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The interplay between mental health disturbances, substance use, and dietary patterns in young adults

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Abstract

Stress and increased education are two factors that put college students' mental health at danger. Substance abuse, mental health problems, and dietary status are related in ways that have an impact on cumulative effects as well as individual health consequences. For a better campus atmosphere, preventative interventions like mental health care and nutrition education are essential. Chronic diseases such as obesity, diabetes, cardiovascular disease, and cancer can be prevented by increasing public awareness of healthy eating practices and including important nutrients. Having an understanding of the connection between mental health, substance abuse, and nutrition can aid in the implementation of preventative measures.

Objective: The primary objective of this study was to thus this study to assess nutritional status among the youth and assess the severity of mental health disturbances and substance use among youth.

Methodology: The study was an observational study, approved by the IEC, involving 365 subjects selected from a population pool based on inclusion and exclusion criteria. Participants were informed of the study's purpose and consent was obtained. Data was collected using tools like DASS-21 and recorded on a data collection form or Google Sheet. The collected data was then analyzed in Microsoft Excel. The study aimed to understand the population and provide valuable insights into the population's health and well-being.

Results: The study reveals that 53% of women are more nutritionally vulnerable than men, with lower intake of fruits, vegetables, dairy products, fish, and eggs. Women are also more likely to miss meals, skip breakfast, and consume fewer servings of fruits and vegetables daily. They also have lower physical activity levels, which are crucial for maintaining good nutrition. The study emphasizes the importance of nutrition for overall health and well-being, and how gender affects access to nutritious foods. Women should prioritize obtaining essential micronutrients and proteins from various sources, such as fruits and vegetables, dairy and fish, and physical activity

Keywords: Mental health disturbances; Depression; Stress; Anxiety; Substance use; Alcohol; Smoking; Cigarettes

1. Introduction

College students are at risk for a variety of mental health problems due to the stress of college life. Many studies have shown that higher levels of education are associated with better overall health. The relationship between nutrition, substance use, and mental health problems in college students interact to create individual health outcomes, as well as their cumulative impact on the overall health of college students. And the importance of preventative measures such as nutrition, substance abuse education, and mental health services to create a healthier campus environment. Today's society is looking for answers to questions such as: What are the most common forms of substance use among college

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students? What is the nature of the relationship between nutritional status and mental health? What factors are associated with increased risk of mental health problems among college students who use substances?

The UN Secretariat uses the terms youth and young people interchangeable to mean age 15-24 with the understanding that member states and other entities use different definitions.[1] Youth is a significant period of transition which is often measured by age in terms of education and employment, yet it is also a vibrant and dynamic period in life which manifests itself differently in individuals as they progress from childhood dependence to independence in adulthood. Therefore, it is essential to understand the broad context in which youth is defined and appreciate its nuances in order to address issues related to this critical period of growth and development.[1] There is no unified international definition of the young age group. The United Nations, however, defines "youth" as people who are between the ages of 15 and 24 for statistics reasons. The population was 1,407,563,842 as of the World Population Prospects' 2022 update. In India, more than 50% of people are under 25, and more than 65% are under 35. In 2021, youth (aged 15 to 29) made up 27.2 percent of the population; by 2036, that percentage is predicted to drop to 22.7. An estimated 29% of the population is considered to be under the age of 18. Bengaluru has 21.73% of the state's youth, which is the largest percentage.

In order to properly evaluate college students' nutrition, it is crucial to take into account their use of substances and mental health issues, both of which have long been recognized as serious health problems among college students. Nutrition knowledge is a critical factor in determining the health and wellbeing among the college students, and it is essential to have a comprehensive understanding of concepts related to diet, health, and disease in order to make informed decisions about nutrition and health.[2] Nutrition knowledge is defined as knowledge of concepts and processes related to nutrition and health, including knowledge of diet and health, diet and disease, foods representing major sources of nutrients, dietary guidelines and recommendations. By understanding the effects of food on health, we are better able to make informed decisions about diets and health. Nutrition knowledge also plays an important role in raising awareness of healthy eating habits, helping to ensure the college students have the best possible health.[3][4]

The importance of nutrition knowledge is especially apparent in current food environment, where unhealthy diets and lifestyles are becoming increasingly common place. In order to reduce the risk of developing chronic diseases, such as obesity, diabetes, cardiovascular disease, and cancer, students must be educated about the benefits of a balanced, nutritious diet. Additionally, students must understand which foods are the best sources of essential nutrients, and how to incorporate these foods into their daily diets. Without this knowledge, students may unknowingly choose foods that are low in nutrients or may be unaware of the health benefits of certain foods.[4]

Understanding the health and wellbeing of young adults depends increasingly on our understanding of the dietary patterns of college students who live at or away from home. Studies have shown that college students who live away from home tend to eat more unhealthy meals, such as fast food, than those who reside at home with their parents. This could be because college students living on their own sometimes lack the time and finances to shop for and prepare healthy meals. As a result, college students who live away from home might be more likely to develop chronic diseases like diabetes and obesity. Additionally, college students who live at home may have easier access to a variety of wholesome foods.[5] Numerous factors affect how students behave while they eat and how much food they consume. The primary determinants of students' eating behavior and dietary intake were found to be personal factors (cooking abilities, food preferences, food taboos, knowledge, and perceptions), societal factors (peer pressure and social norms), university-related factors (campus culture and exam frequency), and environmental factors (access to cooking facilities and resources, as well as food prices).[6]

The World Health Organization (WHO) conceptualizes mental health as a “state of wellbeing in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community”. Mental disorders and psychoactive substance-related disorders are highly prevalent throughout the world and are major contributors to morbidity, disability, and premature mortality. However, the resources allocated by countries to tackle this burden are insufficient, are inequitably distributed, and, at times, inefficiently used. Together, this has led to a treatment gap that, in many countries, is more than 70%. The stigma, social exclusion, and discrimination that occur around people with mental disorders compound the situation.[7] There are several factors which affects the mental health of the students. The psychological factors, such as perfectionism, low self-esteem, and pessimistic thinking, are the most commonly identified risk factors. Academic factors, such as fear of failure, high academic demands, study load, lack of knowledge about how to manage academic stress, and competing priorities, are also important risk factors. Biological factors, such as sleep deprivation, physical health, and genetic predispositions, were also found to have significant impact on students' mental health. Lifestyle factors, such as substance use, smoking, and dietary habits, have also been identified as significant contributors to stress, anxiety, and depression. Social and financial factors, such as lack of social support, family conflict, and financial insecurity, were also found to have significant impact on mental health. The findings of this review suggest that university students in

developed and developing countries are at risk of experiencing stress, anxiety, and depression due to a wide variety of risk factors. Mental health professionals, university faculty and staff, and family and friends can play a critical role in identifying and addressing these risk factors in order to reduce the prevalence of stress, anxiety, and depression among university undergraduates.[8]

