SREE NARAYANA COLLEGE

PUNALUR, KOLLAM - 691305

(Affiliated To the University of Kerala)

HEALTH AUDIT REPORT

(A Report based on Clinical, Anthropometric and Biochemical Tests)

IN COLLABORATION WITH

GOVERNMENT TALUK HOSPITAL, PUNALUR.

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SREE NARAYANA COLLEGE, PUNALUR

CLINICAL, ANTHROPOMETRIC AND BIOCHEMICAL (CAB) SURVEY

2023-2024

NAME OF THE PROGRAMME /ACTIVITY: QUANTITATIVE MEASUREMENTS OF SOME OF THE CORE ELEMENTS OF ANTHROPOMETRY

Date : 15/03/2024	**Total participants/Beneficiaries: 204**
Organized by Department of Zoology in association with IQAC	**Male: 66 Female: 138**

A BRIEF REPORT ON THE ANTHROPOMETRIC SURVEY CONDUCTED ON 15/03/2024

Anthropometric measurements are non-invasive quantitative measurements of the body. According to the Centres for Disease Control and Prevention (CDC), anthropometry provides a valuable assessment of nutritional status in children and adults. Typically, they are used in the pediatric population to evaluate the general health status, nutritional adequacy, and the growth and developmental pattern of the child [1]. Growth measurements and normal growth patterns are the gold standards by which clinicians assess the health and well-being of a child. In adults, body measurements can help to assess health and dietary status and future disease risk. These measurements can also be used to determine body composition in adults to help determine underlying nutritional status and diagnose obesity [2]. The chief objective of this survey is to inform, educate and make students aware about their physical and mental health and the dietary needs. Inculcating in them to lead an addiction free, drug-free, tension-free healthy life was another important objective. Monitoring of the changes in body composition is important as distinguishing changes in each component occur with rapid growth in adolescents as it is occurred in concert with changes in the hormonal environment. The healthy growth and proper accretion of body composition during the adolescent period is important to reduce the risk of metabolic disease and obesity prevention. Adolescent obesity prevalence has been increased and known to be related to various diseases and mortality in adult and body mass index (BMI) has been widely used as a screening tool in adolescent with obesity. BMI is a measure of weight adjusted for height. Weight scales to height with a power of about 2, is the basis of BMI

(weight/height^2, as the scaling of body weight to height across adults provides powers rounded to 2.). In order to collect the data regarding the current health status of the Student Groups, admitted to the College every year, a biomarker component has been introduced. The CAB survey is specifically designed to fill the data gaps on nutritional status, life style diseases so that College level medical awareness programmes and necessary medical assistance to students can be drawn up, funded and implemented. This data can serve as the baseline, helping to assess not only the current health status of the students, but also the impact of these interventions, further enables midcourse corrections by identifying the factors responsible for the poor health performance of the students. As a part of conducting an initiative to the Anthropometric survey, BMI monitoring has been conducted for the academic for first year UG students' of 2024 batch and the anthropometric measurements was done with the kind co-operation of Health Audit team of First year Zoology students. BMI is a simple, inexpensive, and non-invasive surrogate measure of body fat. In contrast to other methods, BMI relies solely on height and weight and with access to the proper equipment, individuals can have their BMI routinely measured and calculated with reasonable accuracy.

Indicators and instruments used for data collection

Stunting (low height-for-age), **Wasting** (low weight-for-height), **Underweight** (low weight for-age) and **undernourished** (low Body Mass Index, BMI) are the four major indicators available for measuring malnutrition level in students. For students, undernourishment and BMI indicators are provided separately for male and female.

Stunting is the effect of an insufficient intake of vital nutrients over a long period of time and frequent infections, leading to a failure to reach a linear growth potential. Stunting, which is also termed as low height-for-age, is associated with poor socio-economic conditions, inappropriate feeding habits and an amplified risk of exposure to adverse conditions such as illness. On the other hand, a reduction in the stunting prevalence is usually indicative of enhanced health and socio-economic conditions.

Wasting is also termed as low weight-for height or thinness. Acute starvation and/or severe diseases are its key indicators as it is often associated with a severe process of weight loss. It may also be a consequence of chronic unfavourable condition.

Underweight is a condition reflecting a low level of body mass relative to the corresponding age. Weight-for-age is determined by both the height of the child (height-for-age) and weight (weight-for-height).

