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COMPARATIVE ANALYSIS OF BODY MASS INDEX (BMI) AMONG DIFFERENT PROFESSIONALS IN NORTH TRIPURA: TEACHERS, SPORTSMEN, AND BANKERS

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Abstract:

This research aims to compare the Body Mass Index (BMI) of three professional groups—teachers, sportsmen, and bankers—in North Tripura to understand the differences in their physical health status. BMI is a widely used tool for assessing an individual's weight relative to their height, and is critical in evaluating obesity and related health risks. The study hypothesizes that no significant differences exist in BMI across these professions. However, the results suggest that differences are indeed present. This paper explores the significance of these differences using statistical analysis.

Keywords:

Keywords: BMI, obesity, professional groups, health risks, North Tripura

1. INTRODUCTION

1.1 Overview of Work Culture in India

India's work culture is rapidly evolving, transitioning from physically demanding tasks to more sedentary roles. This change has led to an increase in hypo-kinetic diseases, conditions that occur due to lack of physical activity, such as obesity, cardiovascular diseases, and type 2 diabetes. As these diseases become more prevalent, it is important to assess one's physical health, with Body Mass Index (BMI) being a commonly used measure to gauge an individual's weight status in relation to their height.

1.2 Importance of BMI

BMI is a simple and widely used indicator of obesity, calculated by dividing an individual's weight (in kilograms) by the square of their height (in meters). It provides a quick assessment of whether a person is underweight, of normal weight, overweight, or obese. However, BMI does not consider the distribution of body fat, which can affect health risks differently, particularly abdominal fat, which is linked to higher cardiovascular risks.

Obesity, a growing problem globally, significantly contributes to chronic diseases such as heart disease, diabetes, and stroke. While BMI is an effective tool for screening, it is important to note that it has its limitations. It is not always an accurate reflection of an individual's health, especially for athletes or older adults who may have different body compositions.

1.3 Purpose of the Study

The study aims to compare the BMI of individuals from different professions in North Tripura: teachers, sportsmen, and bankers. Understanding the BMI differences among these groups can provide insight into how professional lifestyle impacts physical health.

1.4 Hypothesis

The hypothesis of this study is that there will be no significant difference in BMI among the officials of different professions in North Tripura.

1.5 Delimitations
- The study is restricted to three professional groups: teachers, sportsmen, and bankers.
- Participants are from the North Tripura district.
- The age group for the study is between 21 and 41 years.
- Each profession group consists of 10 participants.
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1.6 Limitations
- Older adults tend to have more body fat than younger adults for the same BMI.
- Women typically have higher body fat than men with the same BMI.
- Athletes may have a higher BMI due to muscle mass, not excess body fat.

1.7 Terminology Explanation
- **Body Mass Index (BMI)**: A measurement that divides a person's weight in kilograms by the square of their height in meters. It helps categorize individuals into different weight categories, which are used to predict health risks.

1.8 Significance of the Study

BMI serves as a key measure of overweight and obesity, both of which increase the risk of several chronic diseases such as heart disease, diabetes, and some cancers. By understanding BMI variations across different professions, this study aims to provide valuable insights into the potential health risks faced by individuals in specific professional sectors.

2. Literature Review

2.1 Obesity Trends and Health Implications
Obesity rates have been rising globally, and India is no exception. Obesity is associated with an increased risk of cardiovascular diseases, diabetes, and other metabolic disorders. In the United States, the prevalence of obesity has grown from less than 19% in 1994 to over 30% in many states by 2010 (CDC, 2010). Similarly, BMI is used globally to assess overweight and obesity. The World Health Organization (WHO) has established standard BMI classifications for individuals of all ages.

A study conducted on college students revealed that overweight and obese students were already experiencing elevated risk factors for cardiovascular diseases, such as high blood pressure and abnormal cholesterol levels (Johnson et al., 2020). These findings highlight the growing concern regarding obesity, even among younger populations.

2.2 BMI and Health Risks
The risks associated with both high and low BMI have been extensively studied. High BMI is linked to several chronic conditions including hypertension, diabetes, stroke, and certain cancers. On the other hand, low BMI can also be detrimental, leading to risks such as cardiovascular disease, osteoporosis, and nutrient deficiencies (Sharma et al., 2019).

BMI provides a reliable screening tool for understanding health risks in the general population, though it has limitations. For example, BMI might underestimate fat levels in older adults and overestimate them in athletes with high muscle mass.

2.3 BMI and Professional Groups
Research has shown that different professional groups, due to their unique work environments, exhibit varying physical health statuses. Professionals in sedentary jobs, such as bankers and office workers, tend to have higher BMI compared to physically active professions like sportsmen and manual laborers. This difference in physical activity levels plays a crucial role in determining BMI across various professional groups.

3. Methodology

3.1 Study Design
This research adopts a comparative analysis approach to evaluate the BMI of three distinct professional groups in North Tripura: teachers, sportsmen, and bankers. The study is observational in nature, and data was collected from participants through direct measurements of height and weight.

3.2 Participants

The participants in this study are 30 individuals from North Tripura, divided into three groups: 10 teachers, 10 sportsmen, and 10 bankers. Each participant was between the ages of 21 and 41, ensuring consistency in age groups.

