To Study Body Mass Index among Students and Faculty of the Centre of Excellence - Tourism and Hospitality, Bhiwadi: A Descriptive Cross-Sectional Study

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Abstract—

Background:
Body mass index [BMI] is the metric currently in use worldwide for defining. A higher BMI is a risk factor for the development of or the prevalence of several health issues. It is widely used in determining public health policies.

Objectives:
The aim of the study was to asses overall health status of students and faculty of Centre of Excellence - Tourism & Hospitality through BMI assessment.

Method:
A descriptive cross-sectional study was conducted on the students and faculty members of COE, Bhiwadi. A consent form was prepared, which included questions about personal details such as name, age, height, weight, BMI grade, diet and amount of exercise they do in a day, blood pressure, and blood sugar measurements.A combination of qualitative and quantitative assessment was conducted.

Results:
Only about 11% of total faculty population spent 30min or more for physical activities. Food production students displayed highest 54% of abnormal BMI [both underweight and overweight] grades. about 75% of food production population eat non vegetarian diet. 75% of total participants have normal BMI, 75% of total population of fitness and wellness perform physical activities more than 30 min on daily basis, and about more than 60% participants eat vegetarian diet.

Conclusion: The faculties and the students of Food production domain have higher percentage of overweight. The participants of fitness and wellness had very good overall health status.

Keywords— **BMI, Fitness, Wellness, COETH**

Introduction

The lifestyle of people has changed extensively. Several types of research have shown that the modern lifestyle is lacking in a nutritious diet, which increases unwanted stress, hormonal imbalance, and physical inactivity, increasing the body mass index among adults. Imbalance in BMI causes many health-related problems such as heart disease, period problems, etc. [1].

Approximately one-third of the global population aged 15 years and older engages in insufficient physical activity, which affects health and is known to contribute to the deaths of approximately 3.2 million people every year.

Body mass index is commonly used as a standard to classify overweight, underweight, and obese individuals. The most important cause of obesity can be a high intake of foods that are rich in fat, salt, sugar, etc. A lack of exercise can also be a major cause of low metabolic functioning of the body, which is one of the important reasons for being underweight or overweight, i.e., an inactive body metabolism response.The body mass index [BMI] is the metric currently in use for defining height and weight characteristics in adults and for classifying them into groups. The common interpretation is that it represents an index of an individual's fatness. It is also widely used as a risk factor for the development of or the prevalence of several health issues. In addition, it is widely used in determining public health policies. The BMI has been useful in population-based studies because of its wide acceptance in defining specific categories of body mass as a health issue [2].

BMI can be interpreted as the ratio of weight [kg] and height [m2].

BMI Categories: Underweight = 18.5; Normal Weight = 18.5–24.9; Overweight = 25–29.9; Obesity = BMI of 30 or greater [3].

BMI serves as a prediction method for health and diseases such as hypertension, diabetes, and other chronic diseases. Obesity is becoming very common among people, and it is the result of excessive accumulation of body fat due to unhealthy lifestyles, a lack of exercise, and unhealthy addictions. [4].

BMI as a measurement is typically used to gauge the risk of developing chronic conditions such as diabetes, hypertension, depression, and cancer. Many studies are markedly highlighting the importance of BMI as a screening tool for chronic disease and mortality and briefly introducing the idea of a tool for predicting disease later in life. BMI is seemingly a good indicator for studying the correlation between BMI and chronic disease [6–10].

BMI and hypertension similar studies have been completed that analyse the relationship between body mass index and the probability of developing hypertension. Hu et al. considered survey data from 17,441 Finnish individuals from 1982 to 1992, which evaluated participant height, weight, and heart rate, among other factors. A larger BMI was linked with a greater occurrence of hypertension in this population. Furthermore,

this study discovered that physical activity remarkably mitigated the risk of developing hypertension, even if the body mass index was higher than normal [11].

A higher BMI was directly associated with an increased risk of developing hypertension, and long-term weight changes were inversely correlated with the risk of hypertension [12].

World Health Organisation [WHO] has described obesity as one of the most neglected public health issues, which reduces total lifespan and health span. Nowadays, BMI is used by specific etiologists for mortality risk; it is used to estimate the percent of body fat, diabetes, hypertension, coronary heart disease, metabolic syndrome, the family prevalence of carcinomas, and so on. Recently, it has been reported that more than 50% of susceptibility to coronary artery disease is accounted for by genetic variants and also due to overweight [13].

Earlier, obesity was only a problem in the United States and other high-income countries; however, at present, it is rising in middle- and low-income countries as well, particularly rapidly in India and China, especially in urban areas [14].

A perception-based study on 15 adolescents with excess weight claimed obesity as a disease [15].

Medical health issues related to BMI

The global increase in the prevalence of obesity has led to an increase in health issues such as: **Obesity and diabetes.** The risk of developing diabetes was 93 times higher among women who had a body mass index [BMI] of 35 or higher at the start of the study compared with women with BMIs lower than 22.

Obesity andCardiovascular Diseases Body weight is directly associated with various cardiovascular risk factors. As BMI increases, so do blood pressure, low-density lipoprotein [LDL, or "bad"] cholesterol, triglycerides, blood sugar, etc.

Obesity and Coronary Artery Disease: Numerous studies have demonstrated a direct association between excess body weight and coronary artery disease [CAD]. Obesity, **Depression, and Quality of Life:** People who were obese were more likely to have depression than people with healthy weights. [16]

Obesity and reproduction: Sexual function may also be affected by obesity.

Obesity and Lung Function/Respiratory Disease: The accumulation of abdominal fat, for example, may limit the descent of the diaphragm and, in turn, lung expansion, while the accumulation of visceral fat can reduce the flexibility of the chest wall. Sap respiratory

Others—family history, more hours of fatty foods, sleep, more hours of sedentary activities, advertising, and urbanisation—are known to influence the risk of obesity. [17-26]

Risk factors of being underweight: There are numerous causes, such as genetics, a very high metabolism rate, nutritional deficiency of food habits, low birth weight, inadequate dietary intake, low physical activity or very high physical activity, poverty, chronic sickness, loss of appetite due to medications, a change in lifestyle, stress, and depression.

Risk factors of overweight: There are many causes, such as high blood pressure, high LDL cholesterol, low HDL cholesterol, or high levels of triglycerides; type 2 diabetes; coronary heart disease; stroke; gallbladder disease; osteoarthritis; and a low quality of life.

Sign & Symptoms:

Underweight people experience frequent illnesses or extreme fatigue. Their skin becomes extremely dry and their hair thins out or falls out. On the other side, overweight people experience frequent illnesses or lifestyle disorders such as diabetes, hypertension, thyroid disease, and in females, PCOS [polycystic ovary syndrome] and extreme fatigue. Additionally, they could notice that their skin becomes extremely oily, they have improper digestion, and they are at high risk of heart disease, stroke, and paralysis.

Complications:

An individual becomes susceptible to health issues like starvation, osteoporosis, weakened muscles, hypothermia, and impaired immunity. It is also related to the reduced life span of an individual. Regardless of the terminology and population reference issues, at present, the **BMI is the currency** by which we define the obesity issue throughout the Western world. It was developed for the convenience of epidemiologists, it provide a uniform codification of body weight for height reporting.

Literature review

Year	Author	Inference
2017	Pan Afr Med J	Obesityis a risk factors PCOS, hypertension, heart disease, and stroke.
2011	Coutinho T et al	People with central obesity have higher mortality rate
2000	World Health Organization	BMI >25.0 and >30.0 kg/m2 was taken as cut offs for overweight and obesity, respectively
2000	King DS et al	One-third of all high blood pressure cases are at a risk of developing Diabetes.
1998	Huang Zs et al	Weight gain in middle age is a risk factor for high blood pressure.
1995	Colditz GA et al	Obese people, those have BMIs of 40+, are over with 53 times dangerous for type 2 diabetes
1994	Chan JM et al	The risk of diabetes mellitus among men with a BMI of 35+ was 42 times higher to men with a BMI of < 23.

Table 1: Review of existing literatures

Aim & Objectives

Aim:

The overall aim of the study was to asses overall health status of students and faculty of Centre of Excellence - Tourism & Hospitality through BMI assessment.

Objectives:

1. To measure and evaluate the height and weight of the participants.
2. To measure blood pressure of the participants.
3. To measure random blood sugar of the participants.

Methodology

A descriptive cross-sectional study was conducted on the students and faculty members of COE, Bhiwadi. A consent form was prepared, which included questions about personal details such as name, age, height, weight, BMI grade, diet and amount of exercise they do in a day, blood pressure, and blood sugar measurements.A combination of qualitative and quantitative assessment was conducted.Before beginning a study, the permission from the Institute head was obtained.

Title:**To Study Body Mass Index among Students and Faculty of the Centre of Excellence - Tourism and Hospitality,Bhiwadi: A Descriptive Cross-Sectional Study"**

Location: Centre of Excellence, Optus suites, Bhiwadi, Rajasthan, India

Sample: Students and faculty members of COE, Bhiwadi.

Design: Cross-Sectional, Descriptive, Combination Study [Both Qualitative & Quantitative].

Inclusion criteria: Students and faculty members of centre of excellencetourism & hospitality who are willing to participate in the study.

Exclusion criteria: students and faculty on extended leaves.

