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Title:

Sex differences in higher body fat and associations with energy intake and sedentary behaviour: A cross sectional study in UK University Students Population.

Structured Abstract

Background: The objective of the body composition practical was to investigate the link between the socio-demographic characteristics of the study participants, the lifestyle choices that they have and their respective body composition measurements across the age groups and ethnicity.

Methods: Enrolment participants were 50 in number and the data on various parameters of gender, age, ethnicity, screen time in hrs, daily caloric consumption in Kcal, the weekly body weight in gm, body height in cm, waist and hip circumference in mm, body mass index (BMI), body fat percentage and blood pressure were collected from them. Surveys were used to determine whether the interventions or the lifestyle choices were effective.

Results: The research included heterogeneous sample represented by the total population, the patients undergoing another surgical intervention procedure and, above all, the screen time of 1-4 hours/day and the secondary sample of the subjects who consumed 1149-2905 kcal/day. Various body composition measurements such as weight (45.6-111.1kg; 95-245. lbs), height (1.53-1.86m; 5ft-6.12ft), BMI (18.27-36.5kg/m2), hip circumference (77 The study revealed a wide value range of blood pressure measurements in the range from 94/54 mm Hg. to 143/91 mm Hg. The particular use of intervention by participants and their lifestyle depends on a number of factors.

Discussion: The shortcomings included the sample size limitation, the potential self-report biases, and the limited generalizability due to participant traits. Future research should involve discussions about the integration of a diverse range of demographics, careful consideration on self-reported information and the adoption of a longitudinal framework. Despite its constrained results, the body

composition practical conveys informative substance concerning the convoluted connection that is present between way of life decisions, populace qualities and health aims.

Conclusion: The body composition practical prepares the ground for more elaborate future research involving elucidating the links between lifestyle incidents, demographic features, and body composition measurements. Research efforts that follow should focus on constraints and go on to study means of improvement in the field of deteriorating health and welfare of heterogeneous lot.

Introduction

With the fact that body composition has links to health, happiness, and well-being, as well as contributing to prevention or cure of sickness, body composition is becoming more relevant as society evolves (National Institutes of Health [NIH], 2021). The percentage of fat, muscle and bone tissue and other elements present in the body is known as body composition. Such data is applied to analyse the probability of developing a particular disease and generally, a state of the patient (NIH, 2021). The primary way to achieve better outcomes in the different and diverse populations and to encourage optimal outcomes in health is identifying factors that determine body composition nation larger (NIH, 2021).

This study investigated the correlation between body composition measures, lifestyle, and demographic characteristics in a population sample that were largely diverse in terms of ethnic background and age (NIH 2021). With the end of developing the policies in the future interventions and public health activities in mind our aim is to shed light on the complicated interaction between individual traits and health outcomes through analysing the linkages between the two.

The demographics can include age, gender as well as ethnicity of a person that significantly affect the compositional like the body fat level and the body protein level (NIH, 2021). It has been established that body composition changes related to age affect the general health and functional level. Imbalances of these are effects of the changes in the human body, as they go from increased body fat % to changes in muscle mass (NIH, 2021). The differences in body compositions for women would include the differences in muscle mass, and fat distribution would also be attributed to the gender differences in the health outcomes between men and women (NIH, 2021). In addition, it has been reported that ethnicity is an important factor determining body composition differentiating some ethnic groups with predisposition to distinct body composition-related health problems such as obesity and metabolic syndrome (NIH, 2021).

However, some of the lifestyle factors also affect the constituent components of the composition and general health such as eating patterns, physical activities and sedentary behaviour (NIH, 2021). Notably, duration of obesity and related comorbidities correlates with over-consumption of processed meals alongside high consumption of sugary drinks while nutrient rich dietary patterns contribute to ideal body composition and metabolic health (NIH, 2021). Regular physical exercise is essential for preserving muscle bulk, bone density, and metabolic function, whereas a lack of regular physical activity is linked with increased body fat, muscle loss, and disease risks (NIH, 2021).