Under-nutrition can be termed as a deficiency of calories or several vital nutrients essential for growth and survival. Undernutrition develops largely when people fail to obtain or prepare food, suffer from a disorder that makes eating or absorbing food difficult, or have a greatly increased need for calories.

Over-nutrition is a form of malnutrition marked by an excessive intake of nutrients. The amount of nutrients consumed exceeds the amount required for normal growth, development and metabolism. Overnutrition can develop into obesity, which increases the risk of serious health conditions, including cardiovascular disease, hypertension, cancer, and type-2 diabetes.

BMI: Body Mass Index (BMI) is an index of weight-for-height that is commonly used to classify underweight, overweight and obesity. It is determined by the weight in kilograms divided by the square of the height in meters (kg/m^2). For example, an adult who weighs 70kg and whose height is 1.75m will have a BMI of 22.9.

EQUIPMENTS

Various equipment's were used to take measurements and to collect data. Height is measured using **Wall Mounted Statute Meter**. Weight is recorded with the help of a **Digital Weighing Scale**. Annual Health Survey Report based on the spot information on health status is provided to the participants during the survey in the form a student health Card.

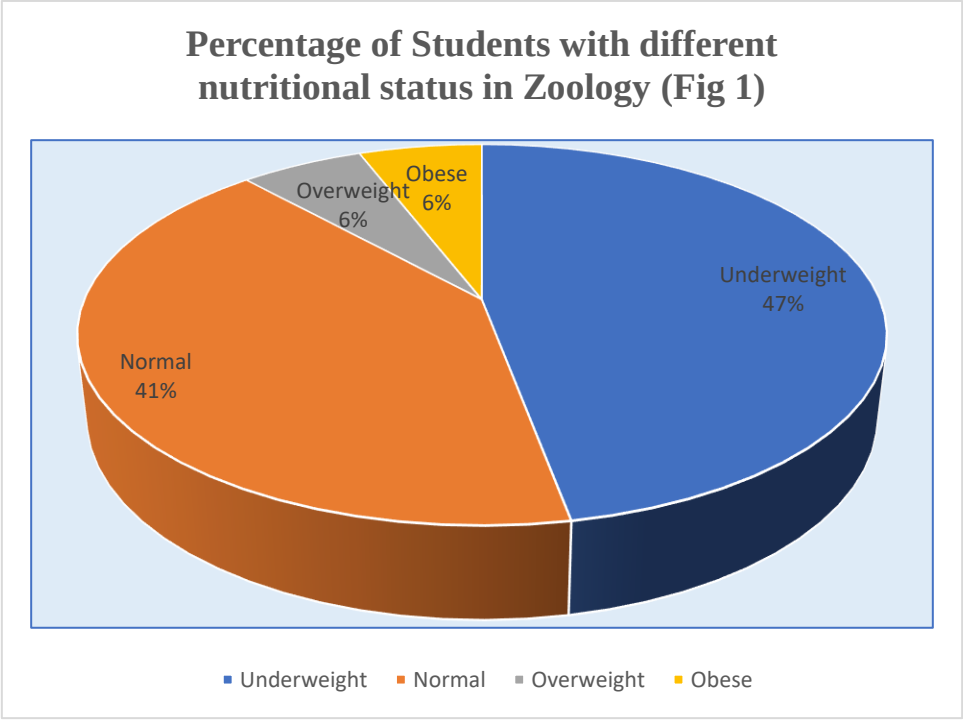
Photographs of CAB survey

Measurement of Height and Weight conducted as a part of Anthropometric Survey

RESULTS

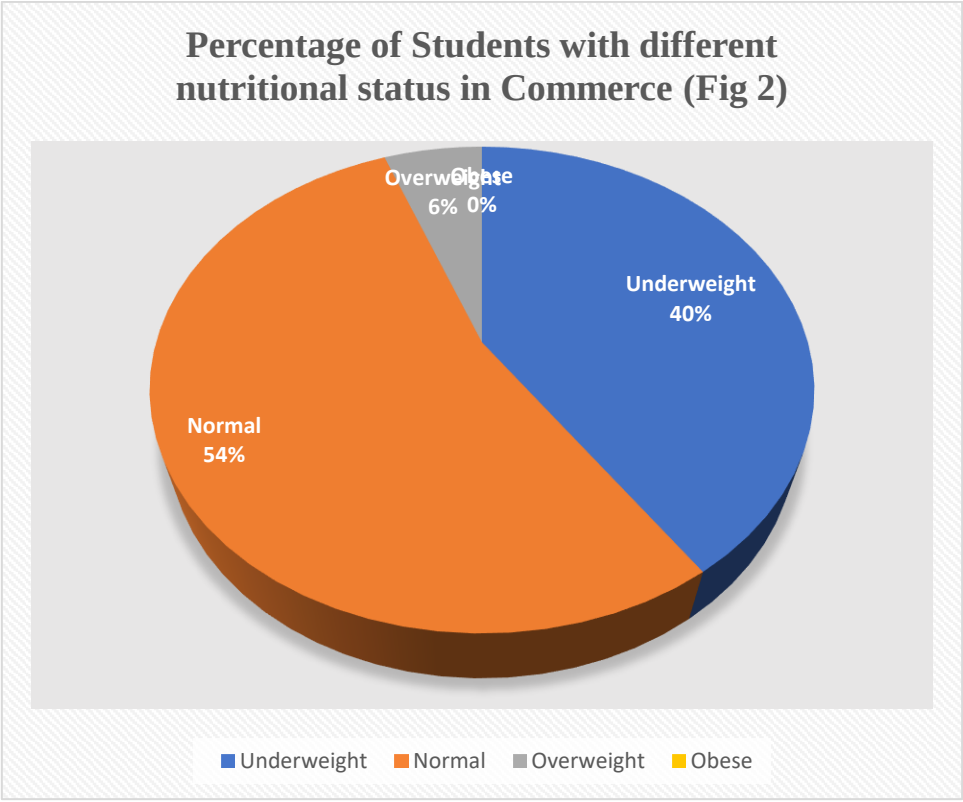
BMI index for the students of Zoology department (Table 1)

BMI	Weight Status	Percentage of Students with different nutritional status in Zoology
Below 18.5	Underweight	47.05
18.5 – 24.9	Normal	41.17
25.0 – 29.9	Overweight	5.88
30.0 and above	Obese	5.88



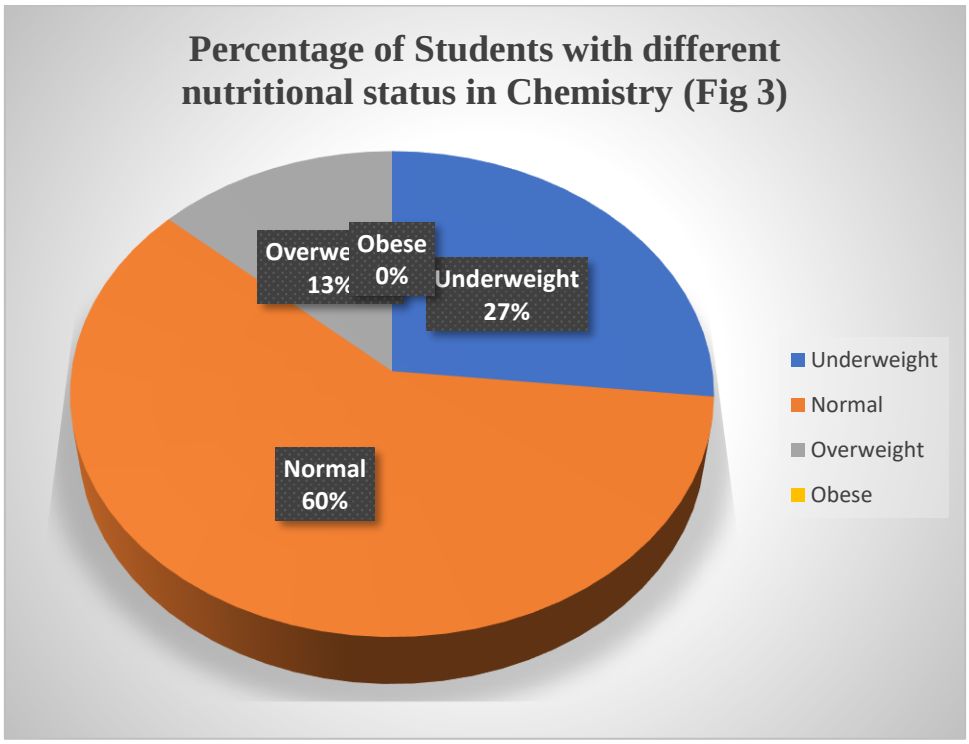
BMI index for the students of Commerce department (Table 2)