Data collection: Data was collected among the members of the COE in May 2023. Both subjective and objective assessments were conducted for 20–25 minutes individually. In subjective assessment, questions were asked related to the lifestyle, such as their daily physical activity duration and diet, such as; vegetarian or non-vegetarian, and in objective assessment, questions; were asked related to the lifestyle. The data was used to estimate obesity prevalence and trends and their possible health associations.

Body weight and heights were measured through direct measurements. Blood pressure was measured using Dr. Morepen automatic digital sphygmomanometer. Blood sugar readings [Random] were obtained using Dr. Morepen blood sugar testing kit.

Activities involved

A consent form was filled by the participants before initiation of the measurement process. The aim, objectives and procedure involved in the study was explained to the participants.

The activities involved in the study were height measurement, weight measurement, blood sugar test, blood pressure measurement, and BMI calculation. The participants needed to answer questions, such as duration of physical activity performed on a regular basis and of dietary[vegetarian or non-vegetarian] preferences.

Figure 1: Consent form fills up

Height measurement: The height of all the students and faculties was measured by using a measuring tape. The students and faculties were asked to stand straight with arms at sides and shoulders level, barefoot, in front of the measuring tape, look ahead so that the line of sight is parallel with the floor, and then the measurement is recorded by us. The height is measured in centimetres [cm].

Figure 2: Height measurement [cm] male   Figure 3: Height measurement [cm] female

Weight Measurement: The weight of all the students and faculties was measured using Eagle digital weight measuring scale with a maximum weight capacity of 200 kg. All the students were asked to stand without shoes on the weight measuring machine during the measurement, and the weight is measured in kilogram's[kg].

Figure 4: Weight measurement [Kg]

BMI: By using the height and weight measurements of the students and faculty, BMI is calculated, and the BMI value is used to grade them as normal, underweight, or obese.

BMI table

Grade	Range
Underweight	<18.5
Normal	18.5-24.9
Overweight	24.9-29.9
Obese grade 1	29.9-34.9
Obese grade 2	>35

Table 2: BMI grade

The formula for BMI is weight in kilograms divided by height in meters squared. If height has been measured in centimetres, divide by 100 to convert this to meters.

$$BMI = Weight\ [Kg]/Height[m^2]$$

Blood Pressure Assessment: The BP was measured using a Dr Morepen automatic, digital sphygmomanometer[BP-02]. All the students and faculty were asked to sit in a comfortable chair with back support, put both feet flat on the ground, and rest the left arm with the cuff on a table at chest height. Now the measurement is taken and recorded. The average of three measurements was considered.

Figure 5: Blood pressure measure

Blood pressure range according to World Health Organization

Normal blood pressure range	Between 115/75 and 120/80 mmHg
Pre hypertensive	Systolic B.P. between 120 and 139 mmHg
	Diastolic B.P. between 80 and 89 mmHg.
Hypertension	Systolic B.P. between 140 and 159 mmHg
	Diastolic B.P. between 90 and 99 mmHg.

Blood Sugar Test: The blood sugar is measured Dr MorepenGlucometer [GlucoOne BG-03]using sterilised lancet and sugar testing strips. All the students and faculties were asked for the blood test, and the test was conducted at COE, Bhiwadi. During the blood test, a uniform timing [11am-12pm]was maintained, and the result was recorded.

Figure 6- Blood sugar measurement

Blood sugar range according to World Health Organization

Fasting blood sugar level	Between 70 mg/dL and 100 mg/dL
Postprandial blood sugar	Between 100 mg/dL and 140 mg/dL
Random	Between 80 mg/dL and 130 mg/dL.

Duration: 6 months

Data collection: Questionnaire, Subjective and Objective assessment

Analysis: Microsoft Excel 2013.

Funding: self-funded

FLOW CHART

SCREENING (78)

ENROLLMENT (n=67)

CONSENTING (n=67)

DATA COLLECTION (n=67)

ANALYSIS (n=67)

RESULT

Results

[Tables]

P.N.	Height in CM	Weight in KG	Age	BMI kg/mm	Grade	Exercise	Diet	BP (mm/Hg)	Sugar (mm/dl)
					Data of food production				
1	182.8	76	22	22.9	Normal	21-30 min	Non-veg	112/80	111
2	172	56	21	18.8	Under weight	> 30 min	Non-veg	110/75	101
3	177.8	62	21	19.6	Normal	> 30 min	Non-veg	110/62	98
4	159	56	23	22.2	Normal	11-20 min	Non-veg	120/85	105
5	175.2	75	21	24.5	Normal	> 30 min	Veg	114/69	99
6	181	88	21	26.9	Over weight	> 30 min	Non-veg	117/68	120
7	154	38	21	16	Under weight	0-10 min	Non-veg	90/65	90
8	181	72	20	22	Normal	0-10 min	Non-veg	112/85	101
9	172.7	55	20	18.4	Under weight	>30 min	Non-veg	110/90	95
10	164	70	23	25.7	Over weight	21-30 min	Veg	118/90	125
11	182.8	60	21	18.1	Under weight	>30 min	Veg	106/60	105
12	177.8	86	23	27.2	Over weight	>30 min	Non-veg	147/97	135
13	167.6	50	22	18.6	Under weight	11-20 min	Veg	101/58	88
14	163	48	21	18.1	Under weight	>30 min	Non-veg	112/75	97
15	164	54	22	20.1	Normal	21-30 min	Non-veg	119/88	95
16	170	50	22	17.3	Under weight	0-10 min	Non-veg	101/58	101
17	172.7	77	26	25.8	Over weight	>30 min	Veg	115/85	129
18	172.7	73	24	24.5	Normal	>30 min	Veg	112/75	98
19	162	68	23	25.9	Over weight	21-30 min	Non-veg	115/85	105
20	166	58	22	18.4	Under weight	>30 min	Non-veg	115/80	108
21	170.1	85	22	29.4	Over weight	21-30 min	Non-veg	115/86	125
22	170	61	22	21.1	Normal	21-30 min	Non-veg	115/78	92
23	156	61	21	24.3	Normal	11-20 min	Non-veg	120/88	89
24	181	70	19	21.4	Normal	>30 min	Non-veg	115/82	88
25	170	54	18	18.7	Normal	>30 min	Veg	111/72	98
26	172.7	55.3	21	18.5	Normal	> 30 min	Non-veg	115/79	99
27	165.1	50	21	18.4	Under weight	>30 min	Non-veg	115/73	106
28	177.8	73	23	23.1	Normal	0-10 min	Non-veg	111/72	89

Table 3: Data collection in the food production domain of the COE

Food production domain:-

BMI: Out of 28 students from the food production domain, about 47% had a BMI in the normal range, while 21% were overweight and 32% were underweight.
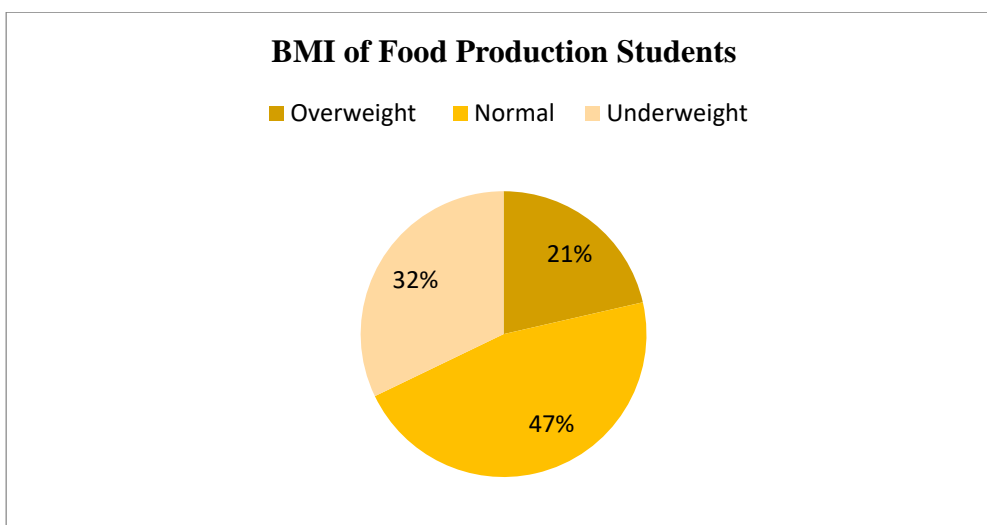
BMI of Food Production Students

■ Overweight ■ Normal ■ Underweight

21%
32%
47%

Figure 7:BMI of Food Production Students

Physical Activities: Out of 28 students from the food production domain, about 54% were doing more than 30 minutes of physical activity, while 21% were doing 21–30 minutes of physical activity, 11% were doing 11–20 minutes of physical activity, and 14% were doing 0–10 minutes of physical activity.