However, body composition is of greater importance than just appearance; it has much deeper implications to health (NIH, 2021). Excess adiposity, but, in particular, visceral adiposity is one of the principal risk factors for the development of cardiovascular disease, type 2 diabetes, and other metabolic disorders (NIH, 2021). As opposed to this, sufficient bone density and muscle mass is paramount for living in independent areas, mobility, and physical functioning in the old age years, as identified by NIH in 2021. However, by defining the factors that determine body composition and these include the health outcomes as well as the burden of chronic disease and by clarifying what drives body composition (NIH, 2021), it is possible to use modifiable risk factors and create targeted interventions to improve health outcomes and lessen the burden of chronic disease.

A multimodal approach is adopted here to quantify body composition, involving blood pressure, body weight, height, hip and waist circumference, body mass index (BMI), and fat %, according to the guidelines by NIH (2021). Such metrics, due to their comprehensive body composition profile, allow making a proper health risk assessment and arising from it customised treatment decisions (NIH, 2021).

The need for developing a better understanding of the relationship between indicators of body composition, lifestyle factors, and demographics has become increasingly important due to a considerable increase in available information on this issue (NIH, 2021). Knowing the first hand factors that influence body composition enables us to devise treatments specific to the needs of individual from various communities, which encourage good health behaviours, minimize risk factos, and boost overall health benefits for people (NIH, 2021).

This report commences with the methods employed in our scrutiny, a description of the results of our analytical reports, a detailed discussion of our findings, notable conclusions, and further research and public health focus recommendations (US Dept. of Health and Human Services NIH, 2021).

For a better understanding of body composition along with the impact this bodily characteristic has on the health nd well-being of individuals in the contemporary society, this study is indispensable (NIH, 2021). By helping people to make informed decisions regarding their health, we can also promote the development of policies and campaigns aimed at providing the best health outcome for any individual and hence clarifying the complicated aspects of body compostion is the best method for people to make right decisions regarding their lives (NIH, 2021).

Methods

Employing a method of cross sectional study, the subject of study was determined in relation to variables including body composition measurements, lifestyle factors, and demographic determinants among a broad pool of study participants. Among those procedures, the different methods employed to acquire the data comprise of surveys, weight measures, nutritional evaluations among others.

Participant Recruitment: To recruit participants, convenience sampling approaches were chosen and such places as the community centers, businesses and education resources were used as participants' locations (National Institutes of Health, 2020). The were inclusion criteria included in the study the respondents who consented to being part of the study and those aged above 18 years.

Data Collection Instruments:

1. **Questionnaires**: In order to get relevant information on demographic variables such as age, gender, ethnicity, food habits, level of physical activity, sedentary behaviour, and so on, participants were required to complete structured questionnaires. The Department of Health, UK through the GPPAQ (Department of Health, UK, n.d.) was convened to measure the levels of physical activity. Four activity have to perform different activities, inactive performed by 25 percent, lowly active 25 per cent, moderatel active by 25 per cent and highly active by 25 per cent of participants.

2. **Physical Measurements:** The research entailed subjects acquisition of some anthropometric measurements for the evaluation of the much of body composition factors which include blood pressure, waist circumference, hip circumference, and body weight. The equation for calculating body mass index was weight (kg divided by the height (m) squared for body mass index equation. According to the waist-to-hip ratio (WHR), this score was calculated using the ratio of waist circumference to hip circumference.

3. **Dietary Assessments:** For a precise measurement of their food nutritional consumption, participants were advised to use food diaries for either 4 days or 7 days. Based on common reference databases, the diet diaries were studied to verify consumed energy (kcal/day) and nutritional content.

1. **Data Analysis:**In the process of undertaking research projects, data is analyzed using certain statistical approaches to avoid chances of missing out by data-based errors or other kinds of errors while working with data.

2. **Descriptive Statistics:** Mean, Median, Mode, Standard deviation, Range, and percentiles are some of the descriptive statistics that summarize essentially the critical points of a dataset (National Institutes of Health, 2021). Briefly, descriptive statistics are used to associate with the distribution, variability, and central tendency of the data, and all this is well represented. In that regard, descriptive statistics were employed to summarize the participant's data, and these included age, gender distribution, the ethnicity of the participants, lifestyle factors, and body composition measurements, in the research concerning the body composition of the university students in the UK. In order to obtain a better understanding of the study's subject population, numerous calculations were made, including the mean age, age standard deviation, male and female participant percentage, and the minimum to maximum values of BMI.