BMI	Weight Status	Percentage of Students with different nutritional status in Commerce
Below 18.5	Underweight	40.38
18.5 – 24.9	Normal	53.84
25.0 – 29.9	Overweight	5.76
30.0 and above	Obese	0



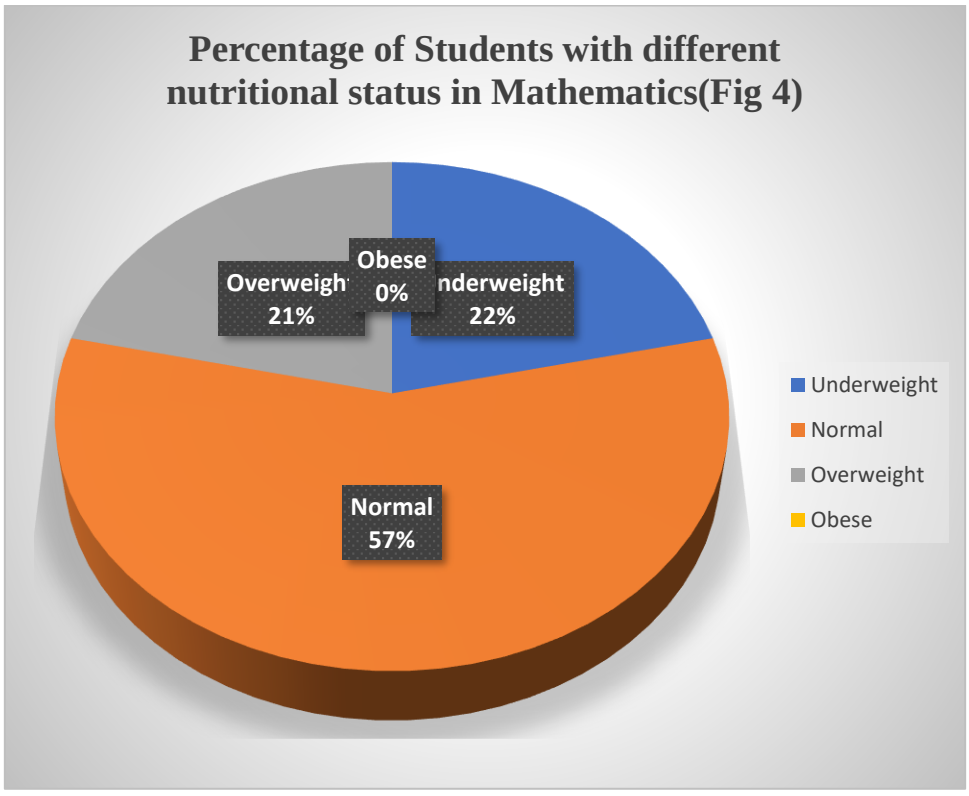
BMI index for the students of Chemistry department (Table 3)

BMI	Weight Status	Percentage of Students with different nutritional status in Chemistry
Below 18.5	Underweight	26.66
18.5 – 24.9	Normal	60
25.0 – 29.9	Overweight	13.3
30.0 and above	Obese	0