Substance abuse refers to the harmful or hazardous use of psychoactive substances, including alcohol and illicit drugs. One of the key impacts of illicit drug use on society is the negative health consequences experienced by its members. Drug use too puts an overwhelming budgetary burden on individuals, families and society. [9] The effects of substance use on the nutritional status of college students and the potential consequences are examined. Substance use is an issue faced by many college students, and abuse of alcohol and other substances can significantly impact the health of college students. This discusses the effects of substance use on nutritional status, and how this can lead to poor nutrition and a range of health problems. This will also consider the potential impact of substance use on the academic performance of college students. Substance use is a pervasive issue in college campuses and it has been linked to a range of health issues among students, including poor nutritional status. Substance use can negatively affect the body's ability to absorb nutrients, leading to malnutrition. Excessive alcohol consumption is associated with an inadequate intake of vitamins and nutrients, as the liver is essential to the digestion process. Furthermore, binge drinking can lead to dehydration, which can cause significant disruptions to the body's normal functioning, including inadequate absorption of nutrients. For example, alcohol consumption is linked to a higher risk of comfort eating, which involves consuming large quantities of unhealthy foods, such as high sugar and fat content snacks. This type of eating could lead to weight gain and exacerbate existing nutritional deficiencies. Furthermore, substance use can impair judgement and reduce inhibitory control, which could lead to increased risk-taking behavior, including increased consumption of junk food and inadequate food choices. These behaviors could contribute to an increased risk of overweight and obesity among college students.

Substance use can have a variety of negative physical and psychological impacts, which might affect academic performance. It is linked to lower academic performance among college students, according to recent studies. These can impair memory or concentration, depending on the amount used and the ability to make sound decisions can be compromised by substance use, which can lower academic performance. It is evident that substance use can significantly impact the nutritional status of college students, with a potential for malnutrition and poor academic performance. Understanding the issue of substance use and its effects on nutritional status and academic performance is essential in order to find potential solutions and reduce the risk of poor health outcomes among college students. Many factors contribute to poor nutritional status and mental health in young adults. There is a clear distinction between depressed and anxious people in the association between nutrition and adult mental health. Furthermore, meal intake differs between men and women with mental health issues. For instance, earlier research discovered that women with depression or anxiety eat more harmful foods overall than men with depression or anxiety. [10]

Intake of a well-balanced diet that provides all the necessary nutrients to satisfy the body's needs is referred to as having good nutritional status. One may say that such a person gets the best nourishment possible. An attentive, pleasant attitude, a normal weight for height, well-developed and firm muscles, the color of the eyelids and the membranes of the lips being reddish pink, a healthy layer of subcutaneous fat, a decent appetite, and great general health are all signs of good nutritional condition. A healthy nutritional state is also indicated by shiny hairs, smooth skin, clear eyes, an attentive expression, and firm flesh on a well-developed frame.[11]

This study aims to investigate the many ways that mental health issues and drug abuse impact nutrition and to examine the significance of integrating these elements in nutrition evaluations. First, we'll talk about how mental health issues like sadness and anxiety might affect college students' dietary habits. The impact of substance use on college students' nutrition will next be covered, including how alcohol and other drug use may do so. The relevance of adding drug use and mental health issues in nutrition evaluations among college students will be covered next, along with suggestions for best practices. Finally, this will look at possible treatments to deal with issues with nutrition among college students who have mental health issues and/or substance abuse.

2. Material and methods

This is a descriptive correlational study. The study duration was 6 months including Planning, Data collection, Interpretation & thesis writing. The study was conducted in Bengaluru. The study was conducted in subjects drawn from college students in Bengaluru, who had consented to the study. A total of 365 subjects fulfilling the inclusion and exclusion criteria were included in the study. The inclusion criteria were Individuals who are in age range of 18-24 and Individuals consented to the study. Exclusion criteria was Individuals with chronic illness. Source of data was Personal interview, Google forms. The following tools were employed to obtain information pertaining to the study:

- **Self-designed data collection form:** A data collection form was designed to collect sample demographic aspects, based on socio-demographic variables. It will also collect data concerning on mental health, stress and satisfaction factors. A validated form will be used to asses nutrition status.
- **DASS-21 Scale:** The Depression, Anxiety, and Stress Scale -21 items (DASS-21) is set of 3 scales designed to measure the emotional states of depression, anxiety, and stress. Each of the three DASS-21 scales contains seven items, divided into sub scales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of life, self -deprecation, lack of interest/involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety and subjective experience of anxious effect. The stress scale assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive and impatient. Scores for depression, anxiety, and stress are calculated by summing the scores for the relevant items.

2.1. Study Procedure

The study commenced after obtaining approval from the IEC. Subjects for the study were be identified by the investigators by conducting community visit, they were selected from the population pool based on the inclusion and exclusion criteria. the purpose of the study was explained to the participant and consent was obtained from them. The subjects were administered with the study tools to obtain relevant information. Relevant data was be recorded on the data collection form or was entered into a Google from and then in a Microsoft Excel sheet. The data so obtained was be segregated in a Microsoft excel sheet and appropriate analysis was be performed.

3. Results and discussion

The study was conducted in the subjects drawn from the population of Acharya Institutes who were fulfilling the inclusion criteria and had provided the informed consent to participate in the study.

3.1. Distribution of subjects by gender

Out of 365 subjects included in the study, the majority of the subject 190 (52.05%) were females. The percentage of males 175 (47.95%) included in the study were lesser than the males.

Table 1 Distribution of subjects by gender

Gender	No. of Subjects	Percentage
Male	175	47.95%
female	190	52.05%

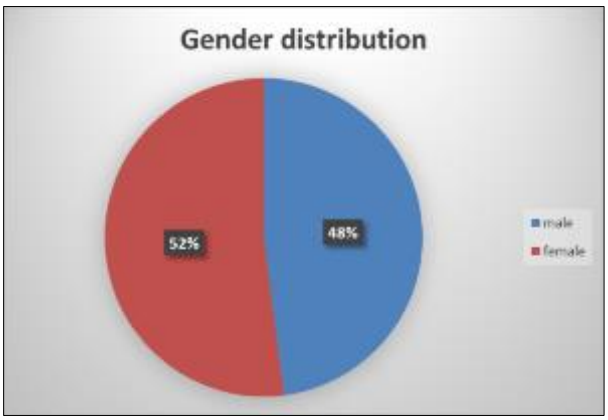

Figure 1 Distribution of subjects by gender

3.2. Distribution of depression, anxiety and stress scale-21 (dass-21) scores:

The Depression, Anxiety and Stress Scale-21 items (DASS-21) is a set of 3 scales designed to measure the emotional states of depression, anxiety and stress. Each of the three DASS-21 scales contains seven times, divided into sub scales with similar content. Scores for depression, anxiety and stress are calculated by summing the scores for the relevant items. The graph shows females have more mental health disturbances issues than men.