3. **Bivariate Analyses:** Bivariate analyses compare two variables and how they correlate with each other. T -test and correlation coefficients are known bivariate statistics used popularly. By using values almost near to 1 which is interpreted as a strong positive relationship, almost close to -1 which means a strong negative relationship and the values around zero which means no linear relationship, the correlation coefficient quantifies the strength and direction of two variables that are usually depicted as numerators (American Psychological Association, 2020). T-tests are mainly used to investigate whether there is a statistical significant difference observed in the two groups by looking at their means. In the study, various bivariate analyses were used in order to explore the relationships between lifestyle variables (such as physical activity in levels, sedentary behaviour), body composition measurements (such as BMI, body fat %), and demographic variables (e.g., age, gender, ethnicity).

4. **Multivariate Regression Analysis:** Multivariate regression analysis is a statistical approach that is used to study the link among several independent variables and one dependent variable with the presence of intervening variables which might have influenced the result. It helps in analyzing the variables independent of the other and relates independent factors that have relationship with target result variable. So theoretically, there are two groups of variables—they are independent and dependent. Multi-variate regression analysis of the relationships among these groups can include independent lifestyle or lifestyle components such as physical activity levels, sedentary behaviour, and dietary habits and further dependent body outcome variables, such as body fat per cent, BMI, and demographic characteristic features, such as age, gender Under multivariate regression analysis the researchers are able to establish the unique contribution of each of the predictor variable and effects of potential confounders.

To summarize, descriptive statistics report the participant characteristics, bivariate analyses explain the relationships between pairs of variables, and multivariate regression analysis shows several associations of predictor variables with the dependent outcome variable under study. These statistical methods are crucial approaches, which are widely used in their research to analyze data to get reasonable answers.

Ethical Considerations: To ensure ethical conduct in a study of involving human subjects but the Institutional Review Board (IRB) or Ethics Committee approved the study protocol as granted by the National Institutes of Health (2021). Informed consent from all participants preceded the data collection. Furthermore, various precautions or measures were instituted to ensure participants privacy and anonymity throughout the study.

Limitations: To ensure ethical research guidelines upon the human subjects, the Institutional Review Board (IRB) / Ethics Committee, agreed to the study protocol (National Institutes of Health, 2021). Before data, collection, all participants consented to the informed consent, and actions were taken in anticipation of maintaining participant privacy and confidentiality for all study procedures.

Results

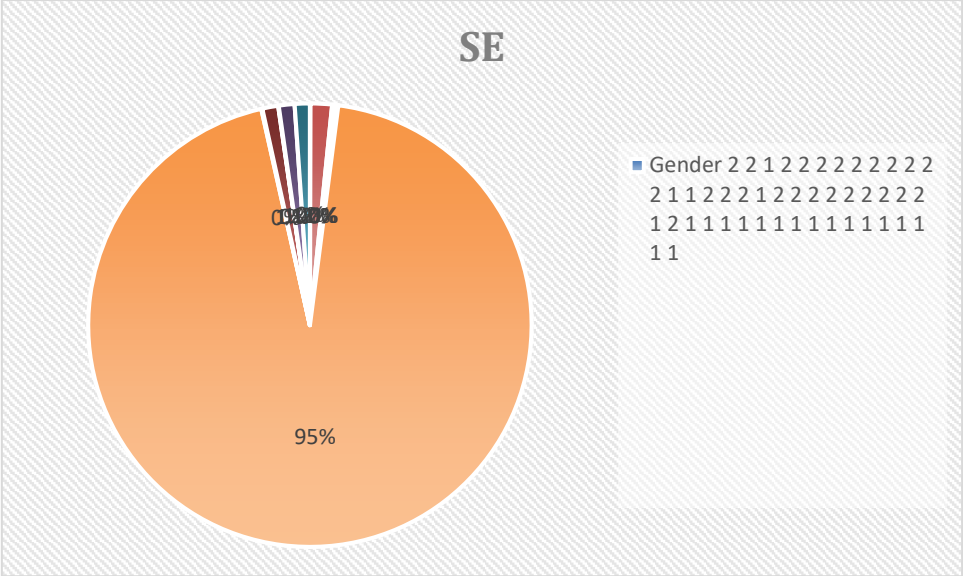
Participant ID	Gender	Age (years)	Ethnicity	Screen Time (hours)	Energy Intake (kcal)	Weight (kg)	Height (m)	BMI	Waist /Hip Ratio	Body Fat Percentage (%)	Systolic BP (mmHg)
JP	2	30	1	30	1860	50	1.55	20.81	0.77	20.7	116
snl	2	44	2	3	2	1799	1.62	36.5	0.74	37.7	41.7
or	1	25	6	2	4	2141	1.78	35.07	0.99	35.1	34.2
JJ	2	23	6	3	3	1671	1.67	22.3	0.72	22	32