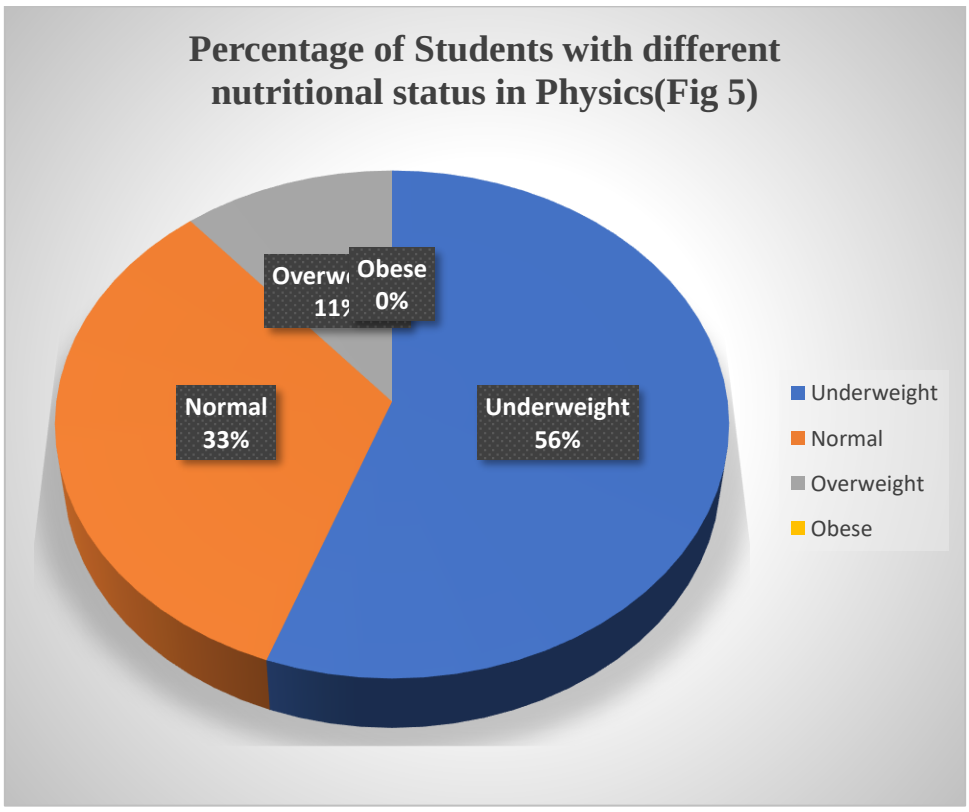
BMI index for the students of Mathematics department (Table 4)

BMI	Weight Status	Percentage of Students with different nutritional status in Mathematics
Below 18.5	Underweight	21.42
18.5 – 24.9	Normal	57.14
25.0 – 29.9	Overweight	21.42
30.0 and above	Obese	0



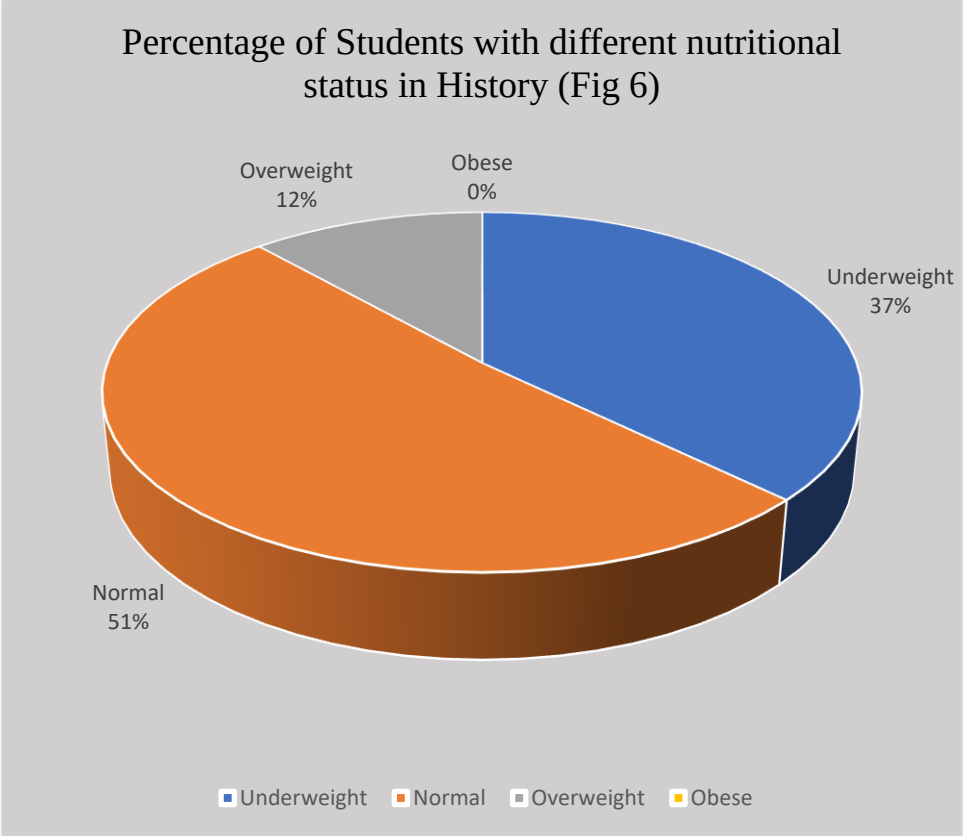
BMI index for the students of Physics department (Table 5)