Physical Activities of Food Production Students

■ 0-10 min ■ 11-20 min ■ 21-30 min ■ > 30 min

14%
11%
54%
21%
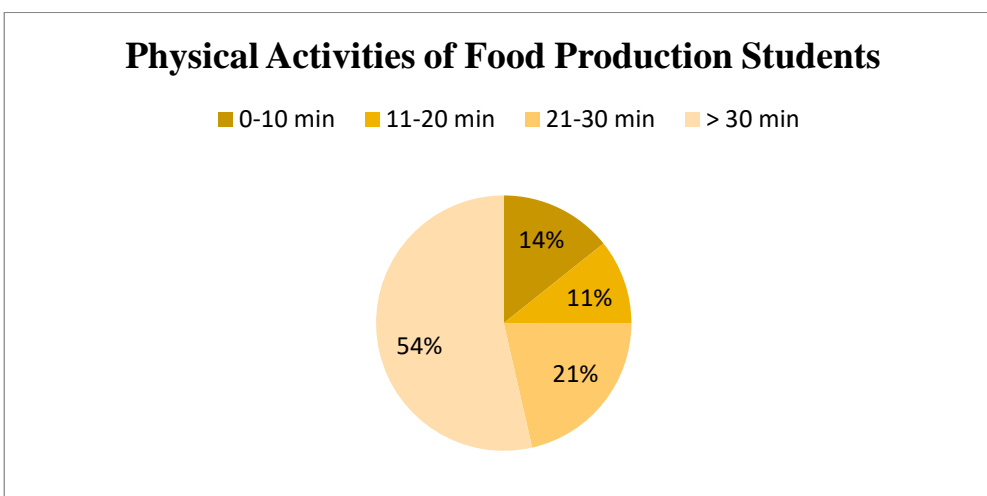
Figure 8: Physical Activities of Food Production Students

Diet: Out of 28 students in food production domain, 75% of total students reported eating a mixed diet consisting of vegetarian and non-vegetarian food items and 25% eat a vegetarian diet.

Diet of Food Production Students

■ Veg   ■ Non-veg

25%

75%
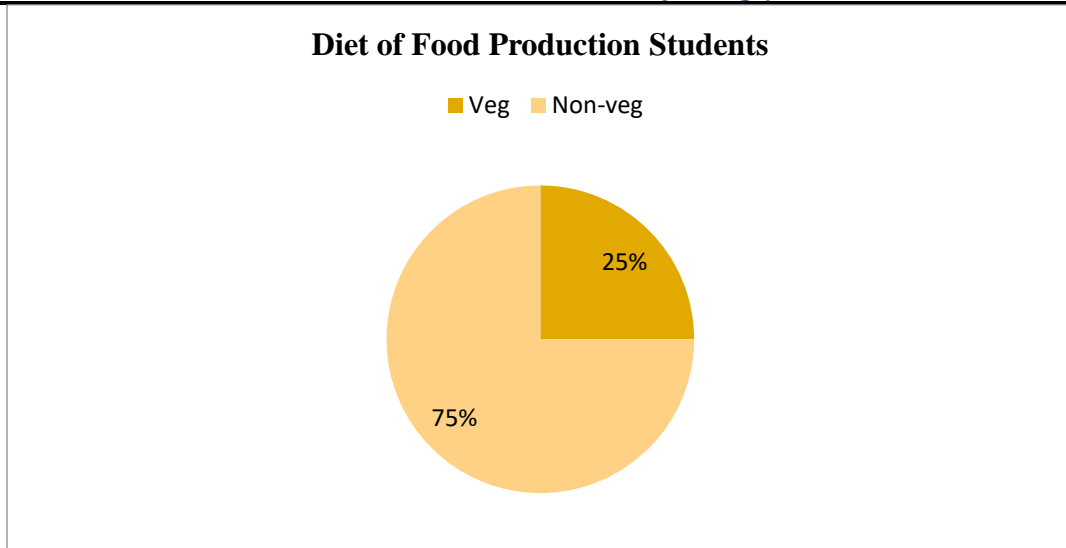
Figure 9: Diet of Food Production Students

Blood Pressure:Out of 28 students in food production domain, 96% registered with blood pressure within normal range, 4% have high blood pressure.
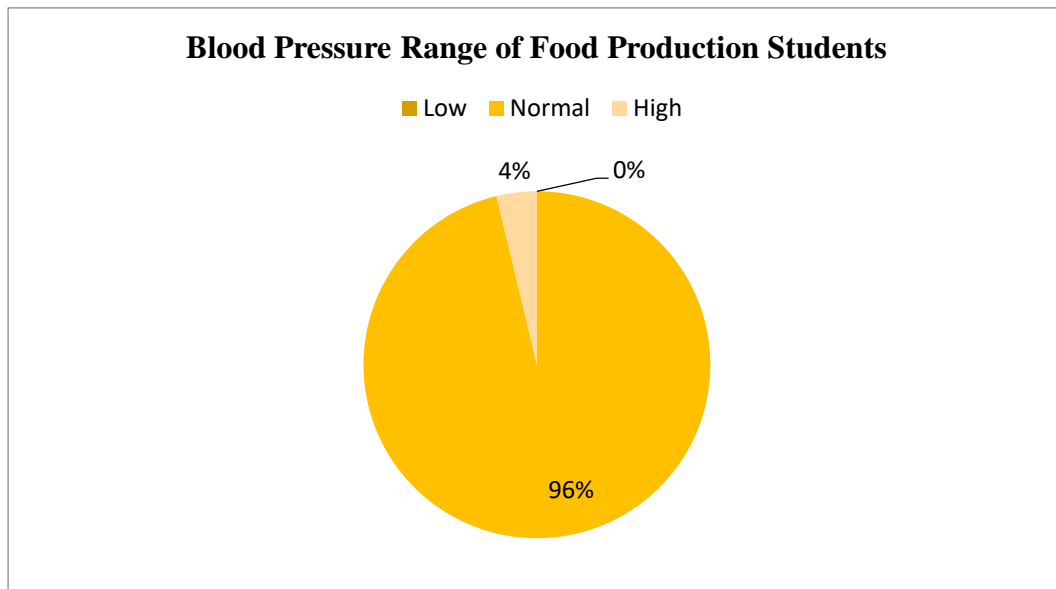
Blood Pressure Range of Food Production Students

■ Low   ■ Normal   ■ High

4%   0%

96%

Figure 10: Blood Pressure Range of Food Production Students

Blood Sugar: Out of 28 students in food production domain, all of the students displayed normal blood sugar levels.

[Tables]

	Data of F&B operation								
P.N.	Height in CM	Weight in KG	Age	BMI kg/mm	Grade	Exercise	Diet	BP (mm/Hg)	Sugar (mm/dl)
1	167.6	87	23	31.2	Over weight	0-10 min	Veg	105/63	107
2	172.7	58	22	19.6	Normal	>30 min	Veg	111/75	102
3	160	50	22	19.5	Normal	>30 min	Non-veg	115/78	97
4	177.8	56	23	17.9	Under weight	0-10 min	Non-veg	103/70	98
5	179.8	79	24	24.7	Normal	21-30 min	Non-veg	135/90	88
6	168	53	21	18.9	Normal	0-10 min	Non-veg	115/86	89
7	157.5	51	24	20.6	Normal	0-10 min	Veg	114/77	106
8	165.1	62	22	22.7	Normal	0-10 min	Veg	97/59	134
9	176.8	70	24	22.6	Normal	>30 min	Non-veg	113/78	80
10	156	45	19	17.9	Under weight	11-20 min	Non-veg	116/78	89
11	167.6	45	22	16.1	Under weight	>30 min	Non-veg	114/76	90
12	167.6	60	26	21.3	Normal	0-10 min	Non-veg	103/75	86
13	175.2	79	21	25.8	Over weight	0-10 min	Non-veg	115/88	129

Table 4: Data collection in the food and beverage domain

Food & Beverage domain:-

BMI:Out of 13 students of food and beverages domain, 62% are in the normal BMI range, 23% are underweight, and 15% are overweight.
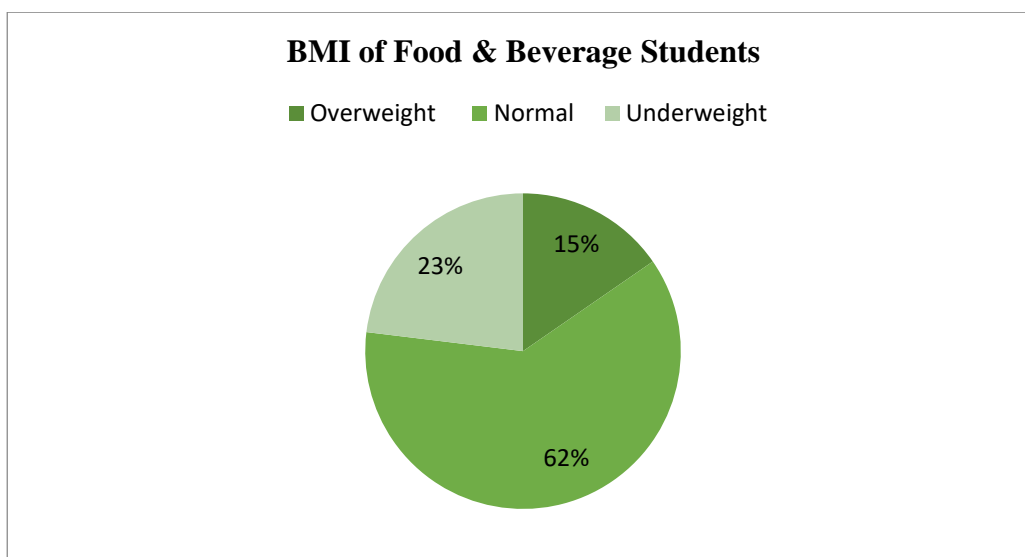