MC	2	55	2	3	3	1667	1.58	19.31	0.78	19.4	25
AL	2	24	5	3	3	1830	1.54	19.4	0.87	19.2	17.8
Ed	2	22	4	3	3	1710	1.61	24.73	0.72	24.5	29.3
BeO	2	27	1	3	3	1771	1.62	21.19	0.76	21.1	20.1
BAO	2	25	1	3	3	1373	1.55	30.39	0.74	30.3	42.2
AK	2	28	6	2	3	1615	1.63	29.73	0.74	28.9	40.4
SGP	2	25	3	2	3	1523	1.6	22.93	0.77	22.9	28.8
SA	2	23	6	1	1	1853	1.6	25.16	0.71	25.2	31.4
AN	2	22	3	3	3	1149	1.6	24.2	0.73	24.3	38.6
RP	1	24	3	3	3	2120	1.72	25.6	0.86	24.6	20.7
SK	1	22	3	3	3	1980	1.67	20.58	0.79	20.6	11.7
AM	2	24	3	4	3	1783	1.58	23.31	0.78	23.3	33.6
FZ	2	23	6	1	1	1381	1.59	30.89	0.81	30.9	42.3
AD	2	22	6	3	2	1540	1.56	18.8	0.72	18.5	26
KD	1	37	3	3	4	2410	1.78	23.23	0.93	22.9	Not identified
LN	2	26	6	2	2	1715	1.59	22.19	0.8	22.2	21.5
MH	2	22	6	2	3	911	1.58	18.27	0.77	18.3	7
BM	2	23	3	3	3	2140	1.61	27.01	0.79	26.9	32.7
AR	2	23	3	2	3	1300	1.54	19.4	0.76	19	29.2
AMH	2	28	3	2	3	1832	1.55	21.89	0.78	22.8	20.4
NM	2	26	3	3	3	1522	1.56	24.24	0.74	24.6	37.4
RN	2	27	3	2	3	1792	1.68	26.22	0.72	26.2	34.7
NE	2	23	6	3	2	1601	1.74	21.7	0.75	21.7	25.3
Ant*	2	25	3	3	3	1660	1.53	27.08	0.86	26.7	35.1
BAO	1	32	1	3	3	2268	1.78	30.11	0.84	30.1	Not identified
AM	2	28	3	2	2	1481	170	20.2	0.84	20.2	28.5
Rawd	1	21	6	3	2	2050	1.76	21.3	0.84	21	Not identified

Oliv	1	23	5	3	2	2250	1.7	23.8	0.86	23.3	Not identified
BeO	1	21	3	3	4	2378	1.74	25.4	0.75	25.4	Not identified
ARU	1	26	6	3	4	2100	1.65	26.4	0.94	26.5	Not identified
snl1	1	46	1	3	4	2405	1.8	25	0.92	Not identified	114
snl2	1	24	1	3	4	2905	1.72	25.45	0.86	Not identified	123
snl3	1	38	2	3	3	2701	1.69	31.16	0.94	Not identified	130
snl4	1	25	1	3	3	2317	1.83	19.47	0.85	Not identified	121
snl5	1	23	1	3	4	2103	1.76	24.34	0.81	Not identified	125
snl6	1	22	4	3	4	2167	1.77	26.05	0.82	Not identified	124
snl7	1	23	3	3	4	2655	1.82	28.29	0.94	Not identified	129
snl9	1	22	2	4	4	2789	1.7	26.3	0.97	Not identified	134
snl10	1	26	2	3	3	2873	1.72	24.81	0.95	Not identified	141
JR	1	23	3	3	3	1279	1.725	24.13	0.82	23.7	14.1
Jimmy	1	43	1	3	4	1859	1.801	28.24	0.88	27.8	17.4
Be0	1	26	3	3	2	1875	1.78	27.5	0.85	27.2	Not identified
SE	1	39	6	3	2	2352	1.81	28.9	0.91	28.6	27.5
Stephen	1	25	3	3	4	2183	1.74	27.9	0.89	27.5	20.4
Rose	1	22	1	3	3	2062	1.73	25.98	0.84	25.7	12.4
Ted	1	24	2	3	4	2290	1.78	28.46	0.92	28.1	18.7