Table 2 Distribution of DASS-21 scores

DASS-21 LEVELS		Male
Depression	8.30	7.73
Anxiety	8.45	7.50
Stress	7.99	7.49

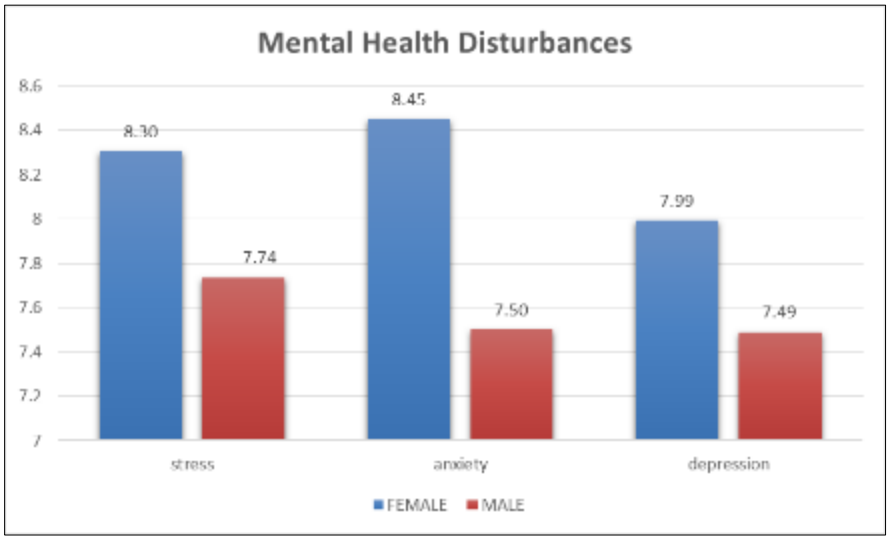

Figure 2 Distribution of DASS-21 Score

3.3. Distribution of substance use among the subjects:

Out of 365 subjects included in the study, the majority of the subject 190 (52.05%) were females. The percentage of males 175 (47.95%) included in the study were lesser than the males.

The graph indicates that there are more non users than regular users, female (139) and males (103). Females are more into smoking than men whereas men are more into illicit drugs and alcohol use.

Table 3 Distribution of substance use among subjects

	smoking	illicit drugs	alcohol	non users
Female	24	2	26	139
Male	18	3	50	103

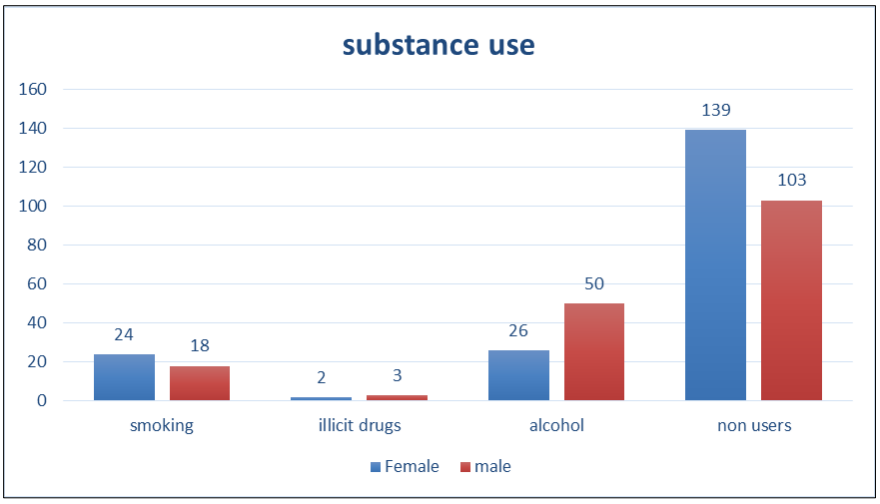

Figure 3 Distribution of substance use among subjects

3.4. Factors affecting nutrition status of youth

3.4.1. Corresponding to mental health disturbances:

Stress

One of the primary ways in which stress affects nutrition is through altered eating patterns. Individuals experiencing stress may exhibit changes in appetite, leading to either increased or decreased food intake. Stress can trigger emotional eating, characterized by a preference for high-calorie, comfort foods, potentially contributing to weight gain. Conversely, some individuals may lose their appetite during stressful periods, leading to inadequate nutrient intake and potential nutritional deficiencies.

Table 4 Distribution of stress v/s nutrition status

Nutrition status	with stress	without stress
proper nutrition	195	23
improper nutrition	134	13

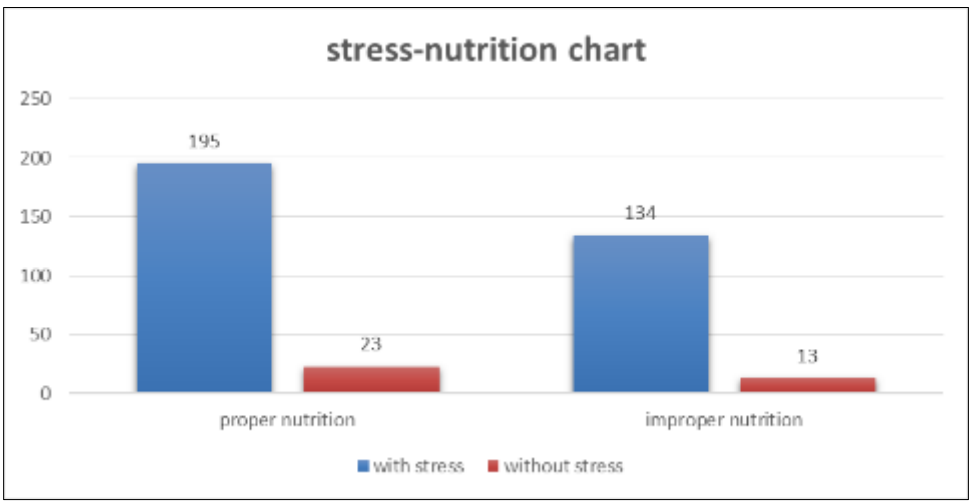

Figure 4 Distribution of stress v/s nutrition status

This graph indicates that nutrition status is not much affected by stress occurring among the subjects.

To assess this factor Mann-Whitney u test was done.