BMI	Weight Status	Percentage of Students with different nutritional status in Physics
Below 18.5	Underweight	55.55
18.5 – 24.9	Normal	33.33
25.0 – 29.9	Overweight	11.1
30.0 and above	Obese	0



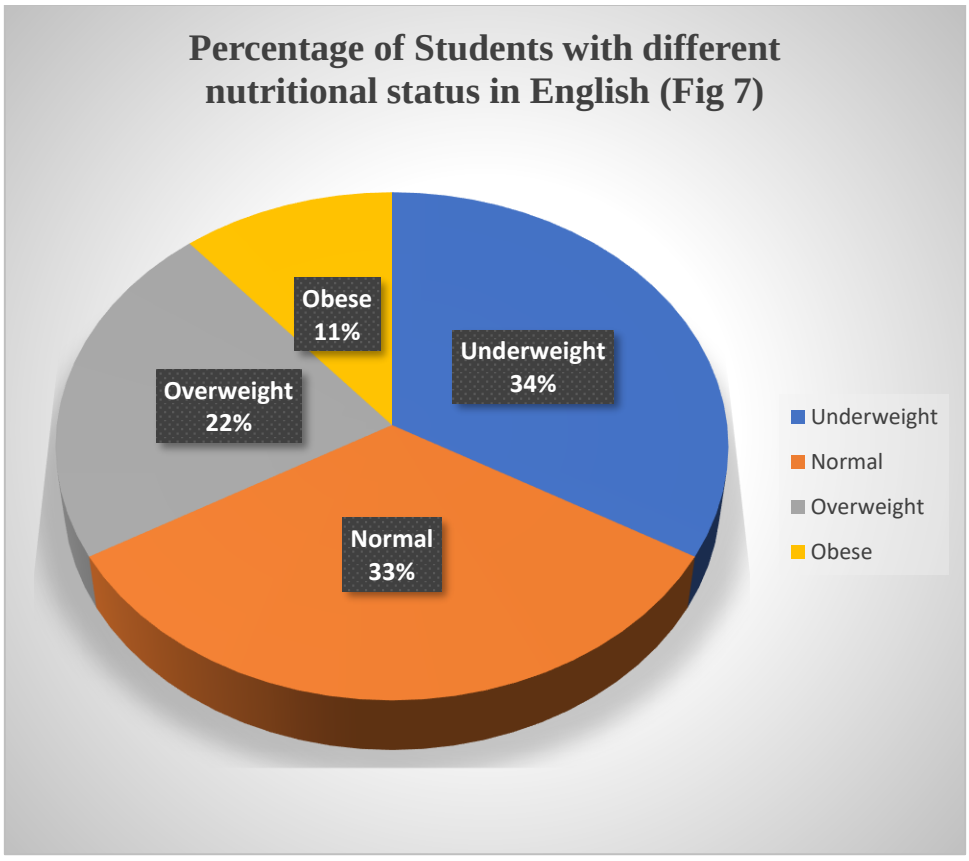
BMI index for the students of History department (Table 6)

BMI	Weight Status	Percentage of Students with different nutritional status in History
Below 18.5	Underweight	37.20
18.5 – 24.9	Normal	51.16
25.0 – 29.9	Overweight	11.62
30.0 and above	Obese	0