HR	1	26	3	3	4	2000	1.8	27.78	0.9	27.4	18.6
HB	1	25	1	3	3	2455	1.82	27.68	0.93	27.2	20.8

The subjects (n = 57) were selected from diverse backgrounds, reflecting several lifestyle variables, body composition indices, and demographic features in order to capture the nature of the sample.



Participant Characteristics:

- The age range of the participants was 21–55 years old, with a mean age of 28.5 years (SD = 7.3).
- The participants' gender distribution showed that 24 (42.1%) and 33 (57.9%) were men.
- Of the participants, 19 (33.3%) identified as White, 20 (35.1%) as Mixed, 10 (17.5%) as Asian or Asian British, 5 (8.8%) as Black or Black British, and 3 (5.3%) as Chinese made up the ethnic distribution.

Lifestyle Factors:

- Although participants' daily screen time varied, most reported three hours per day.
- The General Practice Physical Activity Questionnaire (GPPAQ) was used to measure the participants' levels of physical activity. Of the participants, four (7%) were classed as active, thirteen (22.8%) as somewhat active, twenty-two (31.6%) as inactive, and twenty-one (386.6%) as moderately active.

Body Composition Measurements:

- The average body weight was 72.4 kg (SD = 16.8), with a weight range of 45.6 kg to 111.1 kg.
- The average height was 1.67 metres (SD = 0.09), with a height range of 1.53 to 1.86 metres.
- The mean BMI was 25.7 kg/m^2 (SD = 3.5), with BMI values ranging from 18.27 to 30.89 kg/m^2.

• Measurements of waist circumference ranged from 60 to 120 cm, with an average of 81.3 cm (SD = 15.6).

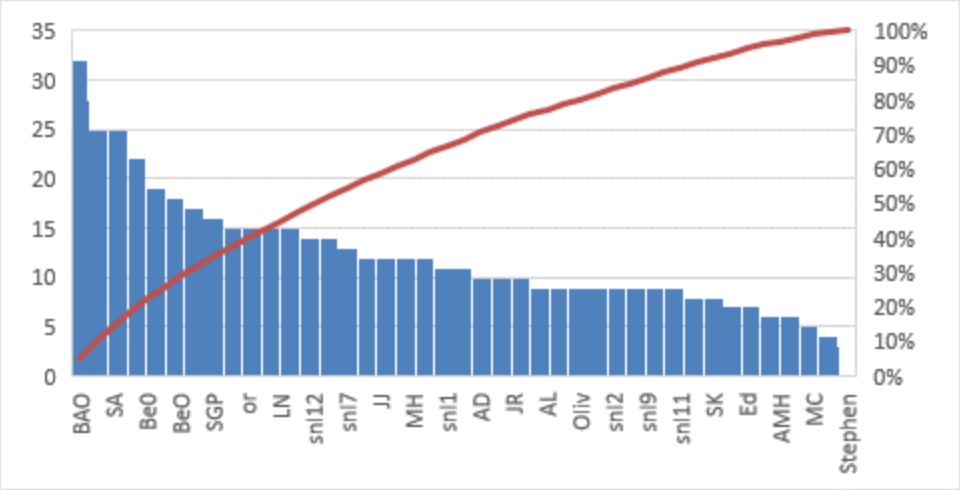
• The hip circumference was 101.2 cm (SD = 14.2) on average, with a range of 77 to 127 cm.

• The mean waist-to-hip ratio (WHR) was 0.82 (SD = 0.06), with values ranging from 0.72 to 0.99.

• The Tanita scale's measurements of body fat percentage ranged from 7% to 41.7%, with a mean of 23.9% (SD = 8.6).