Figure 12: BMI of Food & Beverage Students

Physical Activities: Out of 13 students from the food and beverage domain, about 31% were doing more than 30 minutes of physical activity, while 8% were doing 21–30 minutes of physical activity, 7% were doing 11–20 minutes of physical activity, and 54% were doing 0–10 minutes of physical activity.
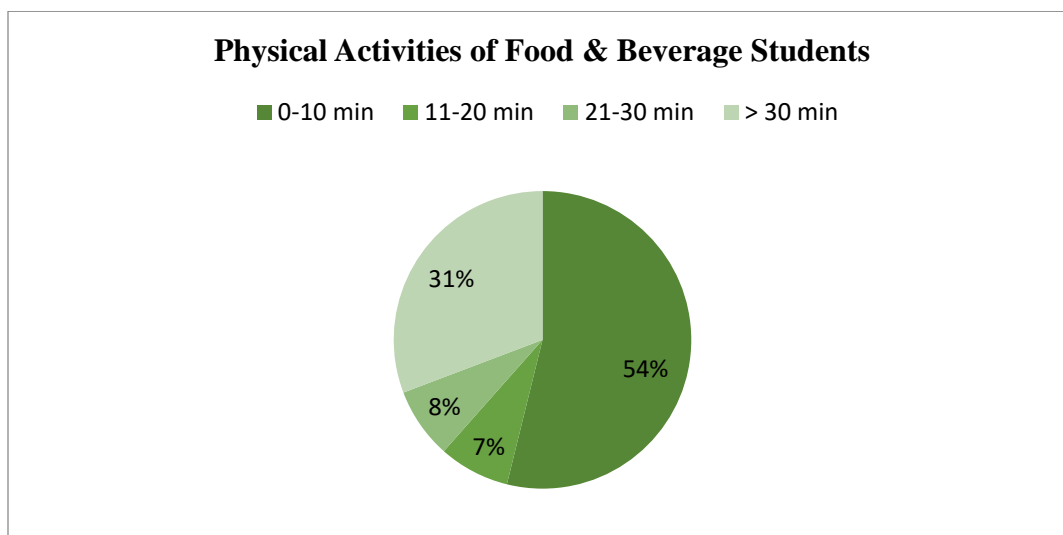

Figure 13: Physical Activities of Food & Beverage Students

Diet: Out of 13 students in food and beverages domain, 69% of total students reported eating a mixed diet consisting of vegetarian and non-vegetarian food items and 31% eat a vegetarian diet.

Diet of Food & Beverage Students
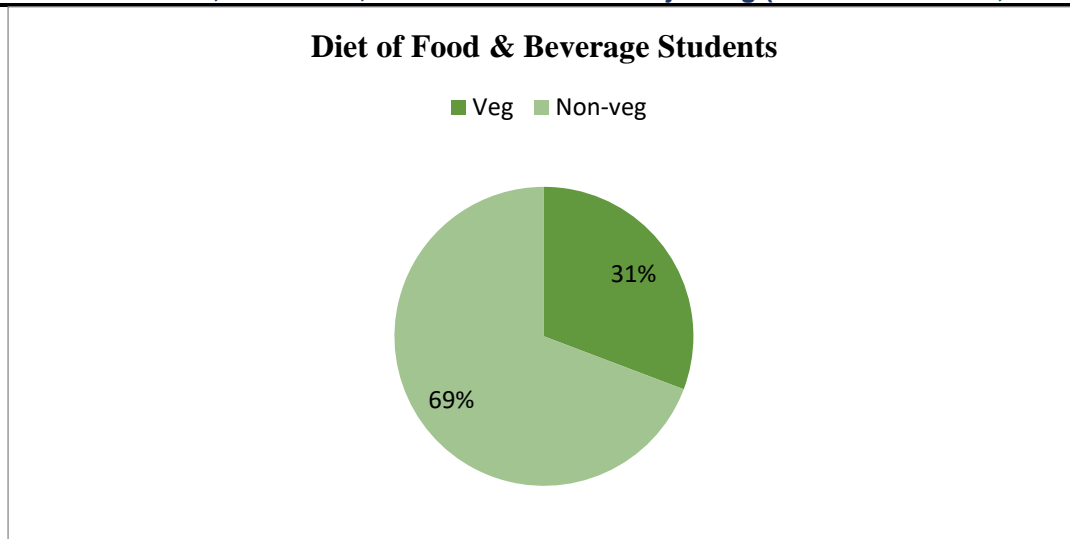
Figure 14: Diet of Food & Beverage Students

Blood Pressure:Out of 13 students in food and beverages domain, 92% registered with blood pressure within normal range, 8% have high blood pressure.

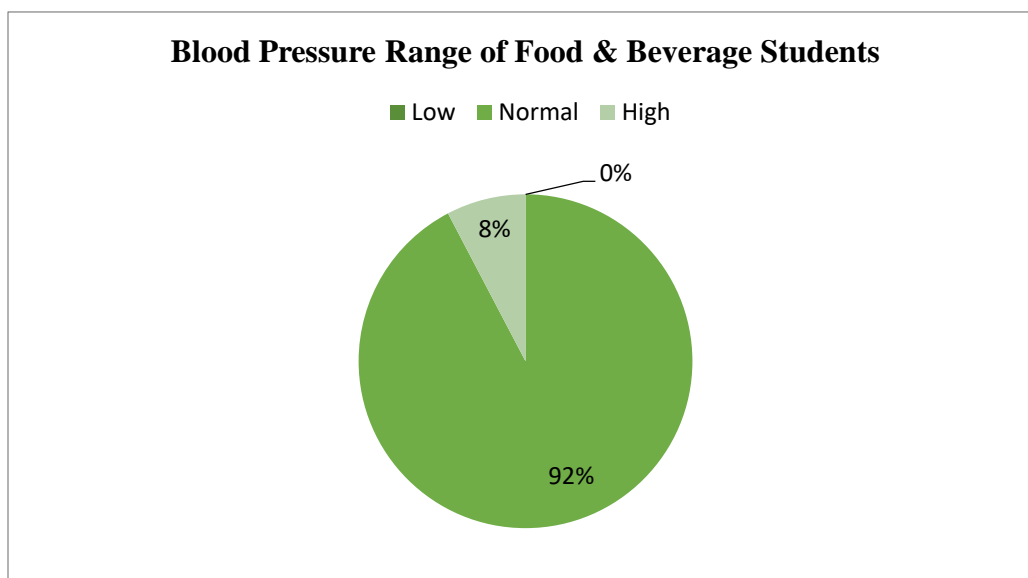**Blood Pressure Range of Food & Beverage Students**

Figure 15: Blood Pressure Range of Food & Beverage Students

Blood Sugar: Out of 13 students in food and beverages domain, all of the students displayed normal blood sugar levels.

[Table]

					Data of hotel operation				
P.N.	Height in CM	Weight in KG	Age	BMI kg/mm	Grade	Exercise	Diet	BP (mm/Hg)	Sugar (mm/dl)
1	167.6	53	23	19	Normal	0-10 min	Non-veg	114/78	105
2	157.4	63	20	25.6	Over weight	0-10 min	Veg	120/72	125
3	157.4	50	24	20.3	Normal	0-10 min	Non-veg	115/72	88
4	154.9	53	23	22.3	Normal	0-10 min	Non-veg	102/65	86
5	169	55	26	20.3	Normal	0-10 min	Non-veg	111/72	89
6	160	65	22	25.4	Over weight	11-20 min	Veg	115/84	122
7	167.6	50	20	17.9	Under weight	0-10 min	Non-veg	92/65	119
8	154	50	21	22.2	Normal	0-10 min	Veg	101/76	103
9	182.9	62	24	22.4	Normal	>30 min	Veg	115/79	95

Table 5: Data collection of hotel operations

Hotel operations students:-

BMI: Out of 9 students from the hotel operations domain, 67% had a BMI in the normal range, while 22% were overweight and 11% were underweight.
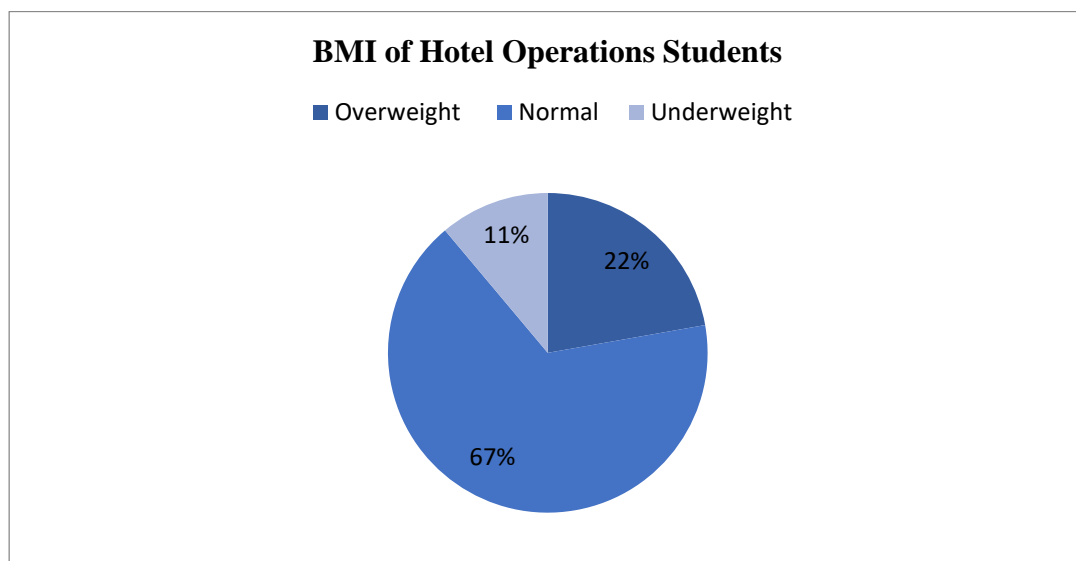

Figure 17: BMI of Hotel Operations Students

Physical Activities: Out of 9 students from the hotel operations domain, about 11% were doing more than 30 minutes of physical activity, 11% were doing 11–20 minutes of physical activity, and 78% were doing 0–10 minutes of physical activity.

