A Persistent Study of Selected Anthropometric Changes in the Indian and Sudan Students

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Abstract

Objectives: To determine the persistent study of selected anthropometric changes in the Indian and Sudan students. Design: The students were selected randomly into two groups' Sudan Students (SS; n = 50) and Indian Students (IS; n = 65). Setting: The two groups did not significantly (p > 0.05) after randomization in the dependent variable. The data obtained from the subjects are analysed statistically by applying analysis covariance (ANOVA) at a 0.05 level of significance. Participants: One hundred and fifteen boys students were selected ages: 10.1 ± 1.2 to 14.2 ± 1.4 years. Main Outcome Measures: Height, Weight and BMI of 4 years of performance were assessed using anthropometric measurements. Results: According to the study's findings, there are significant disparities in anthropometric measurements between students from Sudan and India who are the same age. Conclusions: This comparison study's findings demonstrate a considerable difference between Sudanese and Indian students who are residing in Qatar in terms of their height, weight, and BMI.

Introduction

Sports and game performance may be seen by anthropometric measures. Age, gender, BMI, and physical characteristics are the primary determinants of the parameters (Divya et al., 2019). To build sports equipment properly for a better future, anthropometric research data is used. In prospective observational population studies of persons done over the past 20 years using baseline physical activity (Mehta et al., 2008) assessments, inconsistent results were obtained about the association between physical activity and body weight and the onset of obesity (Majumder, 2014). Inconsistent findings were found on the relationship between physical activity and body weight and the development of obesity in prospective observational population studies of people conducted over the past 20 years utilizing baseline physical activity measurements (Andersen et al., 2000).

Sports performance equipment includes shoes, helmets, and other accessories. Height, weight, body form, and composition of the human body have all been carefully and scientifically assessed

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using various anthropometric (Ali et al., 2017) measures to fully comprehend and evaluate the human body. The two most crucial elements for the majority of sports performances are body type and size. For instance, a tall physique is ideal for high jump competitions, volleyball matches, and basketball (Dewangan et al., 2005). Athletes can be outfitted for speciality competitions by sports coaches using anthropometric data. The nutritional status of a community and the degree of physical fitness of students from various nations are also determined using anthropometric data. Unhealthy eating practices are linked to Sudan's obesity epidemic. Less than half of Sudanese students consume veggies more than three days a week, according to research (Musaiger et al., 2016). Even though there have been several research looking at the various factors that contribute to adult obesity, students in Sudan have not been the subject of many of these studies. Additionally, no previous research had been done to evaluate food and physical activity patterns using tried-and-true techniques.

Childhood overweight and obesity are caused by several variables, including higher socioeconomic level, urbanization, and gender disparity, among others. Numerous indices, including BMI, waist-hip ratio (WHR), waist circumference, and skin fold thickness, are frequently used to describe obesity (Taneja et al., 2015). So far, no particular initiatives, programs, or strategies have been implemented in the state of Haryana to address the issue of teenage overweight and obesity. Therefore, it is crucial to comprehend the causes of teenage overweight and obesity. By implementing particular preventative measures, other instances and prevalence can be reduced.

Methodology

The cross-sectional comparative study of anthropometric variations between Indian and Sudan students aged between 10 and 14 years took 4 years to complete. 115 boys were chosen from Ideal Indian School in Doha, Qatar, for this study. At the age of 10, 65 pupils of Indian ethnicity and 50 students of Sudanese ethnicity were chosen in 2018. The chosen anthropometric measurement data were gathered in April and May of 2018. Using a Seca scale, weight was calculated to the nearest 0.1 kg; the scale was zeroed before the respondent stepped on it. The responders were instructed to take out any heavy objects from their pockets as well as any bulky pieces of clothing or other accessories. They were instructed to remain motionless on the scales and motionless on the scales and to stare straight ahead. The body weight (kg) was calculated to be within 0.1kg. A portable stadiometer was used to measure height in a full-standing posture to the closest 0.1 cm (Peltzer et al., 2014). Body mass index (BMI), which is determined as the weight in kilograms divided by the square of the height in meters, was used to assess nutritional health. According to the WHO 2000 (Al-Rethaiaa et al., 2010) categorization standards for adults, it is divided into four categories: underweight (BMI less than 18.5), normal (18.5–24.9), overweight (25–30), and obese (BMI greater than 30). Throughout the four years of physical education, all

students engaged in consistent physical activity three days a week. After four years, in the months of May and June of 2022, the same pupils' height, weight, and BMI were once more obtained from them using the same methodology. The data were then subjected to statistical analysis using the analysis of variance (ANOVA) after the completion.