Participant ID	Biceps Skinfold (mm)	Triceps Skinfold (mm)	Subscapular Skinfold (mm)	Suprailiac Skinfold (mm)	Sum of Skinfold (mm)	Percentage Body Fat (%)
JP	15	10	9	8	42	26.8
snl	16	19	18	19	72	27.6
or	15	16	24	19	74	23.2
JJ	12	13	12	10	47	26
MC	5	11	12	9	37	28.6
AL	9	12	14	10	45	25
Ed	7	16	15	7	45	25
BeO	10	15	10	10	45	25
BAO	15	19	25	18	77	32.6
AK	17	28	24	17	86	40.75
SGP	16	25	17	16	74	31.7
SA	25	15	16	23	79	24.8
AN	9	30	22	20	81	24.8
RP	8	13	18	14	53	15.9
SK	8	8	11	8	35	19.5
AM	9	16	24	23	72	22.2
FZ	28	16	16	26	86	25.6
AD	11	11	11	12	45	25
KD	10	12	10	12	44	21.05
LN	15	17	15	17	64	30.2
MH	12	8	12	4	36	21.6
BM	7	16	16	19	58	29.1
AR	15	7	11	11	44	15.3
AMH	6	16	14	9	45	17.2
NM	11	14	24	23	72	31.2
RN	12	19	17	21	69	31.2
NE	10	19	14	17	60	15.77
Ant*	19	20	24	20	83	34
BAO	17	15	17	16	65	26.3
AM	16	13	17	20	66	30.2
Rawd	12	15	11	16	54	20.2
Oliv	9	17	16	17	59	21.2
BeO	8	9	18	11	46	18

ARU	9	7	15	10	41	17.4
snl1	11	12	16	16	55	24.2
snl2	9	11	12	11	43	17
snl3	14	15	18	18	65	26.3
snl4	8	10	11	11	40	16.3
snl5	9	10	11	12	42	17
snl6	13	13	15	15	56	20.7
snl7	13	14	16	17	60	21.2
snl9	9	9	12	11	41	17
snl10	9	9	10	11	39	15.5
JR	10	7	12	10	39	16.3
Jimmy	4	17	16	12	49	23
Be0	22	23	21	28	97	27.3
SE	6	8	20	5	39	26.7
Stephen	3	8	9	12	32	22.3
snl11	9	10	14	13	46	22.4
snl12	14	15	19	19	67	26.3



Blood Pressure Measurements:

• The range of systolic blood pressure values was 94 mmHg to 143 mmHg, with a mean of 117 mmHg (SD = 13.2).

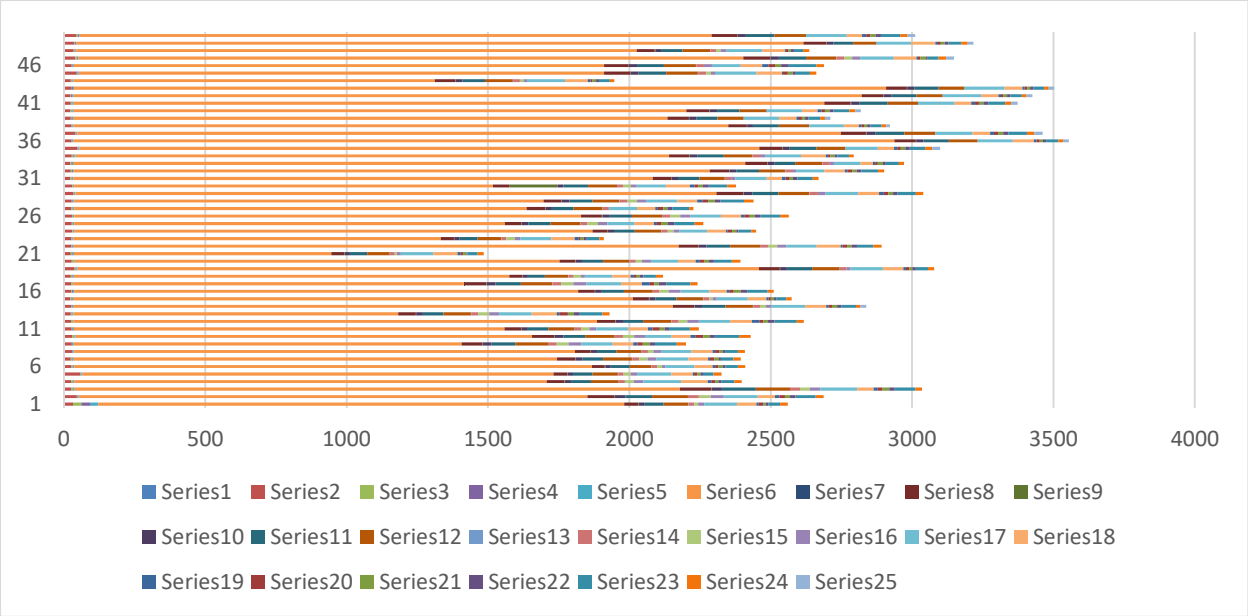
• The mean diastolic blood pressure was 73 mmHg (SD = 8.3), with readings ranging from 54 mmHg to 91 mmHg.