Table 5 Mann-Whitney u test table to assess the correlation between stress and nutrition

Sample 1	Sample 2	S1 Values	S1 Rank	S2 Values	S2 Ranks
0	7	0	18.5	0	18.5
11	8	0	18.5	0	18.5
4	4	0	18.5	0	18.5
11	14	0	18.5	0	18.5
3	0	0	18.5	0	18.5
0	6	0	18.5	0	18.5
1	0	0	18.5	0	18.5
0	3	0	18.5	0	18.5
8	1	0	18.5	0	18.5
0	1	0	18.5	0	18.5
3	2	0	18.5	0	18.5
5	4	0	18.5	0	18.5
1	2	0	18.5	0	18.5
7	6	1	45	0	18.5
1	0	1	45	0	18.5
11	3	1	45	0	18.5
4	4	1	45	0	18.5
3	10	1	45	0	18.5
2	6	1	45	0	18.5
3	0	1	45	0	18.5
6	1	1	45	0	18.5
8	7	2	63	0	18.5
0	19	2	63	0	18.5
2	5	2	63	1	45
2	7	2	63	1	45
5	10	2	63	1	45
9	7	2	63	1	45
7	3	2	63	1	45
2	3	2	63	1	45
7	8	2	63	1	45
11	0	2	63	1	45
13	14	2	63	1	45
2	10	2	63	2	63

0	9	2	63	2	63
3	11	3	83.5	2	63
2	4	3	83.5	2	63
12	17	3	83.5	2	63
2	7	3	83.5	2	63
5	1	3	83.5	3	83.5
5	6	3	83.5	3	83.5
8	5	3	83.5	3	83.5
11	4	3	83.5	3	83.5
11	6	3	83.5	3	83.5
9	8	3	83.5	3	83.5
7	7	3	83.5	3	83.5
11	9	4	102.5	3	83.5
9	14	4	102.5	3	83.5
1	3	4	102.5	3	83.5
10	15	4	102.5	3	83.5
17	13	4	102.5	4	102.5
13	4	5	119.5	4	102.5
6	6	5	119.5	4	102.5
5	6	5	119.5	4	102.5
7	1	5	119.5	4	102.5
10	11	5	119.5	4	102.5
0	12	5	119.5	4	102.5
0	3	5	119.5	4	102.5
3	0	5	119.5	4	102.5
1	0	5	119.5	4	102.5
1	1	5	119.5	4	102.5
6	5	5	119.5	5	119.5
7	3	6	139.5	5	119.5
7	4	6	139.5	5	119.5
8	12	6	139.5	5	119.5
12	1	6	139.5	5	119.5
6	0	6	139.5	5	119.5
1	0	6	139.5	5	119.5
5	0	6	139.5	6	139.5
7	21	6	139.5	6	139.5
5	3	6	139.5	6	139.5
12	18	6	139.5	6	139.5

2	0	6	139.5	6	139.5
3	15	7	165.5	6	139.5
10	0	7	165.5	6	139.5
14	0	7	165.5	6	139.5
0	2	7	165.5	6	139.5
4	9	7	165.5	6	139.5
11	0	7	165.5	6	139.5
8	7	7	165.5	7	165.5
6	6	7	165.5	7	165.5
3	13	7	165.5	7	165.5
6	0	7	165.5	7	165.5
11	7	7	165.5	7	165.5
2	10	7	165.5	7	165.5
8	7	7	165.5	7	165.5
2	7	7	165.5	7	165.5
6	6	7	165.5	7	165.5
1	7	8	189	7	165.5
8	2	8	189	7	165.5
6	11	8	189	7	165.5
7	2	8	189	7	165.5
14	9	8	189	7	165.5
7	7	8	189	7	165.5
7	11	8	189	8	189
0	14	8	189	8	189
14	16	8	189	8	189
8	16	8	189	8	189
0	15	8	189	9	206.5
18	12	8	189	9	206.5
8	17	8	189	9	206.5
0	12	9	206.5	9	206.5
5	15	9	206.5	9	206.5
3	1	9	206.5	9	206.5
16	7	9	206.5	9	206.5
14	7	9	206.5	10	223.5
13	13	9	206.5	10	223.5
16	7	9	206.5	10	223.5
12	3	9	206.5	10	223.5
13	6	9	206.5	10	223.5

16	4	9	206.5	10	223.5
13	1	9	206.5	10	223.5
18	9	10	223.5	10	223.5
8	5	10	223.5	10	223.5
2	5	10	223.5	11	248
0	4	10	223.5	11	248
2	3	10	223.5	11	248
5	0	10	223.5	11	248
8	10	10	223.5	11	248
7	0	11	248	11	248
4	12	11	248	11	248
4	4	11	248	11	248
3	17	11	248	11	248
6	0	11	248	11	248
3	4	11	248	11	248
2	10	11	248	11	248
5	5	11	248	11	248
7	11	11	248	11	248
5	0	11	248	11	248
16	0	11	248	12	274.5
6	0	11	248	12	274.5
9	0	11	248	12	274.5
6	2	11	248	12	274.5
15	14	11	248	12	274.5
8	16	11	248	12	274.5
7	8	11	248	12	274.5
14	6	11	248	12	274.5
11	5	12	274.5	12	274.5
11	3	12	274.5	12	274.5
9	12	12	274.5	13	293
9	12	12	274.5	13	293
10	11	12	274.5	13	293
9	11	12	274.5	13	293
11	11	12	274.5	13	293
11	11	12	274.5	13	293
11	11	12	274.5	14	309
11	11	12	274.5	14	309
11	13	13	293	14	309

10	12	13	293	14	309
9	13	13	293	14	309
13	10	13	293	14	309
13	11	13	293	14	309
13	10	13	293	15	322.5
12	18	13	293	15	322.5
11	14	13	293	15	322.5
12	21	13	293	15	322.5
10	19	13	293	15	322.5
16	16	13	293	15	322.5
18	15	14	309	15	322.5
15	17	14	309	15	322.5
18	15	14	309	16	334.5
18	0	14	309	16	334.5
18	18	14	309	16	334.5
14	15	14	309	16	334.5
16	14	14	309	17	344.5
16	18	14	309	17	344.5
16	15	15	322.5	17	344.5
19	9	15	322.5	17	344.5
15	11	15	322.5	18	354.5
18	9	15	322.5	18	354.5
18	11	16	334.5	18	354.5
17	10	16	334.5	18	354.5
14	13	16	334.5	19	362
14	12	16	334.5	19	362
17	11	16	334.5	21	364.5
10	12	16	334.5	21	364.5
13		16	334.5		
11		16	334.5		
13		17	344.5		
15		17	344.5		
12		17	344.5		
7		17	344.5		
17		18	354.5		
9		18	354.5		
12		18	354.5		
12		18	354.5		

12		18	354.5		
8		18	354.5		
13		18	354.5		
9		18	354.5		
9		19	362		

Here, Sample 1 refers to Stress and Sample 2 refers to Nutrition. Mann-Whitney u test was done on this test to assess the correlation between stress and nutrition and the Z-Score is 1.14246. The p-value is .25428. The result is not significant at $p < 05$.