Analysis of data

Data acquired were subjected to statistical analysis using the analysis of variance (ANOVA). A table was used to illustrate the current outcome.
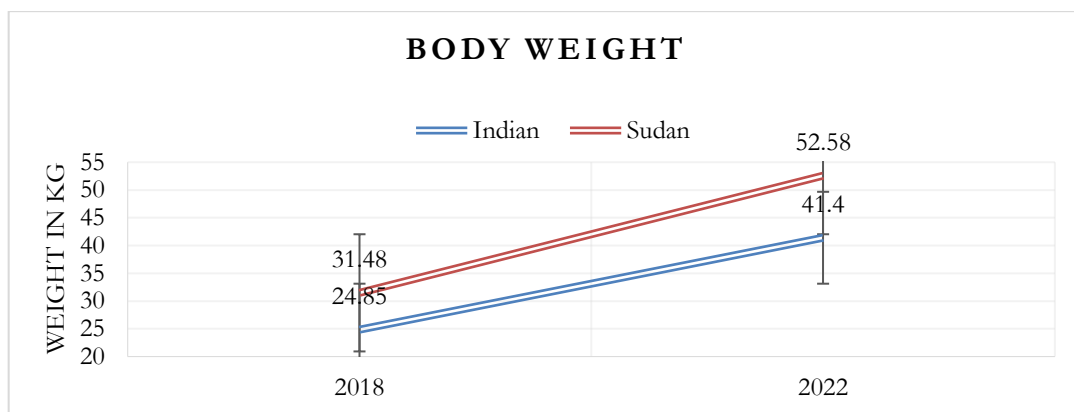
Weight

Table I: 't' Test Analysis between the years 2014 and 2018 of Sudan and Indian students of Body Weight.

Year	Nationality	Mean	M D	SD	'value	'P' value
2018	Indian	24.85		5.95		
	Sudan	31.48	6.63	7.68	3.07	0.001
2022	Indian	41.4		11.78		
	Sudan	52.58	11.11	16.25	-2.53	0.007

According to the statistics above, the mean and SD of body weight for Indian students in 2018 were 24.85 and 5.95, whereas those from Sudan were 31.48 and 7.68, with a mean of 6.63. The significance level for P .05. The t-'value was 3.07, and the 'p-value' was 0.001. According to statistics from 2022, the mean and SD body weights of pupils from India were 41.4 and 11.78, those from Sudan were 52.58 and 16.25, and the MD was 11.11. The significance level was set at P .05. The 't'value was -2.53, while the 'p-value was 0.007.

Graph I: Comparison between the years 2018 and 2022 of Sudan and Indian student's Body Weight.
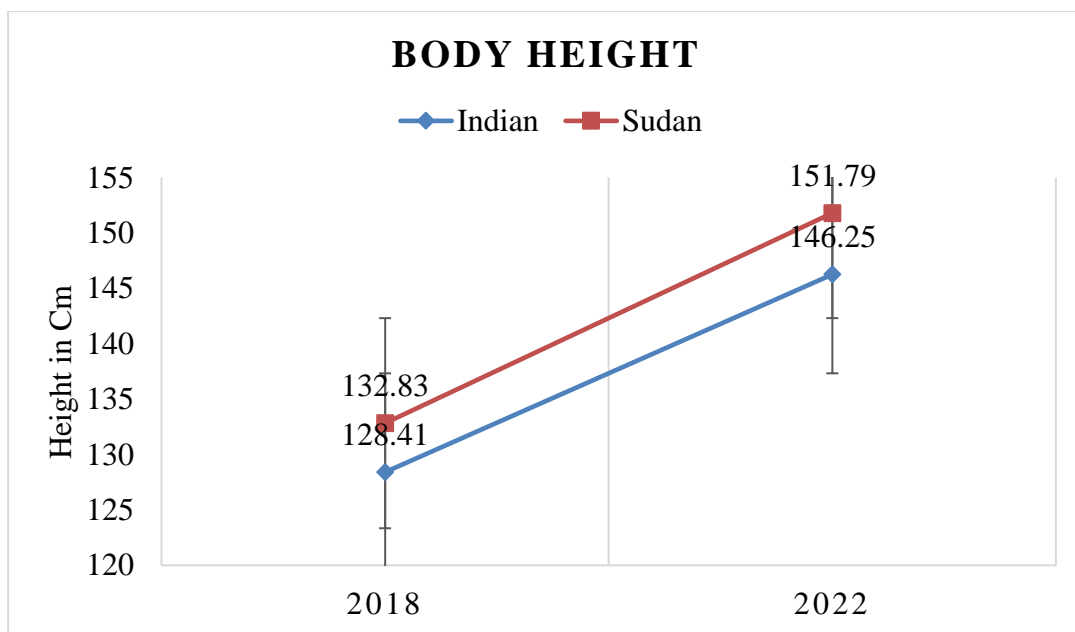
Height