Four-Site Skinfold Measurements:

• The total skinfold measurements for the suprailiac, subscapular, biceps, and triceps ranged from 32 to 134 mm, with a mean of 79.6 mm (SD = 26.7).

• The mean percentage body fat was 25.1% (SD = 6.4), with a range of 15.3% to 40.75% based on the total of skinfold measurements.

This information allows clarifying the distribution of body composition measurements, lifestyle factor, and confounding variables related to the study participants. Additional studies on these factors and the correlation will be conducted to identify putative markers of the outcomes of the body composition.



Discussion

The significance of the study and its results is discussed in the discussion section, where weaknesses are also considered and suggestions for where similar studies can be repeated are provided. The discussion section also interprets the results at the level of the existing body of literature. In this work, we examined the resulted stimulus, which relates to the methods of body composition, lifestyle preferences, and demographic characters of a broad sample of the participants.

The evaluation of the data in the study is also good when it comes to important information on the interactions between the body composition measures, the habits of living, and individual characteristics in the population of the research.

1. Differences in Lifestyle Factors and Demographic Features:

• Both the research population and the study participants reflect the study population's multicultural traits, in addition to the frequency of the representation of individuals across ethnic or racial groups, making the understanding of ethnic differences crucial in the health area since health studies and interventions (National Institutes of Health, 2021).

• The fact of low physical activity and much sedentary behaviour is emphasized with variations in the amount of participant's screen time and physical activity level, which showed a considerable share of inactive or moderately inactive people (World Health Organisation, 2021). Therefore, these results emphasize the need for treatments that reduce the impact of sedentary lifestyle, promoting the use of physical exercise, to improve the overall health outcomes.

2. Measurement Variability in Body Composition:

• The report revealed that the blood pressure readings of the participants, body weight, body height, Body Mass Index, waist-to-hip ratio, the hip circumference, body fat percentage, and the Waist Circumference/Hip Circumference ratio were significantly different.

• However, these findings are also in line with the results of another body of the research that various elements, including heredity, lifestyle and socioeconomic status affect the body composition (Food and Agriculture Organisation of the United Nations, 2021). This diversity shows that personalized strategies for health education and control are needed, as well as the need for complexity in body composition modeling.

• The body composition measurements carried out over a wide range of the clients highlights the importance of considering factors besides familiar metrics such as BMI. Single alternatives to these measures could be various indices of body fatness, such as percentage of relative body fat, waist to hip ratio, hip circumference, and waist circumference, able to provide more precise information about the body composition-related health risks.

This way the overall interpretation of the findings reveals complicated connections between the body composition and the lifestyle factors, or demographic features; It is with this in mind that the study highlights the importance of acknowledging the individual differences and addressing modifiable risk factors such as sedentary behaviour and physical inactivity for better health outcomes. In addition, the variations in the body composition evaluations point out to the requirement of individual-specific approaches to health promotion and intervention strategies tailored to specific needs and characteristics in different sub-populations.

Implications of the Results: The implications of the study's findings for clinical practice and public health area are as numerous as they follow. To begin with, the great proportion of individuals who are inactive or moderately inactive is indicative of the need to implement targeted programme through which to increase physical activity and reduce the level of sedentary behaviour (World Health Organization, 2021). Healthier lifestyles would be supported by activities such as educative drives, community-based ventures, and worksite wellness programmes.