Depression

Table 6 Distribution of depression v/s nutrition status

Nutrition status	with	without
proper nutrition	193	25
improper nutrition	124	23

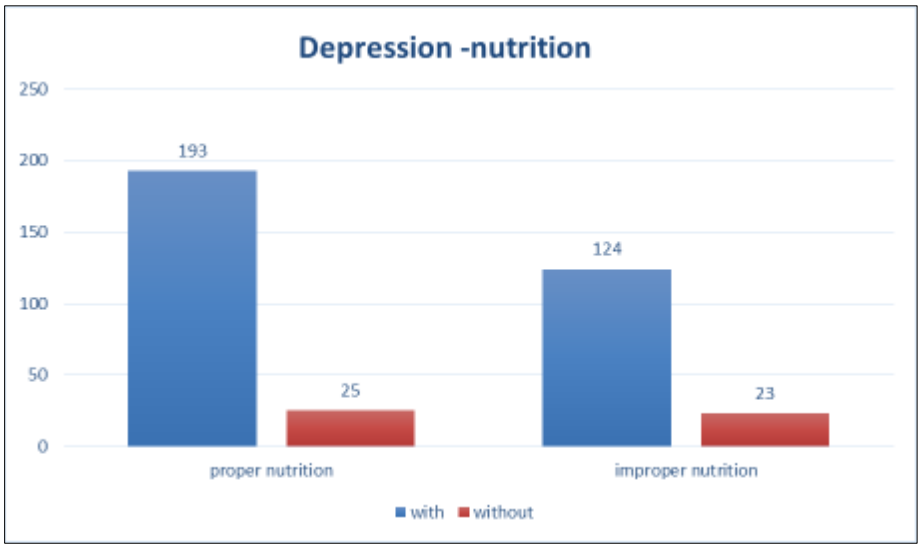

Figure 6 Distribution of depression v/s nutrition status

One of the hallmark manifestations of depression affecting nutrition is changes in appetite. While some individuals may experience an increase in appetite, often leading to overeating and potential weight gain, others may undergo a significant decrease in appetite, resulting in reduced food intake and unintentional weight loss. These alterations in eating patterns can compromise the nutritional status of individuals grappling with depression.

This graph indicates that nutrition status is not much affected by depression occurring among the subject

Table 7 Mann-Whitney u test table to assess the correlation between depression and nutrition

Sample1	Sample2	S1 values	S1 rank	S2 value	S2 rank
1	7	0	24.5	0	24.5
4	6	0	24.5	0	24.5

2	1	0	24.5	0	24.5
10	14	0	24.5	0	24.5
10	0	0	24.5	0	24.5
0	5	0	24.5	0	24.5
0	1	0	24.5	0	24.5
0	3	0	24.5	0	24.5
10	0	0	24.5	0	24.5
0	3	0	24.5	0	24.5
2	5	0	24.5	0	24.5
5	5	0	24.5	0	24.5
1	1	0	24.5	0	24.5
11	7	0	24.5	0	24.5
5	2	0	24.5	0	24.5
11	1	0	24.5	0	24.5
1	8	0	24.5	0	24.5
0	5	0	24.5	0	24.5
0	5	0	24.5	0	24.5
2	0	0	24.5	0	24.5
8	2	1	60	0	24.5
7	10	1	60	0	24.5
0	17	1	60	0	24.5
4	9	1	60	0	24.5
10	7	1	60	0	24.5
2	10	1	60	0	24.5
8	14	1	60	0	24.5
7	5	1	60	0	24.5
3	0	1	60	1	60
3	10	1	60	1	60
2	3	1	60	1	60
17	13	1	60	1	60
1	10	2	84	1	60
2	8	2	84	1	60
1	11	2	84	1	60
0	4	2	84	1	60
7	16	2	84	1	60
0	11	2	84	1	60
2	1	2	84	1	60
0	6	2	84	2	84

4	2	2	84	2	84
12	2	2	84	2	84
11	3	2	84	2	84
9	9	2	84	2	84
7	3	2	84	2	84
2	8	2	84	2	84
12	12	2	84	2	84
0	0	2	84	3	104.5
10	10	2	84	3	104.5
14	13	3	104.5	3	104.5
12	4	3	104.5	3	104.5
6	3	3	104.5	3	104.5
2	6	3	104.5	3	104.5
7	0	3	104.5	3	104.5
8	10	3	104.5	3	104.5
0	9	3	104.5	3	104.5
0	5	4	118	4	118
3	0	4	118	4	118
1	0	4	118	4	118
1	0	4	118	4	118
2	6	4	118	5	133
10	0	4	118	5	133
10	7	4	118	5	133
6	9	5	133	5	133
5	1	5	133	5	133
3	1	5	133	5	133
2	0	5	133	5	133
4	0	5	133	5	133
7	21	5	133	5	133
2	0	5	133	5	133
11	19	6	152	5	133
1	0	6	152	5	133
2	20	6	152	6	152
15	0	6	152	6	152
14	0	6	152	6	152
6	0	6	152	6	152
5	6	6	152	6	152
13	0	6	152	6	152

16	5	7	173.5	6	152
7	6	7	173.5	6	152
6	12	7	173.5	6	152
7	0	7	173.5	6	152
2	6	7	173.5	6	152
1	10	7	173.5	7	173.5
8	8	7	173.5	7	173.5
0	7	7	173.5	7	173.5
4	10	7	173.5	7	173.5
0	3	7	173.5	7	173.5
9	3	7	173.5	7	173.5
3	6	7	173.5	7	173.5
7	0	7	173.5	7	173.5
18	6	7	173.5	8	191.5
7	5	7	173.5	8	191.5
1	8	7	173.5	8	191.5
0	19	8	191.5	8	191.5
14	15	8	191.5	8	191.5
7	13	8	191.5	8	191.5
1	15	8	191.5	9	206.5
7	11	8	191.5	9	206.5
4	16	8	191.5	9	206.5
0	12	9	206.5	9	206.5
7	16	9	206.5	9	206.5
1	4	9	206.5	9	206.5
14	5	9	206.5	9	206.5
11	6	9	206.5	9	206.5
14	15	9	206.5	9	206.5
19	2	9	206.5	9	206.5
12	2	10	227.5	9	206.5
11	11	10	227.5	10	227.5
18	7	10	227.5	10	227.5
14	0	10	227.5	10	227.5
15	9	10	227.5	10	227.5
10	2	10	227.5	10	227.5
5	4	10	227.5	10	227.5
0	11	10	227.5	10	227.5
2	1	10	227.5	10	227.5