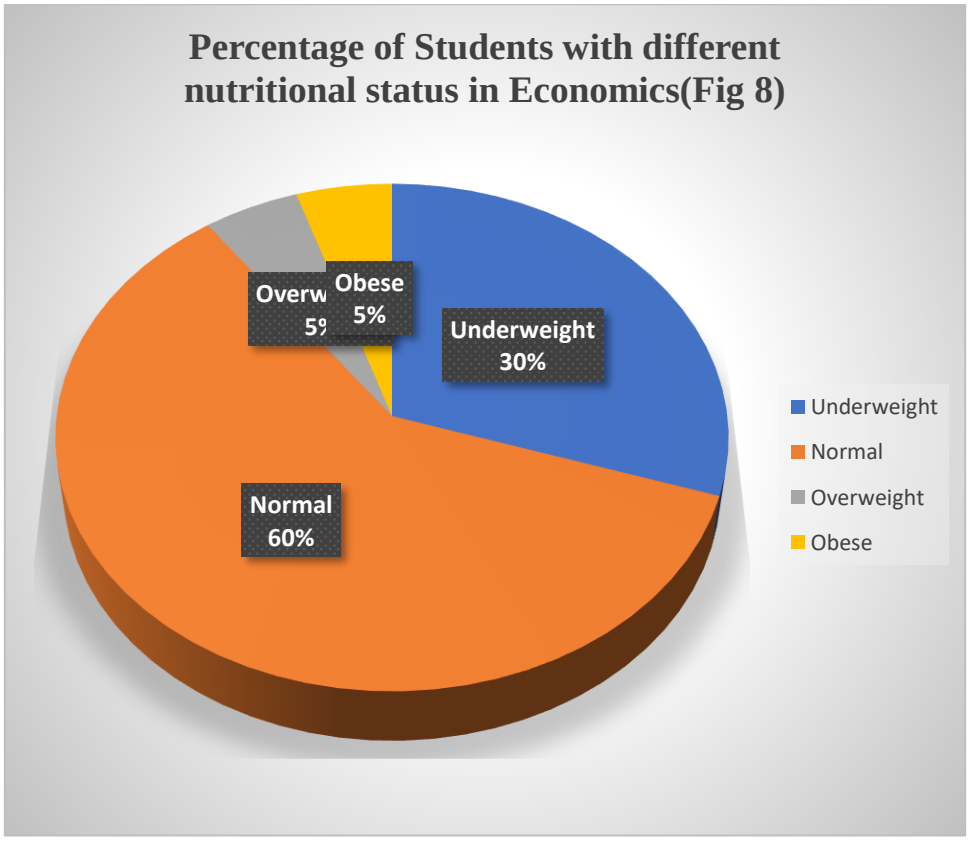
BMI index for the students of English department (Table 7)

BMI	Weight Status	Percentage of Students with different nutritional status in English
Below 18.5	Underweight	33.33
18.5 – 24.9	Normal	33.33
25.0 – 29.9	Overweight	22.22
30.0 and above	Obese	11.11



BMI index for the students of Economics department (Table 8)

BMI	Weight Status	Percentage of Students with different nutritional status in Economics
Below 18.5	Underweight	30
18.5 – 24.9	Normal	60
25.0 – 29.9	Overweight	5
30.0 and above	Obese	5



Nutritional status of Students

The CAB survey provides vital insights regarding nutritional status of students.2024 Physics batch students recorded the highest prevalence of undernourishment (55.55 per cent) (Table 5, Fig 5). Mathematics batch students recorded the lowest prevalence of under nourishment (21.42 per cent) respectively (Table 4,Fig 4). Prevalence of over weight is comparatively higher (22.2%) the English batch of 2024 students (Table 7, Fig 7). Also, **percentage of obese students with greater BMI than or equal to 30** is found highest (11.11%) in English 2024 batch students. (Table 7,Fig 7) .

CONCLUSION

Anthropometric measurements are non-invasive and easily obtained measurements with a wide range of utility in both paediatric and adult populations. In paediatric populations, it is an essential tool to detect metabolic and developmental abnormalities early on so that they may be addressed efficiently. In the adult population, they can be used to diagnose the severity of illnesses such as obesity and cognitive impairments and help follow patients over time to assess for improvement after treatment. Intensive training has also been provided to the student members of Health Audit team, The field investigators were trained for skill upgradation and taught about quality control measures to

ensure accuracy of measurements. As per the report of Health survey, some students are in high need of immediate medical advice from an eminent Physician and Dietician to control their depreciating levels of nutrition. Such students are referred to Government Taluk Hospital, Punalur. To conclude with, we hope that more awareness should be raised among the target population. This will result in a drastic improvement of their quality of life, and shift their focus to a better lifestyle in the near future. Creating awareness is the major step in prevention of obesity. Other strategies included educational interventions for the public regarding consuming a healthy diet, following strict physical exercise regimen, maintaining normal body weight, and avoiding use of tobacco, alcohol, junk foods and beverages drinks. Stress reduction measures also should be included. The preventive strategies involve counseling for healthy eating, psychological interventions for over eating people.