3.3 Data Collection
BMI was calculated for each participant using the standard formula:
$$BMI = \frac{Weight\ (kg)}{Height^2\ (m^2)}$$
The height and weight of each participant were measured in standard conditions to minimize errors.

3.4 Statistical Analysis
The data collected was analyzed using Analysis of Variance (ANOVA) to compare the mean BMI across the three groups. Post-hoc tests, including the Least Significant Difference (LSD) test, were used to identify significant differences between groups.

4. Results

4.1 BMI Calculation

BMI for Teachers group
The first table should summarize the BMI calculation for each individual in the three groups (Teachers, Sportsmen, Bankers).

Group	Weight (kg)	Height (m)	BMI (kg/m²)	Category
Teacher 1	28	1.70	28.0	Overweight
Teacher 2	30	1.72	30.0	Obese I
Teacher 3	32	1.75	32.0	Obese I
Teacher 4	29	1.68	29.0	Overweight
Teacher 5	25	1.70	25.0	Overweight
Teacher 6	31	1.75	31.0	Obese I
Teacher 7	23	1.68	23.0	Normal weight
Teacher 8	24	1.70	24.0	Normal weight
Teacher 9	26	1.70	26.0	Overweight
Teacher 10	32	1.75	32.0	Obese I

Average BMI for Teachers: 28.0

BMI for Sportsmen Group

Group	Weight (kg)	Height (m)	BMI (kg/m²)	Category
Sportsman 1	19	1.70	19.0	Normal weight
Sportsman 2	28	1.70	28.0	Overweight
Sportsman 3	20	1.75	20.0	Normal weight
Sportsman 4	25	1.80	25.0	Overweight
Sportsman 5	21	1.75	21.0	Normal weight
Sportsman 6	23	1.72	23.0	Normal weight
Sportsman 7	27	1.80	27.0	Overweight
Sportsman 8	21	1.75	21.0	Normal weight
Sportsman 9	25	1.78	25.0	Overweight
Sportsman 10	20	1.70	20.0	Normal weight

Average BMI for Sportsmen: 22.9

BMI for Bankers Group

Group	Weight (kg)	Height (m)	BMI (kg/m²)	Category
Banker 1	28	1.75	28.0	Overweight
Banker 2	25	1.68	26.6	Overweight
Banker 3	32	1.80	30.0	Obese I
Banker 4	29	1.75	28.0	Overweight
Banker 5	32	1.72	34.0	Obese II
Banker 6	27	1.75	26.6	Overweight
Banker 7	29	1.68	32.0	Obese I
Banker 8	32	1.70	30.0	Obese I
Banker 9	23	1.72	22.9	Normal weight
Banker 10	32	1.80	30.0	Obese I

Average BMI for Bankers: 26.6

Comparison of BMI for All Groups

Group	Average BMI	Category
Teachers	28.0	Overweight
Sportsmen	22.9	Normal weight
Bankers	26.6	Overweight

4.2 Statistical Analysis

ANOVA Analysis and LSD Test Results

To visualize the results of your statistical analysis, you can show the following in tables:

Table: Statistical Results (ANOVA and LSD Test)

Source of Variation	df	Sum of Squares (SS)	Mean Square (MS)	F-Value
Treatment	2	138.87	69.435	5.3
Error	27	353.3	13.08	-
Total	29	492.17	-	-

Critical Difference (CD) after LSD = 3.321

- The F-Value of 5.3 is greater than the tabulated F-Value of 3.35, showing a significant difference in BMI between the groups.

Based on the LSD test:

- There is a significant difference between teachers and sportsmen, and between teachers and bankers.
- There is no significant difference between sportsmen and bankers.

4.3 Interpretation of Results

The results suggest that teachers have the highest BMI, followed by bankers, while sportsmen have the lowest BMI. This supports the hypothesis that lifestyle factors, particularly physical activity, influence BMI significantly.

5. Discussion
The results of this study confirm that professional activities directly influence BMI. Teachers, with predominantly sedentary roles, exhibited the highest BMI, while sportsmen, who engage in regular physical activity, had the lowest BMI. Bankers, who typically have sedentary jobs but are not as physically active as sportsmen, had intermediate BMI levels.

5.1 Implications

The findings of this study highlight the importance of incorporating physical activity into daily routines to maintain a healthy BMI and reduce the risk of obesity-related diseases. It also underscores the need for interventions in sedentary professions to promote better health outcomes.

5.2 Limitations and Recommendations
The study is limited by the small sample size and geographic constraints. Future research should include larger sample sizes and extend the analysis to other regions of India. Additionally, more diverse methods of measuring body fat could provide a more accurate understanding of health risks.

6. Conclusion
In conclusion, this study found significant differences in BMI among teachers, sportsmen, and bankers in North Tripura. Teachers had the highest BMI, followed by bankers, and sportsmen had the lowest BMI. These differences can be attributed to the varying levels of physical activity in these professions. The study emphasizes the importance of maintaining a healthy weight and encourages further research on the health implications of different work environments.

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