3	1	10	227.5	10	227.5
6	8	11	252	10	227.5
12	3	11	252	10	227.5
6	14	11	252	10	227.5
4	0	11	252	10	227.5
2	11	11	252	10	227.5
5	0	11	252	11	252
6	7	11	252	11	252
0	5	11	252	11	252
3	7	11	252	11	252
7	10	11	252	11	252
6	0	11	252	11	252
16	0	11	252	11	252
0	1	11	252	11	252
9	0	11	252	12	275
5	2	11	252	12	275
19	13	11	252	12	275
7	17	11	252	12	275
2	0	12	275	12	275
14	6	12	275	12	275
13	1	12	275	12	275
12	5	12	275	12	275
11	9	12	275	13	292
11	10	12	275	13	292
13	9	12	275	13	292
12	9	12	275	13	292
11	11	12	275	13	292
12	13	12	275	13	292
12	12	12	275	13	292
9	10	12	275	13	292
11	14	12	275	14	307.5
11	12	13	292	14	307.5
12	12	13	292	14	307.5
12	13	13	292	14	307.5
14	12	13	292	14	307.5
14	13	13	292	14	307.5
11	19	14	307.5	15	321
11	14	14	307.5	15	321

8	21	14	307.5	15	321
11	20	14	307.5	15	321
17	17	14	307.5	16	331
16	17	14	307.5	16	331
15	17	14	307.5	16	331
20	18	14	307.5	16	331
20	0	14	307.5	17	342
17	17	14	307.5	17	342
14	16	14	307.5	17	342
16	14	14	307.5	17	342
18	17	15	321	17	342
15	15	15	321	17	342
18	9	15	321	17	342
16	10	15	321	18	350.5
16	9	15	321	19	356.5
19	10	16	331	19	356.5
18	9	16	331	19	356.5
14	13	16	331	20	361.5
14	10	16	331	20	361.5
17	11	16	331	21	364.5
9	12	16	331	21	364.5
13		16	331		
11		17	342		
12		17	342		
16		17	342		
9		17	342		
7		18	350.5		
15		18	350.5		
9		18	350.5		
10		18	350.5		
10		18	350.5		
11		19	356.5		
8		19	356.5		
13		19	356.5		
11		20	361.5		
12		20	361.5		

Here, Sample 1 refers to Depression and Sample 2 refers to Nutrition. Mann-Whitney u test was done to assess the correlation between nutritional status and depression The Z-Score is 1.05408. The p-value is .29372. The result is not significant at $p < .05$

3.4.2. Anxiety

Table 8 Distribution of anxiety v/s nutrition status

Nutrition status	with	without
proper nutrition	201	17
improper nutrition	128	19

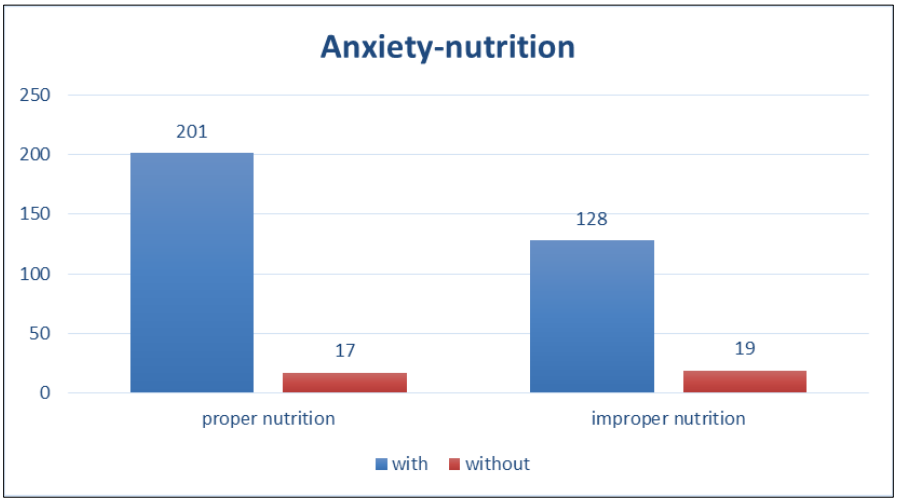

Figure 8 Distribution of anxiety v/s nutrition status

Anxiety, a prevalent and often debilitating mental health condition, extends its influence into various facets of an individual's life, including dietary habits and nutrition. The intricate relationship between anxiety and nutrition is a dynamic interplay that requires careful consideration, as the consequences of this interaction can significantly affect overall well-being.

This graph indicates that nutrition status is not much affected by anxiety occurring among the subjects as well as subjects are more prone to be in anxiety than stress and depression.

Table 9 Mann-Whitney u test table to assess the correlation between anxiety and nutrition

SAMPLE1	SAMPLE2	S1 VALUE	S1 RANK	S2 VALUE	S2 RANK
0	0	0	18.5	0	18.5
7	5	0	18.5	0	18.5
2	9	0	18.5	0	18.5
9	13	0	18.5	0	18.5
2	0	0	18.5	0	18.5
2	4	0	18.5	0	18.5
0	0	0	18.5	0	18.5
0	6	0	18.5	0	18.5
10	0	0	18.5	0	18.5

0	3	0	18.5	0	18.5
8	2	0	18.5	0	18.5
3	3	0	18.5	0	18.5
4	3	0	18.5	0	18.5
7	5	0	18.5	0	18.5
4	2	1	43	0	18.5
8	3	1	43	0	18.5
1	8	1	43	0	18.5
3	6	1	43	0	18.5
2	2	2	59	0	18.5
2	0	2	59	0	18.5
6	0	2	59	0	18.5
8	13	2	59	0	18.5
5	17	2	59	1	43
6	7	2	59	1	43
5	7	2	59	1	43
6	5	2	59	1	43
11	9	2	59	1	43
5	6	2	59	1	43
5	1	3	82	1	43
12	9	3	82	1	43
19	0	3	82	1	43
7	10	3	82	2	59
1	10	3	82	2	59
0	5	3	82	2	59
4	10	3	82	2	59
3	5	3	82	2	59
8	14	3	82	2	59
2	2	3	82	2	59
8	0	3	82	2	59
3	5	3	82	2	59
8	5	3	82	3	82
18	6	4	106.5	3	82
12	3	4	106.5	3	82
11	6	4	106.5	3	82
5	6	4	106.5	3	82
10	9	4	106.5	3	82
15	15	4	106.5	3	82

4	4	4	106.5	3	82
11	10	4	106.5	3	82
15	15	4	106.5	3	82
10	2	4	106.5	3	82
6	6	4	106.5	3	82
3	7	4	106.5	3	82
7	0	4	106.5	3	82
6	10	5	130	4	106.5
0	11	5	130	4	106.5
0	3	5	130	4	106.5
7	1	5	130	4	106.5
0	2	5	130	4	106.5
1	0	5	130	4	106.5
4	3	5	130	4	106.5
8	4	5	130	4	106.5
10	5	5	130	4	106.5
10	10	5	130	5	130
6	1	6	154	5	130
4	1	6	154	5	130
8	0	6	154	5	130
3	0	6	154	5	130
8	21	6	154	5	130
5	2	6	154	5	130
5	17	6	154	5	130
2	1	6	154	5	130
0	15	6	154	5	130
4	0	7	175.5	5	130
13	2	7	175.5	5	130
3	6	7	175.5	5	130
4	6	7	175.5	5	130
11	0	7	175.5	5	130
11	9	7	175.5	6	154
9	3	7	175.5	6	154
0	18	7	175.5	6	154
7	1	7	175.5	6	154
5	4	7	175.5	6	154
5	9	7	175.5	6	154
7	6	7	175.5	6	154