Risk factors for obesity-related conditions [3,4,5]

Being overweight or having obesity can increase the risk to the heart.

- **The following issues can also increase the risk of developing heart disease, for example.**
- high blood pressure (hypertension)
- high levels of low-density lipoprotein (“bad”) cholesterol
- low levels of high-density lipoprotein (“good”) cholesterol
- high levels of triglycerides
- high blood sugar levels
- a family history of early heart disease
- physical inactivity

- cigarette smoking
- a high consumption of alcohol

- **To help reduce the health risks associated with having obesity during childhood, encourage children and teens to practice healthy habits by:**

- Taking time for self-care and stress reduction. Try strategies like breathing exercises, meditation, yoga etc.
- Choose whole grains more often. Try whole-wheat breads and pastas, oatmeal, or brown rice.
- Select a mix of colourful vegetables. Vegetables of different colours provide a variety of nutrients. Try collards, kale, spinach, squash, sweet potatoes, and tomatoes.
- Walk in parks, around a track, or in your neighbourhood with your family or friends.
- Make getting physical activity a priority.
- Try to do at least 150 minutes a week of moderate-intensity aerobic activity, like biking or brisk walking.
- If your time is limited, work in small amounts of activity throughout your day.
- Eating healthy food and drinking plenty of water.
- Making mealtimes a family affair. Have your children help with cooking and let them choose healthy foods as well.
- Helping children find a physical activity they enjoy and participating in physical activity on most (preferably all) days of the week.
- Getting adequate sleep.
- Limiting screen time.

- **Try these activities to add more movement and colours to your daily life.**

  - Practice gratitude to the deserving ones.

  - Begin with something positive.

  - Choose parking spots that are farther away for extra steps.
  - Walk around the inside of a shopping mall or other large building, especially in bad weather.
  - Rake the leaves, wash the car, or do brisk housecleaning.

- Visit museums or the zoo. Many of these activities are free. You and your family can walk for hours and not realize how far you have gone.
- Take a break from sitting at the computer, TV, or other device.
- Start a walking or other active group where you work, live, or worship. Having a buddy can help keep you focused and add fun to your activity.
- If your time is limited, do 10 minutes of exercise at a time. Spread these bursts of activity throughout the day. Every little bit counts!
- Plan ahead to avoid setbacks. Find a backup activity you can do in case of bad weather or injury. If you do have a setback, regroup and focus on meeting your goal again as soon as you can.

References

[1] Fryar CD, Gu Q, Ogden CL, Flegal KM. Anthropometric Reference Data for Children and Adults: United States, 2011-2014. Vital Health Stat 3 Anal Stud. 2016 Aug;(39):1-46. [PubMed].

[2] Gavriilidou NN, Pihlsgård M, Elmståhl S. Anthropometric reference data for elderly Swedes and its disease-related pattern. Eur J Clin Nutr. 2015 Sep;69(9):1066-75. [PMC free article] [PubMed].

[3] Hales CM, Carroll MD, Fryar CD, Ogden CL. Prevalence of obesity among adults and youth: United States, 2015–2016. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Health Statistics. NCHS Data Brief No. 288. www.cdc.gov/nchs/data/databriefs/db288.pdf External link (PDF, 603 KB) . Published October 2017. Accessed April 15, 2019.

[4] Sleep deprivation and obesity. Harvard T.H. Chan School of Public Health website. www.hsph.harvard.edu/nutritionsource/sleep/ External link. Accessed August 7, 2019.

[5] Hicklin T. Molecular ties between lack of sleep and weight gain. NIH Research Matters. March 22, 2016. www.nih.gov/news-events/nih-research-matters/molecular-ties-between-lack-sleep-weight-gain NIH external link. Accessed August 7, 2019.

[6] Jensen MD, Ryan DH, Apovian CM, et al. 2013 AHA/ACC/ TOS guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. Circulation. 2014;129(25Suppl2):S102–S138. https://europepmc.org/articles/pmc5819889 External link. Accessed April 15, 2019