Table II: 't' Test Analysis between the years 2018 and 2022 of Sudan and Indian students of Body Height

Year	Nationality	Mean	M D	SD	't'value	'P' value
2018	Indian	128.41		7.75		
			4.42		-2.03	0.242
	Sudan	132.83		4.09		
2022	Indian	146.25		9.96		
			5.54		1.54	0.065
	Sudan	151.79		4.89		

According to the information in Table II, the mean and SD of body height for Indian students in 2018 were 128.41 and 7.75, 146.25 and 4.09 for Sudanese students, and 4.42 for all students. The significance level for P.05.'s 't' value was -2.03, and the 'p-value was 0.24. According to the statistics from 2022, the body heights of Indian students were 146.25 and 9.96, Sudanese students were 151.79 and 4.89, and the MD was 5.54. The't' value was 1.54 and the 'p-value was 0.065, neither of which was significant for P .05.

**Graph II:** Comparison between the years 2018 and 20122 of Sudan and Indian students of Body Height.

BODY HEIGHT

◆ Indian ■ Sudan

151.79

146.25

132.83

128.41

(Graph: Height in Cm vs Year. Y-axis: 120 to 155. X-axis: 2018, 2022. Indian values: 128.41 in 2018, 146.25 in 2022. Sudan values: 132.83 in 2018, 151.79 in 2022.)

BMI

Table III: 't' Test Analysis between the years 2018 and 2022 of Sudan and Indian students of Body Mass Index.

Year	Nationality	Mean	M D	SD	't'value	'P' value
2018	Indian	15.17		2.31		
			2.7		2.99	0.002
	Sudan	17.87		3.82		
2022	Indian	18.99		3.58		
			3.55		-2.62	0.006
	Sudan	22.54		6.72		

According to the statistics in Table III, the mean and SD of the Body Mass Index for Indian students in 2018 were 15.17 and 2.31, respectively, whereas those for Sudanese students were 17.87 and 3.82, and the MD was 2.7. The significance level for P .05. The 't'value was 2.99, while the 'p-value' was 0.002. According to the statistics from 2022, the mean and SD BMI of Indian students were 18.99 and 3.58, those of Sudanese students were 22.54 and 6.72, and the mean was 3.55. The 'p-value was 0.006 and the 't' value was -2.62, both of which were significant at P .05.