4	7	7	175.5	6	154
4	5	8	192	6	154
3	3	8	192	6	154
0	3	8	192	6	154
4	6	8	192	6	154
10	3	8	192	6	154
7	7	8	192	6	154
4	3	8	192	7	175.5
3	6	8	192	7	175.5
9	13	8	192	7	175.5
14	17	8	192	7	175.5
8	15	8	192	7	175.5
0	12	8	192	7	175.5
13	10	9	207	7	175.5
9	19	9	207	8	192
3	13	9	207	9	207
6	18	9	207	9	207
0	1	9	207	9	207
17	5	9	207	9	207
16	4	9	207	9	207
16	4	9	207	9	207
18	5	9	207	9	207
12	3	10	229.5	9	207
9	11	10	229.5	10	229.5
17	0	10	229.5	10	229.5
12	3	10	229.5	10	229.5
3	10	10	229.5	10	229.5
7	1	10	229.5	10	229.5
4	4	10	229.5	10	229.5
3	7	10	229.5	10	229.5
1	1	10	229.5	10	229.5
2	2	10	229.5	10	229.5
10	10	10	229.5	10	229.5
9	0	11	251.5	10	229.5
8	13	11	251.5	10	229.5
6	4	11	251.5	10	229.5
2	10	11	251.5	10	229.5
9	0	11	251.5	10	229.5

7	4	11	251.5	10	229.5
0	6	11	251.5	10	229.5
2	6	11	251.5	11	251.5
6	5	11	251.5	11	251.5
5	0	11	251.5	11	251.5
17	0	12	271.5	11	251.5
3	0	12	271.5	11	251.5
11	0	12	271.5	11	251.5
7	5	12	271.5	12	271.5
17	16	12	271.5	12	271.5
7	17	12	271.5	12	271.5
10	10	12	271.5	12	271.5
14	5	12	271.5	12	271.5
13	5	12	271.5	13	292.5
12	7	12	271.5	13	292.5
9	9	12	271.5	13	292.5
12	14	12	271.5	13	292.5
12	11	12	271.5	13	292.5
11	9	12	271.5	13	292.5
10	10	12	271.5	13	292.5
12	13	12	271.5	13	292.5
12	10	12	271.5	13	292.5
13	13	12	271.5	13	292.5
13	13	12	271.5	14	307.5
12	11	13	292.5	14	307.5
12	12	13	292.5	14	307.5
10	10	13	292.5	14	307.5
14	10	13	292.5	14	307.5
12	16	13	292.5	15	317
11	19	13	292.5	15	317
13	14	13	292.5	15	317
11	21	13	292.5	15	317
10	20	14	307.5	16	326.5
19	18	14	307.5	16	326.5
16	17	14	307.5	16	326.5
16	18	14	307.5	17	341
17	17	14	307.5	17	341
18	0	14	307.5	17	341

17	17	14	307.5	17	341
14	16	15	317	17	341
17	14	15	317	17	341
17	20	15	317	17	341
16	14	16	326.5	18	353.5
18	10	16	326.5	18	353.5
16	13	16	326.5	18	353.5
16	10	16	326.5	18	353.5
17	11	16	326.5	19	359.5
17	12	16	326.5	19	359.5
14	13	16	326.5	20	362.5
14	12	16	326.5	20	362.5
16	12	16	326.5	21	364.5
11	11	17	341	21	364.5
13		17	341		
12		17	341		
12		17	341		
16		17	341		
12		17	341		
7		17	341		
15		17	341		
13		17	341		
12		17	341		
12		18	353.5		
12		18	353.5		
8		18	353.5		
12		18	353.5		
9		19	359.5		
14		19	359.5		

Here, Sample 1 refers to Anxiety and Sample 2 refers to Nutrition. Mann-Whitney u test was done to assess the correlation between anxiety and nutrition status and the Z-Score is 1.94481. The p-value is .05238. The result is not significant at $p < .05$.

Substance use

Table 10 Distribution of substance use v/s nutrition status

Nutrition status	**drinking**	**smoking**	**illicit drugs**	**none**
proper nutrition	39	21	3	155
improper nutrition	37	21	1	87

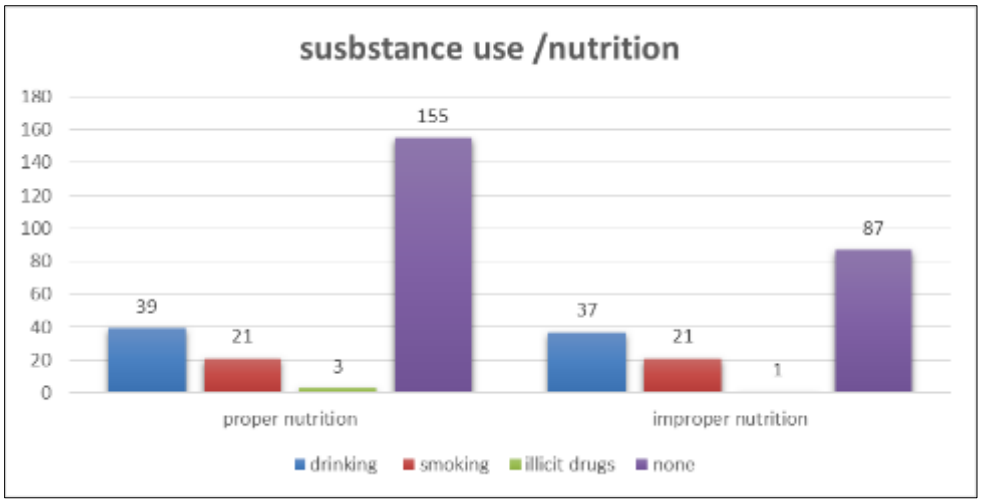

Figure 10 Distribution of substance use v/s nutrition stat

Substance use, encompassing the misuse of alcohol and illicit drugs, casts a profound shadow on various facets of an individual's life, including nutritional well-being. The intricate relationship between substance uses and nutrition is a dynamic interplay that necessitates careful consideration, as the consequences of this interaction can significantly affect physical health and overall well-being

This graph shows that most of the subjects are substance non-users (males and females)

