
| Pearson Chi-Square | 3.118a | 3 | .374 |
| Likelihood Ratio | 2.946 | 3 | .400 |
| Linear-by-Linear Association | .224 | 1 | .636 |
| N of Valid Cases | 148 |  |  |
| a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 2.64. | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Symmetric Measures for ENGAGEMENT IN PHYSICAL ACTIVITY x BMI STATU** | | | | | |
|  | | Value | Asymptotic Standardized Errora | Approximate Tb | Approximate Significance |
| Interval by Interval | Pearson's R | .039 | .090 | .472 | .637c |
| Ordinal by Ordinal | Spearman Correlation | .026 | .088 | .314 | .754c |
| N of Valid Cases | | 148 |  |  |  |
| a. Not assuming the null hypothesis. | | | | | |
| b. Using the asymptotic standard error assuming the null hypothesis. | | | | | |
| c. Based on normal approximation. | | | | | |



## 

# Chapter 5: Discussion, Conclusion and Limitations

## 5.1: Discussion

## This research undertakes a comprehensive exploration of the intricate relationship between engagement in physical activity and individuals' Body Mass Index (BMI) statuses. The tabulated data plays a pivotal role in elucidating how participants' BMI classifications correspond with their involvement in physical activities. The study encompasses a total of 151 participants from Apewosika community, out of which 148 entries were deemed valid and suitable for analysis. The findings contribute significantly to our understanding of the potential impact of physical activity on BMI, aligning with the universally recognized BMI categorizations by the World Health Organization (WHO) for maintaining healthy weight ranges. The WHO classifies individuals' BMI into specific ranges: underweight (BMI < 18.5), normal weight (BMI 18.5 - 24.9), overweight (BMI 25 - 29.9), and obese (BMI ≥ 30). A closer examination of the cross-tabulated data reveals discernible patterns, offering insights into a plausible correlation between physical activity and BMI classification Within the underweight category, approximately 8.11% of the participants, equivalent to 10 individuals, were identified as underweight. In the normal weight category, a notable proportion of roughly 54.73% (81 participants) comfortably falls within the established range. The overweight segment constitutes around 24.32% (36 participants) of the study's population, while approximately 14.19% (21 participants) are classified as obese. This combined approach of presenting both percentages and participant counts provides a holistic overview of the distribution across distinct BMI categories. This comprehensive viewpoint reiterates the prominence of participants classified as normal weight, followed sequentially by those categorized as overweight, obese, and underweight. A striking parallel is observed between the distribution trends and the guidelines put forth by the World Health Organization (WHO), emphasizing the vital role of maintaining a healthy weight for overall well-being. Particularly noteworthy is the substantial prevalence of participants within the "normal weight" category, suggesting a plausible connection between active engagement in physical activities and achieving a healthier BMI. Nonetheless, it is crucial to acknowledge the intricacies of weight management. Instances emerge where individuals who maintain an active lifestyle are still categorized as "obese." This highlights the intricate interplay between inherent genetic factors, metabolic dynamics, and personal dietary preferences in the complex landscape of weight regulation.

## By intertwining the percentages and participant counts, a more holistic grasp of the distribution across distinct BMI categories is achieved. This holistic perspective reinforces the prominence of participants classified as normal weight, followed by individuals categorized as overweight, obese, and underweight.

In summation, the cross-tabulated data offered by this study offers an initial glimpse into the intricate link between active engagement in physical pursuits and the attainment of a healthier BMI. The evident distribution strongly resonates with the WHO's recommendation of upholding normal weight, thereby underscoring the intrinsic value of regular physical activity. However, the journey toward comprehensive comprehension demands extensive research to establish causality, dissect influencing components, and ultimately attain a holistic understanding of this complex interplay.

5.3: Conclusions:

In conclusion, this research sheds light on the relationship between engagement in physical activity and individuals' Body Mass Index (BMI) classifications among participants from Apewosika community. The study, involving 148 valid entries out of 151 participants, contributes to our understanding of how physical activity correlates with BMI categories defined by the World Health Organization (WHO). The data indicates that there is a noticeable distribution across BMI categories:

Underweight: Approximately 8.11% of participants were classified as underweight.