Graph III: Comparison between the years 2018 and 2022 of Sudan and Indian students of Body Mass Index.
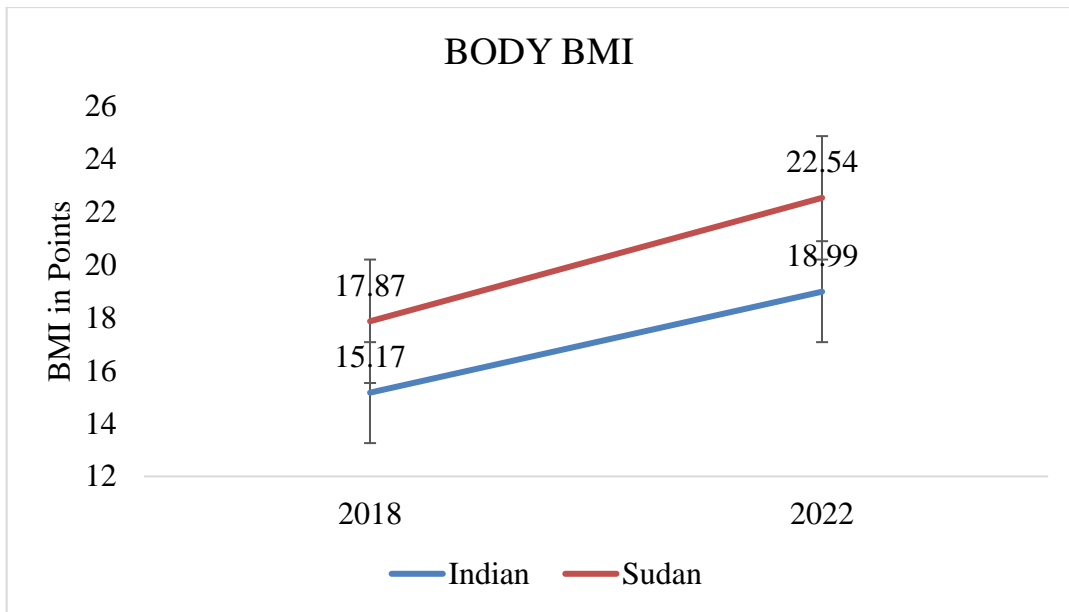
Result and Discussion

According to the results of the body weight measurements taken in 2018 and 2022, the body weights of Indian and Sudanese pupils were 24.85 and 31.48 correspondingly in 2018. In 2022, the numbers were 41.4 and 52.58, respectively. Compared to Indian pupils, Sudanese students showed a substantial increase in body weight between 2018 and 2022. According to 2018 analysis data, there was a 6.63 MD difference between the two nationalities of students, and there was a significant difference between the groups, demonstrating that Sudanese students are more massive than Indian students at the same age level and that Sudan students eating habits have a greater impact (Yousif et al., 2019).

However, analysis of the results in 2022 reveals that Sudanese students' body weight grew significantly when compared to Indian students; the MD was 11.11, which was twice as high as the MD in 2018. The findings of the analysis demonstrate the stark disparity in body weight between students from Sudan and India during a 4-year period. Due to their eating habits, the Sudanese students significantly increased their body mass (Al-Haj et al., 2015) The Sudanese health authorities should not only prioritize preventing childhood malnutrition but also develop initiatives to(Elshibly & Schmalisch, 2010) encourage young people to adopt healthy lifestyles and eat well in order to reduce the worrisome risk factors for chronic illnesses. (Musaiger et al., 2016).

The average height of Indian students at the age of 10 years, or in 2018, was 128.41, whereas Sudan students' average height was 132.83, demonstrating that Sudan children are genetically taller than

Indian students in the same age group. The same student's data from 2022 at the age of 14 reveal that the average height of students from India and Sudan, respectively, was 146.25 and 151.79. This outcome demonstrates that both ethnicities' growth in height was essentially equal. The development of growth in the both ethnicity was same but the natural body height was more in Sudanese than Indian.

The features of the overall BMI for students from India and Sudan in 2018 were 15.17 and 17.87, respectively, as shown in Table III. This BMI result makes it quite evident that Sudanese pupils were in better health than Indian students. The outcomes of the same students from Sudan and India in 2022 are, at the age of 14, 18.99 and 22.54, respectively. This increase in BMI shows that Sudanese students have a better eating habits, as the MD was altered from 2.7 to 3.55 between 2018 and 2022, respectively.

Conclusion

This comparison study's findings demonstrate a considerable difference between Sudanese and Indian students who are residing in Qatar in terms of their height, weight, and BMI. Students from Sudan have a significant disparity in height, weight, and BMI. This weight fluctuation indicates that students of Sudanese nationality are larger than Indian students at the same age, indicating that eating habits have a greater influence on Sudanese students.

Funding

Ethical Declarations

Ethics approval and Consent Participation

The project entitled "The persistent study of selected anthropometric changes in the Indian and Sudan students." was approved on 15 May 2018 by the Alagappa University College of Physical Education, Alagappa University, Karaikudi, Tamil Nadu, India. Therefore, this manuscript was created, and all participants gave their written consent to participate in the experiments according to the principles outlined in the Declaration of WMA Declaration of Helsinki -Ethical Principles for Medical Research Involving Human Subjects. Furthermore, all methods were performed according to relevant guidelines and regulations.

Acknowledgment

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