Physical Activities of Hotel Operations Students

■ 0-10 min ■ 11-20 min ■ 21-30 min ■ > 30 min
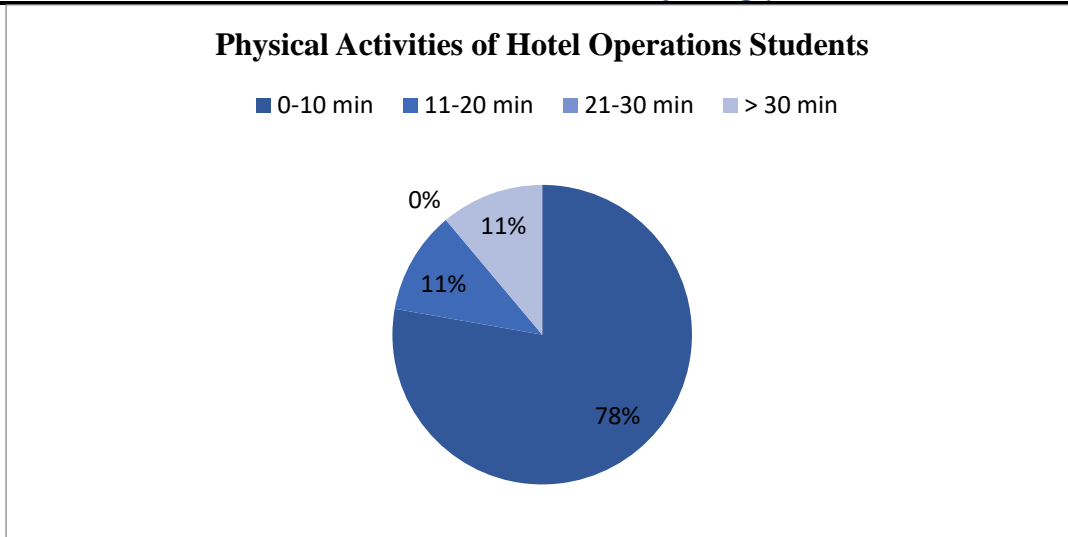
0%

11%

11%

78%

Figure 18: Physical Activities of Hotel Operations Students

Diet: Out of 9 students in hotel operations domain, 56% of total students reported eating a mixed diet consisting of vegetarian and non-vegetarian food items and 44% eat a vegetarian diet.
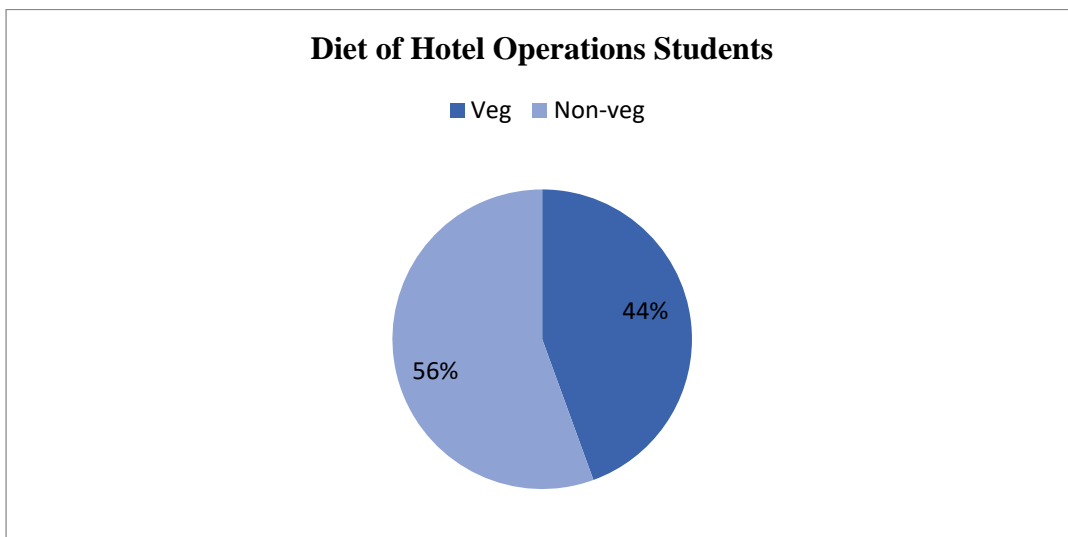
Diet of Hotel Operations Students

■ Veg ■ Non-veg

44%

56%

Figure 19:Diet of Hotel Operations Students

Blood Pressure:Out of 9 students in hotel operations domain, 100% registered with blood pressure within normal range.

Blood Sugar: Out of 9 students in hotel operations domain, all of the students displayed normal blood sugar levels.

[Table]

P.N.	Height in CM	Weight in KG	Age	BMI kg/mm	Grade	Exercise	Diet	BP (mm/Hg)	Sugar (mm/dl)
					Data of fitness & Wellness				
1	183	85.2	22	25.4	Over weight	>30 min	Non-veg	115/89	102
2	183	82	24	24.5	Normal	>30 min	Non-veg	112/78	105
3	154	50	26	21.1	Normal	>30 min	Veg	115/82	102
4	170	72	23	23.9	Normal	>30 min	Veg	115/82	124
5	180	50	24	15.4	Under weight	11-20 min	Non-veg	111/78	118
6	174	72	25	23.4	Normal	11-20 min	Veg	115/81	110
7	188	70	27	19.8	Normal	>30 min	Veg	113/76	108
8	175	70	27	22.9	Normal	>30 min	Veg	114/78	122

Table 6: Data collection in the fitness and wellness domain

Fitness & wellness students:-

BMI: Out of 8 students from the fitness & wellness domain, 75% had a BMI in the normal range, while 12% were overweight and 13% were underweight.
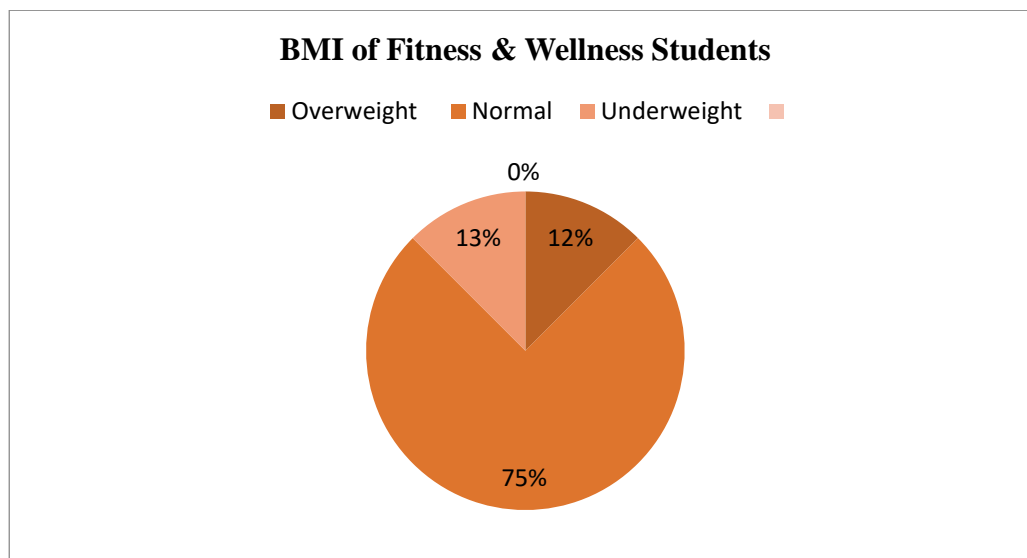