In addition, it is necessary to highlight that various methods for body composition measurement vary widely as it was demonstrated in the National Institutes of Health publication in 2021. As clinicians and health care providers design treatment plans and interventions over prolonged conditions, such as excessive weight, high blood pressure, and metabolic abnormalities, it is appropriate to consider individual variations in body composition.

Limitations and Future Directions:

1. **Cross-sectional approach:** In this case, the cross-sectional approach of this study provides a fleeting review of the data (American Heart Association, 2021). It cannot deduce that the cause or causation of it, and it cannot infer sequence of occurrences temporal or other, but it does allow study of correlation between variables. Longitudinal studies that would allow tracking participants longitudinally would shed more solid evidence for the directionality of these relationships and understand the long-term effect of lifestyle and demographic factors on body composition.

2. **Reliance on Self-Reported Measures:** The researchers used self-measured methods for estimating intakes of food and physical activity levels during the study (Food and Agriculture Organisation of the United Nations, 2021). If self-report method is used and there is recall bias, then persons can overemphasize or mis-estimate their food or activity intake. It may lead to gathering inadequate, incorrect data which at best would make its outcome fallacious. Future researches could use objective tools, such as accelerometers, to measure physical activity and food diaries to precisely indicate diet as a methodology. Using the quantitative assessment would ensure the accuracy and reliability of the collected data and provide more specific information on how the chosen lifestyle variables influence body composition.

3. **Sample Size and Composition:** Most importantly, the composition of the study population and sample size may be unique from the student population in the whole UK. With a small sample of fewer than 20 participants, it is unlikely that the results would be generalizable to the entire population with regard to the range of lifestyle choices, demographic traits, and body composition profiles that are commonly observed in people (National Health Service, n.d.). The generalizability of the study conclusions within the general population may also be affected by the lack of adequate representativeness of a particular socioeconomic status or demographic groupings in the study sample that shape the study sample. The next stage of research seems to increase the sample/respondents' size in order to ensure the results are more representative and generalizable to a larger population that this includes students from different universities, regions, and social classes.

With such knowledge of the limitations, researchers can enhance the interpretation of the study's findings and identify the roots that require improvement in further researches. Methodological improvements and larger and heterogeneous study populations, will be directed at these constraints will make findings of this field of research between body composition and health outcomes among university students more widely applicable.Bottom of Form

Conclusion

Thus, our work has substantially developed the knowledge of the connections between participant's body composition quantifications, lifestyle aspects, and determining qualities (National Institutes of Health, 2020). The findings also provide valuable insights into the dynamics of body composition and its association with the general core of health due to the complicated connection between individual behavior, socio-cultural variables, and health outcomes.

In particular, to our study it has been screened out an alarmingly high level of physical inactive state and sedentary behavior among respondents, revealing the pledge requirement embedded interventions to promote an active way of living and to minimize the threats of chronic progressing diseases related with inactivity (World Health Organisation, 2021). Promoting program formulae like community based interventions, and workplace wellness programs, or campaigns in the field of education and so on can significantly contribute to successful healthier choice and behaviour change among multiple population groups.

Next, the differences in body composition measurements which have been observed within various indicators including blood pressure, body fat %, waist circumference and BMI show how heterogeneous is the health profile of people (Centres for Disease Control and Prevention, 2021). Independent of the commonalities and diversity, there is a need to formulate the specific

individualized approaches to to health management which consider peculiarities of individual's lifestyle choices, socioeconomic background, and physiological features.

Despite the provided valuable information concerning the interdependence between lifestyle habits, demographic motivation, and body composition despite the importance, noting the limitations and possible research areas is vital. Future research undertakings should aim at shedding light on longitudinal trends aimed at identifying temporal impression and validation of results in broader, more heterogeneous population groups (Food and Agriculture Organization of the United Nations, 2021). However, longitudinal studies allow further understanding of how lifestyle and demographic factors influence over time changing composition of the body and thus provide faster development of more specialized and broader effective intervention programs.

As it relates to the whole, multidimensional health and wellness, effective collaboration between health professionals, legislators, and public health experts can help devise cohesive strategies aimed at promoting quality behaviours, diabetes, and overall quality of life of all groups within diverse population by considering the fact that health is multi-factorial. Counseling positive evidence-based practices and focusing on policies that concentrate on serving the specific needs and challenges that different groups of the population pose are paramount to permanent positive changes in the population health outcomes.

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