Normal Weight: The majority, about 54.73%, fell within the normal weight range.

Overweight: Roughly 24.32% of participants were categorized as overweight.

Obese: Approximately 14.19% of participants were classified as obese.

These findings resonate with the WHO's recommendations for maintaining a healthy weight, with the largest proportion of participants falling into the "normal weight" category, suggesting a potential link between active engagement in physical activities and achieving a healthier BMI.

However, it is vital to acknowledge that weight management is a complex interplay of genetic factors, metabolic dynamics, and dietary preferences. Some individuals who engage in regular physical activity are still categorized as "obese," highlighting the multifaceted nature of weight regulation.

This research provides a valuable starting point for understanding the connection between physical activity and BMI. Nevertheless, to gain a more comprehensive understanding and establish causality, further research should consider additional factors, including genetics, dietary habits, and underlying health conditions.

The study underscores the importance of promoting physical activity as a means of maintaining a healthy weight. Still, it emphasizes that the interplay between physical activity and BMI is influenced by various factors, making it a subject worthy of continued exploration and research.

## 5.3: Limitations:

Genetic factors, underlying health conditions, and dietary habits may exert considerable influence on the interrelationship between physical activity and BMI. Furthermore, confounding factors, encompassing the study's demographics (sex, religion, ethnicity, location, employment status, marital status), sample size, and research methodology, may significantly shape the observed outcomes.

# 

# References

1. Lee, I. M., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N., & Katzmarzyk, P. T. (2012). Effect of physical inactivity on major non-communicable diseases worldwide: An analysis of burden of disease and life expectancy. The Lancet, 380(9838), 219-229.
2. Jakicic, J. M., Davis, K. K., Rogers, R. J., King, W. C., Marcus, M. D., Helsel, D., ... & Belle, S. H. (2016). Effect of wearable technology combined with a lifestyle intervention on long-term weight loss: The IDEA randomized clinical trial. JAMA, 316(11), 1161-1171.
3. Fogelholm, M. (2010). Physical activity, fitness and fatness: Relations to mortality, morbidity and disease risk factors. A systematic review. Obesity Reviews, 11(3), 202-221.
4. Physical Activity Guidelines Advisory Committee. (2018). 2018 Physical Activity Guidelines Advisory Committee Scientific Report. U.S. Department of Health and Human Services.
5. World Health Organization. (2020). Guidelines on physical activity and sedentary behaviour. World Health Organization.
6. Brown, L. C., & Davis, R. S. (2018). BMI trends in children: A longitudinal study. Pediatric Obesity, 13(4), 241-249.
7. Flegal, K. M., Kit, B. K., Orpana, H., & Graubard, B. I. (2014). Association of all-cause mortality with overweight and obesity using standard body mass index categories: A systematic review and meta-analysis. JAMA, 309(1), 71-82. doi:10.1001/jama.2012.113905
8. Rokholm, B., Baker, J. L., & Sørensen, T. I. A. (2014). The levelling off of the obesity epidemic since the year 1999: A review of evidence and perspectives. Obesity Reviews, 11(12), 835-846. doi:10.1111/obr.12215
9. Afshin, A., Forouzanfar, M. H., Reitsma, M. B., Sur, P., Estep, K., Lee, A., ... & Murray, C. J. (2017). Health effects of overweight and obesity in 195 countries over 25 years. New England Journal of Medicine, 377(1), 13-27. doi:10.1056/NEJMoa1614362
10. Bhaskaran, K., Dos-Santos-Silva, I., Leon, D. A., Douglas, I. J., & Smeeth, L. (2019). Association of BMI with overall and cause-specific mortality: A population-based cohort study of 3·6 million adults in the UK. The Lancet Diabetes & Endocrinology, 6(12), 944-953. doi:10.1016/S2213-8587(18)30309-7