Figure 22: BMI of Fitness & Wellness Students

Physical Activities: Out of 8 students from the fitness & wellness domain, about 75% were doing more than 30 minutes of physical activity and 25% were doing 0–10 minutes of physical activity.
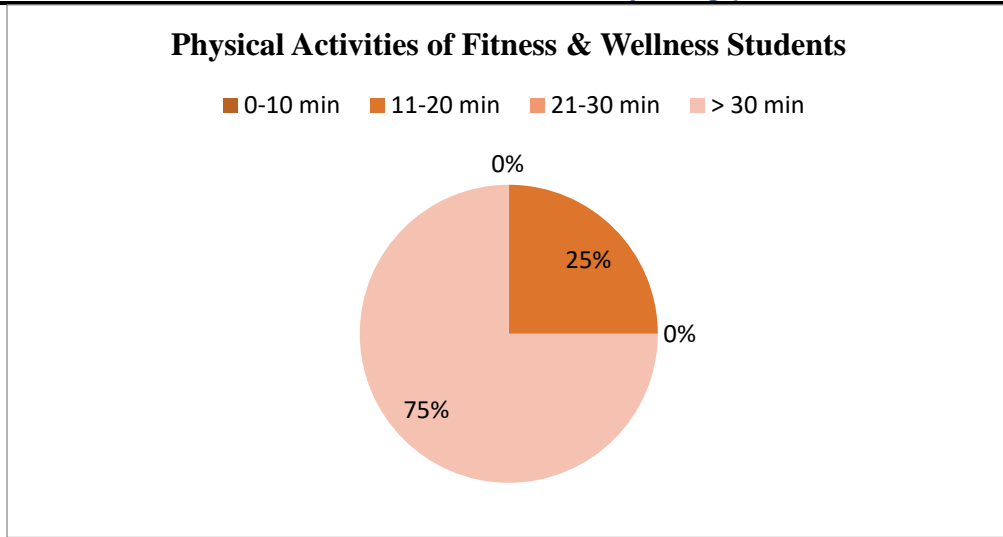
Physical Activities of Fitness & Wellness Students

Figure 23: Physical Activities of Fitness & Wellness Students

<u>Diet</u>: Out of 8 students in fitness & wellnessdomain, 38% of total students reported eating a mixed diet consisting of vegetarian and non-vegetarian food items and 62% eat a vegetarian diet.
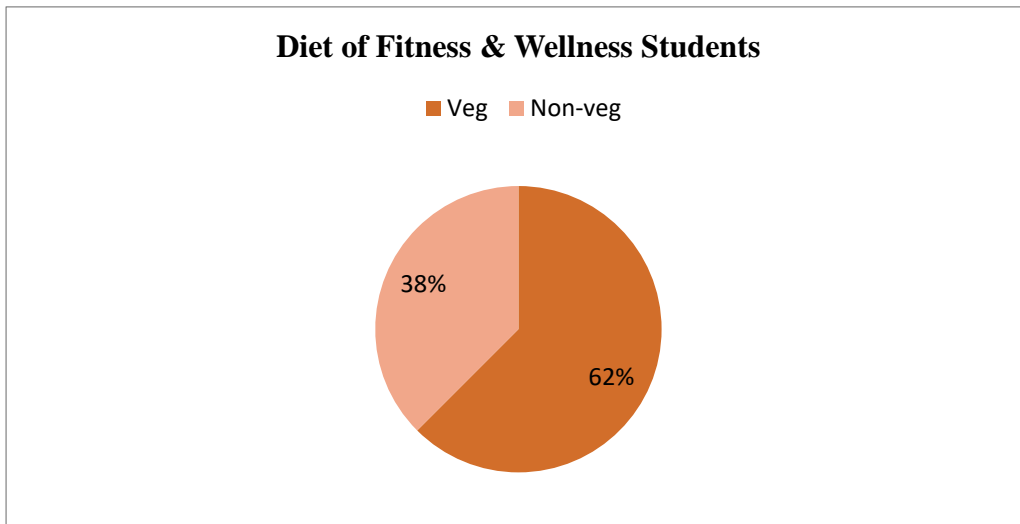

Figure 24: Diet of Fitness & Wellness Students

<u>Blood Pressure</u>:Out of 8 students in fitness & wellnessdomain, all of the students displayed normal range in blood pressure.

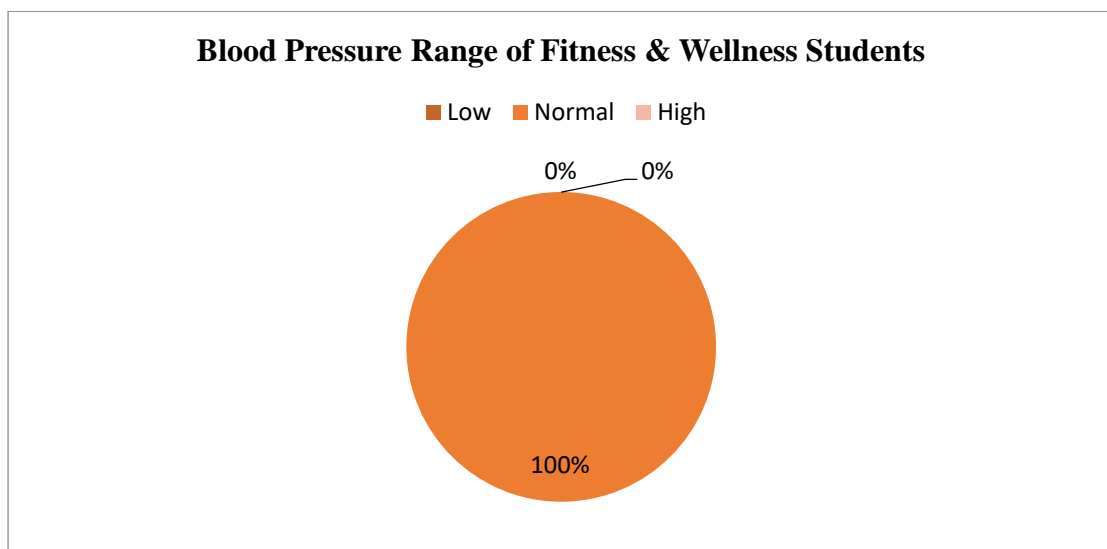

Figure 25: Blood Pressure Range of Fitness & Wellness Students

Blood Sugar: Out of 8 students in fitness & wellnessdomain, all of the students displayed normal blood sugar levels.

[Table]

P.N.	Height in CM	Weight in KG	Age	BMI kg/mm	Grade	Exercise	Diet	BP (mm/Hg)	Sugar (mm/dl)
Data of faculty									
1	170	68	42	23.5	Normal	0-10 min	Non-veg	112/86	124
2	167.6	67	26	24.3	Normal	21-30 min	Veg	114/76	114
3	175	85.4	48	27.8	Over weight	30> min	Veg	112/76	106
4	167	80	47	27	Over weight	11-20 min	Non-veg	174/110	135
5	172	77	36	26	Over weight	11-20 min	Veg	115/86	103
6	185.9	87	34	25.7	Over weight	11-20 min	Non-veg	115/79	124
7	165.1	55	46	20	Normal	0-10 min	Non-veg	113/79	134
8	185	70	39	20.5	Normal	0-10 min	Veg	116/79	105
9	180	72	37	22.2	Normal	11-20 min	Non-veg	144/78	104

Table 7: Data collection of COE faculties

COE faculty members:-

BMI: Out of 9faculties ofthe COE, 56% had a BMI in the normal range and 44% were overweight.
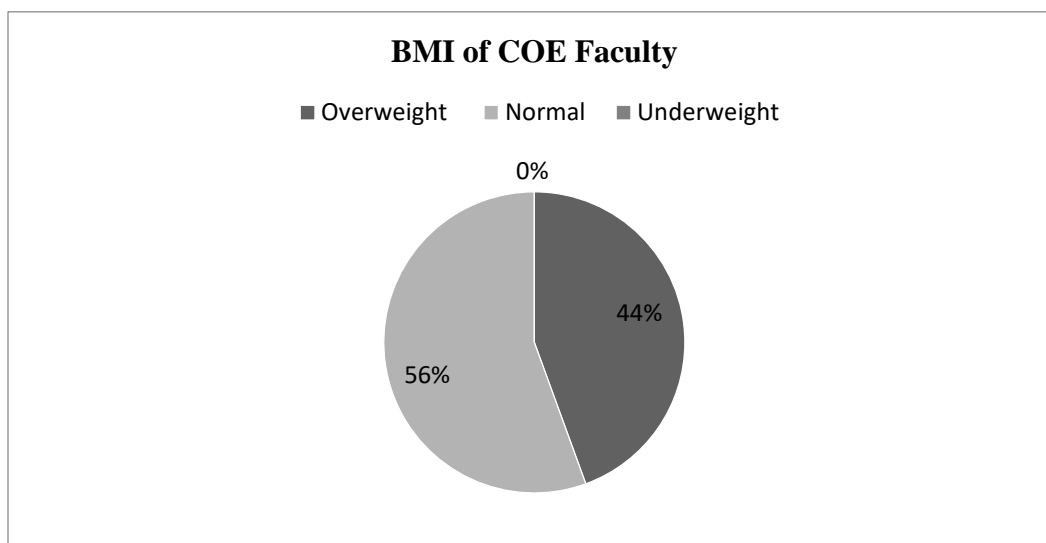

Figure 27: BMI of COE Faculty

Physical Activities: Out of 9 faculties of the COE, about 11% were doing more than 30 minutes of physical activity, while 11% were doing 21–30 minutes of physical activity, 45% were doing 11–20 minutes of physical activity, and 33% were doing 0–10 minutes of physical activity.
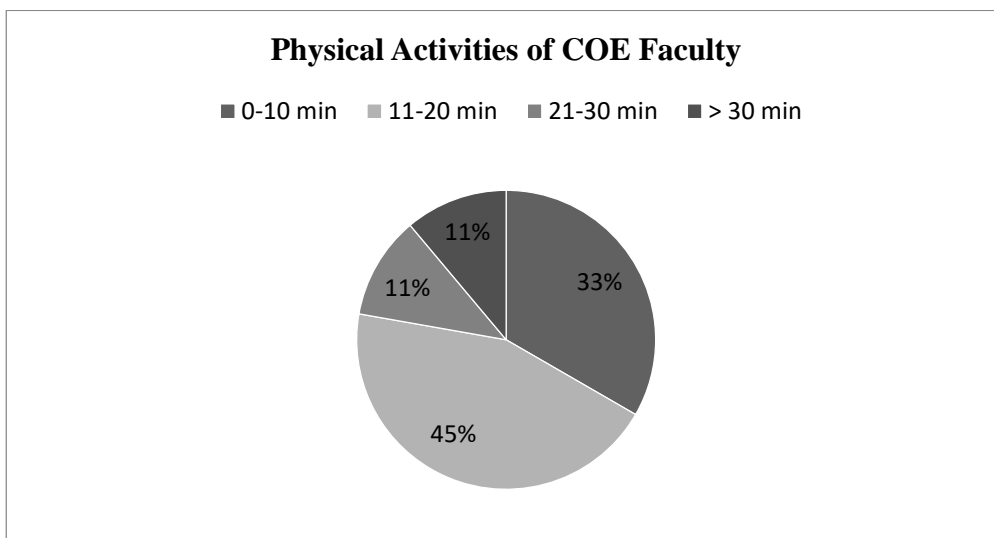
Physical Activities of COE Faculty

■ 0-10 min   ■ 11-20 min   ■ 21-30 min   ■ > 30 min

11%
11%
33%
45%

Figure 28: Physical Activities of COE Faculty

Diet: Out of 9 faculties of the COE, 44% of total faculties reported eating a mixed diet consisting of vegetarian and non-vegetarian food items and 56% eat a vegetarian diet.
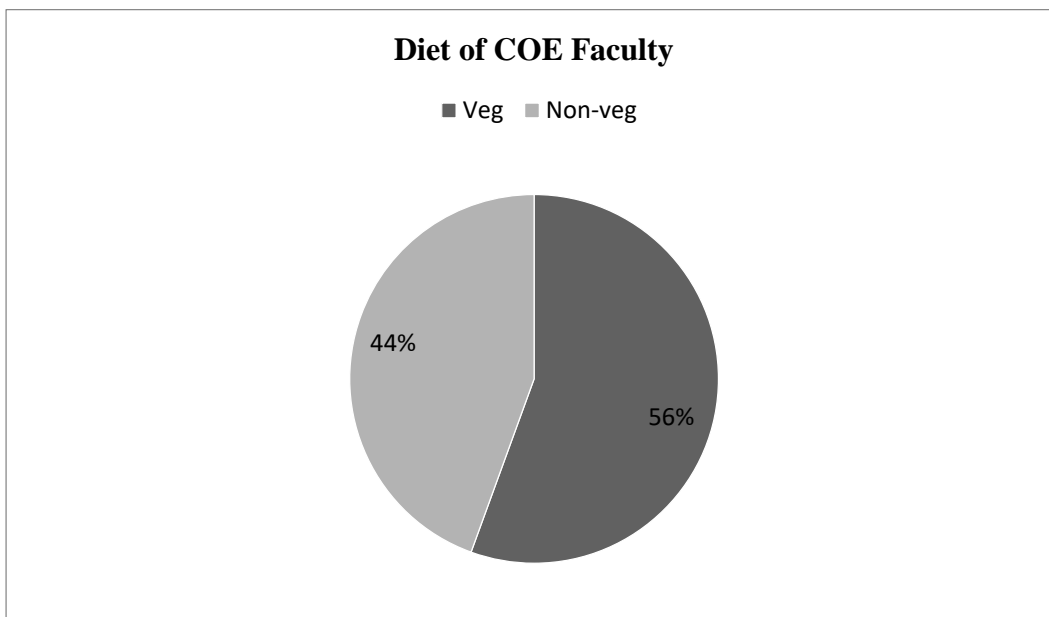
Diet of COE Faculty

■ Veg   ■ Non-veg

44%
56%

Figure 29: Diet of COE Faculty

Blood Pressure:Out of 9 faculties of the COE, 78% registered with blood pressure within normal range, 22% have high blood pressure.
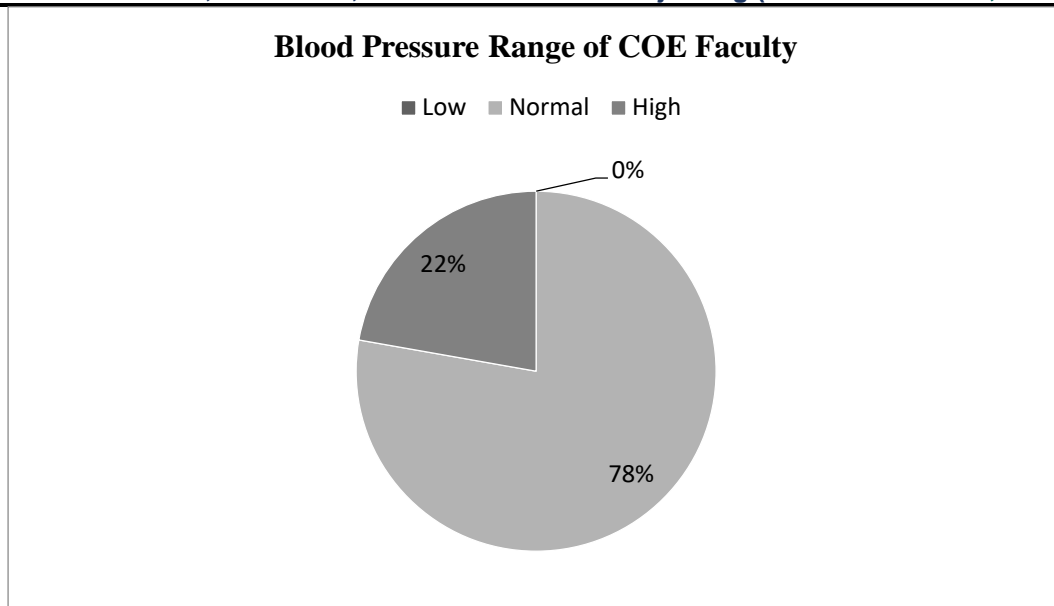
Blood Pressure Range of COE Faculty

Figure 30: Blood Pressure Range of COE Faculty

Blood Sugar: Out of 9 faculties of the COE, all of the faculties displayed normal blood sugar levels.

Overall participant results:-

BMI: Out of 67 participants from the COE, about 57% had a BMI in the normal range, while 22% were overweight and 21% were underweight.
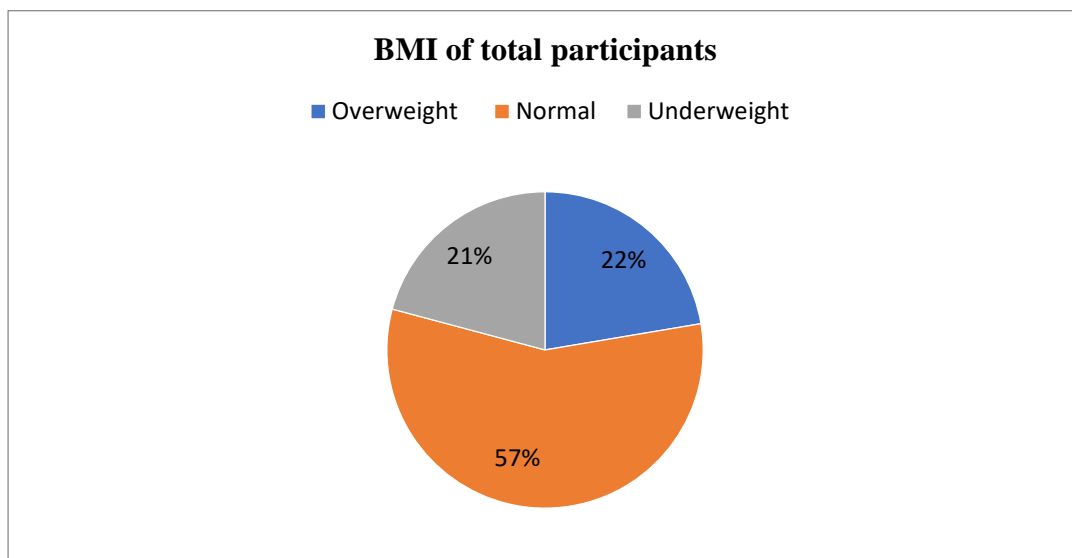
BMI of total participants

Figure 32: BMI of total participants

Physical Activities: Out of 67 participants, about 40% were doing more than 30 minutes of physical activity, while 12% were doing 21–30 minutes of physical activity, 17% were doing 11–20 minutes of physical activity, and 31% were doing 0–10 minutes of physical activity.
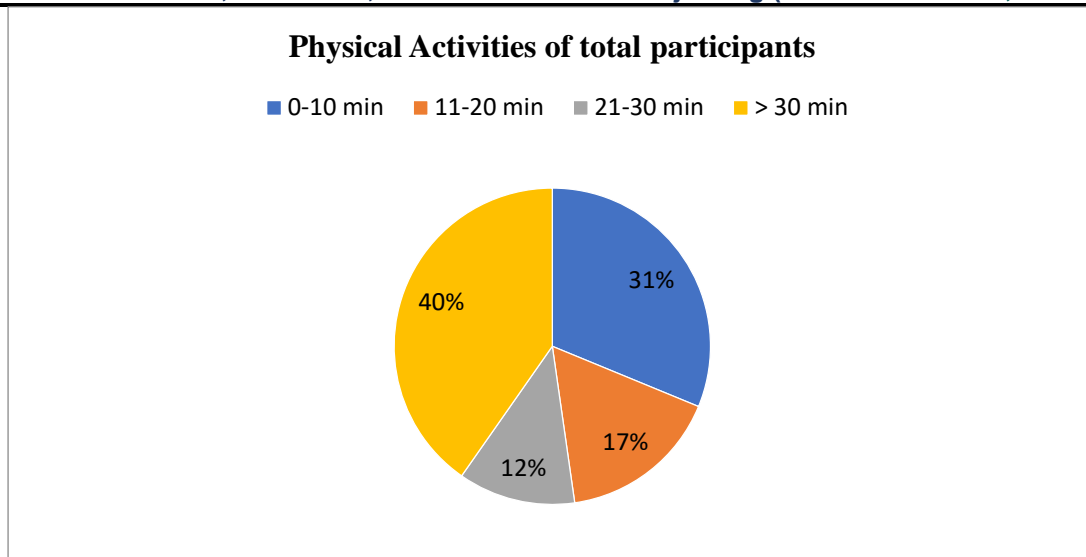
Physical Activities of total participants

■ 0-10 min   ■ 11-20 min   ■ 21-30 min   ■ > 30 min

[Pie chart: 31%, 17%, 12%, 40%]

Figure 33: Physical Activities of total participants

<u>Diet</u>: Out of 67 participants, 64% of total participants reported eating a mixed diet consisting of vegetarian and non-vegetarian food items and 36% eat a vegetarian diet.
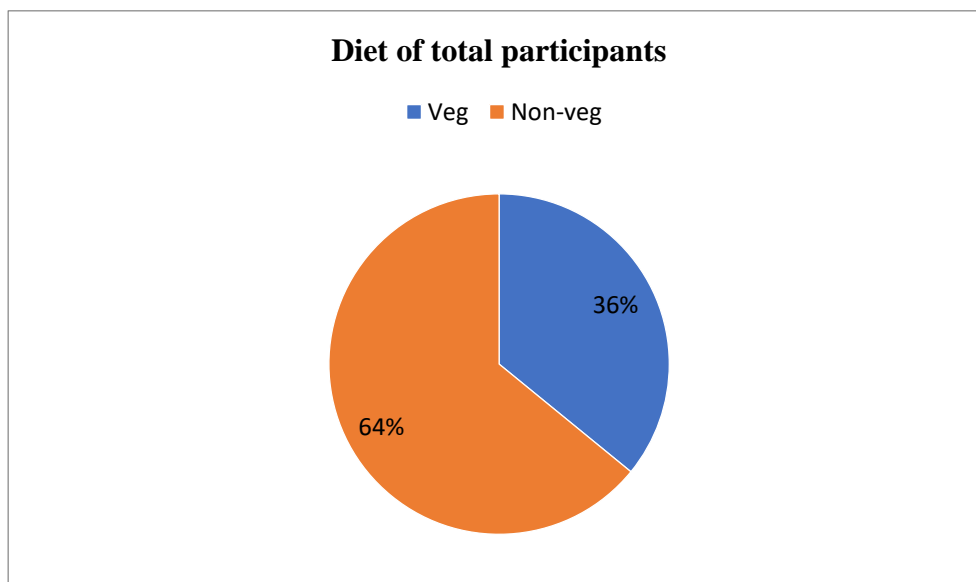
Diet of total participants

■ Veg   ■ Non-veg

[Pie chart: 36%, 64%]

Figure 34: Diet of total participants

<u>Blood Pressure</u>:Out of 67 participants 94% registered with blood pressure within normal range, 6% have high blood pressure.

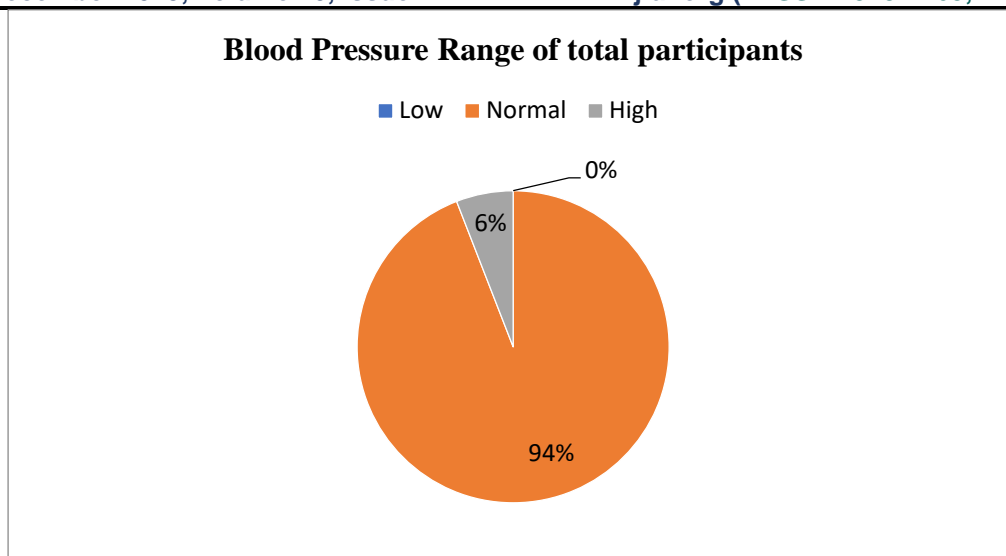**Blood Pressure Range of total participants**

Figure 35: Blood Pressure Range of total participants

<u>Blood Sugar</u>: Out of 67 participants, all of the participants displayed normal blood sugar levels.

Discussion

The prevalence of obesity and underweight is increasing continuously worldwide, affecting all ages, sexes, races and becoming major risk factor for non-communicable disease. This was a cross-sectional descriptive study, where we assessed BMI, dietary habits,physical exercise, blood sugar and blood pressure among the students and faculty of COETH.

Comparison of vegetarian and nonvegetarian diet shows that vegetarian diets are usually rich in carbohydrates, dietary fibre, folic acid, vitamin C, vitamin E, and magnesium and relatively low in protein, saturated fat, retinol, vitamin B12, Zinc. Higher intake of dietary fibre and lower intake of animal fat can reduce body mass index. In the study it is also found that participants with higher BMI have high BP and blood sugar as well. In the present study, body mass index were found to be higher in non vegetarian than vegetarians.

In our study we observe that the faculty participants have higher percentage of overweight. This can be due to the sedentary lifestyle, lesser physical activities, etc.Only about 11% of total faculty population spent 30min or more for physical activities.

Food production students displayed highest 54% of abnormal BMI[both underweight and overweight] grades. This can be due to irregular duty pattern; 12-16 working hours on daily basis, nil or very less physical activities, diet about 75% of food production population eat non vegetarian diet, etc.

It is observed that the participants of fitness and wellness had very good overall health status in our cross sectional study as compare to other participants i.e. 75% of total participants have normal BMI, 75% of total population of fitness and wellness perform physical activities more than 30 min on daily basis, and about more than 60% participants eat vegetarian diet.

Comparison Table

Domain	BMI	Exercise	DIET	BP	RBS
FP	47% Normal	54% 30 min. or more	25% vegetarian	96% Normal	100% Normal
FB	62% Normal	31% 30 min. or more	31% vegetarian	92% Normal	100% Normal
HOPS	67% Normal	11% 30 min. or more	44% vegetarian	100% Normal	100% Normal
FW	75% Normal	75% 30 min. or more	62% vegetarian	100% Normal	100% Normal
FACULTY	56% Normal	11% 30 min. or more	56% vegetarian	78% Normal	100% Normal

Table 8: Table of comparison

Conclusion

This study highlights the fact that superior knowledge only about healthy dietary habits does not necessarily result into better practices. Programmes need to be focusing on improving time management skills of students are essential. They need to be encouraged to participate in physical exercise, especially sports, athletics, and other outdoor activities. Further studies should be undertaken to identify specific barriers among students in practicing healthy dietary habits and come up with workable solutions. Improvement in dietary habits and Nutrition education is required including counselling on skipping meals and consumption of snacks. Among non-vegetarians body mass index was found to be higher. Regular physical exercise and balanced diet should be followed to prevent overweight and obesity.

Strength

The participants resided in an in-house environment during the study. It means that they followed a similar type of diet pattern and daily routine.

Limitation

We conducted this study over a limited sample size in a single institution. Our study design didn't permit the measurement of association between variables. Further studies with larger sample size at multiple institutes shall be carried for better understanding of BMI and its relationship with other heath indicators among students and professionals.

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