Nutrition v/s substance use

Table 11 Distribution of nutrition status v/s substance use

nutrition	yes	no
proper nutrition	63	155
improper nutrition	60	87

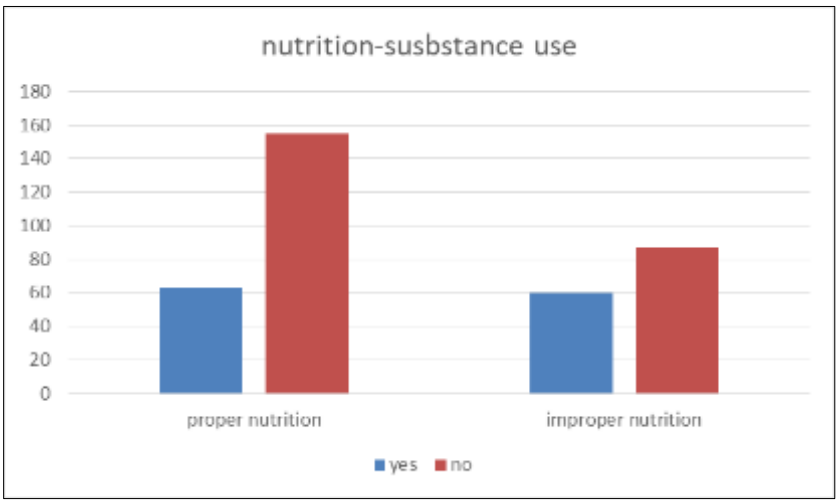

Figure 11 Distribution of nutrition status v/s substance use

In this table and graph indicates yes and no as substance user and non-users respectively

Chi-square test was done to assess the correlation between substance use and nutrition status and the chi-square statistic with Yates correction is 5.0602. The p-value is .024482. Significant at $p < .05$

Table 12 Nutrition status v/s substance use (observed values)

Gender	YES	NO	TOTAL
Female	63	155	218
Male	60	87	147
TOTAL	123	242	365

Table 13 Nutrition status v/s substance use (expected values)

Gender	AFFECTED	NOT AFFECTED	TOTAL
Female	73.46	144.54	218
Male	49.54	97.46	147
TOTAL	123	242	365

3.5. End result

Table 14 Distribution of nutrition status v/s the factors (Mental Health disturbances and substance use)

nutrition	substance user	substance non user	MHD	non MHD
proper nutrition	63	155	104	110
improper nutrition	60	87	76	71

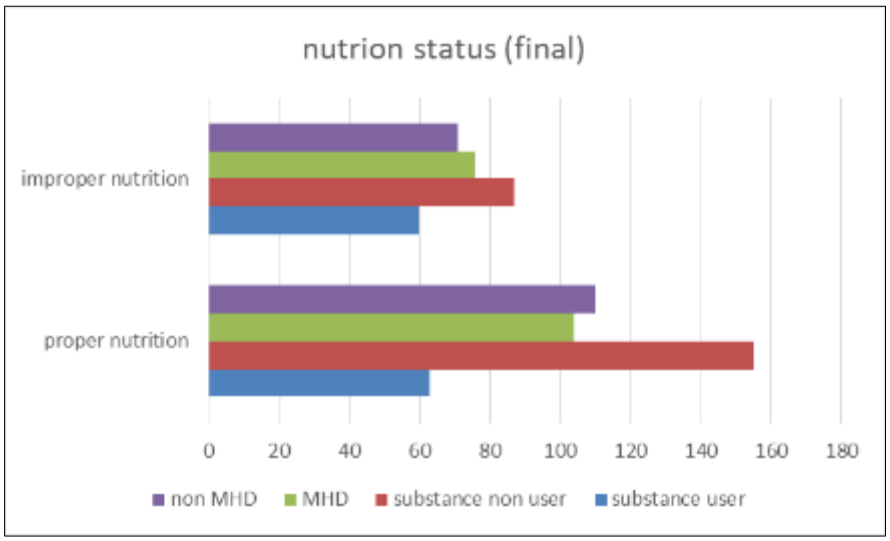

Figure 14 Distribution of nutrition status v/s the factors (mental Health disturbances and substance use)

This is all over distribution that shows which all factors i.e., mental health disturbances and substance use affects the most in subjects (both female and male).

4. Discussion

This study was conducted in Bengaluru and subjects drawn from college students in Bengaluru who were eligible as per the inclusion criteria and who was willing to provide informed consent to participate in the study. A total of 365 participants were included in the study, which spanned 3 months from, May 2023 to July 2023.

Out of the 365 subjects, the selected study population was distributed in the mean age range of 18-24, considering the students enrolled in various study programs starting from first year to final year. This particular age range was considered on the idea that late adolescence and emerging adulthood are transitional periods marked by major physiological and psychological changes, including elevated stress, as described by Georgia Barbayannis et al., (2022).

The subjects were categorized according to their age group, gender, educational status, intake of diet and dietary supplements, substance use and mental health status.

Of the 365 subjects who participated in the study, the majority were females 53% (n= 190) followed by males 47% (n=175).

Assessment of mental health disturbances among the subjects were carried out using DASS-21 scale. Considering females, they have scored 8.30, 8.45 and 7.99 for depression, anxiety and stress respectively, whereas males have scored 7.73, 7.50 and 7.49 for the same. Based on the results it was observed that Females experience more mental health disturbances than Males (as shown in table 2 and figure 2).

In a study conducted by Ruby R. Brougham, *et al* (2009) on 166 college students, coping mechanisms (self-help, approach, accommodation, avoidance, and self-punishment) and stressors (academics, finances, family, social, and everyday difficulties) were looked at. It was also looked into how coping mechanisms, particular stressors, and sex interacted. Based on a 5-factor updated COPE model, students completed an inventory of stress coping strategies and an assessment of stress (Zuckerman and Gagne Journal of Research in Personality, 37:169–204, 2003). According to the findings, college women than college males reported higher overall stress levels and more use of emotion-focused coping mechanisms. Men and women in college also reported using different coping mechanisms to deal with various stressors; nonetheless, for both sexes, emotion-focused coping mechanisms were more common than problem-solving techniques. These findings have consequences for stress design.[13]

Study conducted by Larson EA, *et al* (2006) looked at the relationship between stress and engagement and activity levels. There was an overrepresentation of academic tasks (41%), as compared to the general frequency. Students who perceived a high level of complexity in an activity were more likely to report feeling stressed; nevertheless, social situations and low complexity activities could equally cause stress.[12]

Considering the use of substance among the subjects using questionnaires, substances were assessed and categorized as smoking, drinking, illicit drugs and the subjects who did not fall in any of the given category were marked as substance non users (as shown in table.7 and figure.7). When assessed, in females, the habit of drinking was found to be the most (n=26), followed by smoking (n=24). The least number of subjects were found to be consuming illicit drugs (n=2) whereas in men, the habit of drinking was found to be the most (n=50), followed by smoking (n=18). The least number of subjects were found to be consuming illicit drugs (n=3). In case of substance non users, 139 females and 103 males were identified. Results demonstrated that subjects participated in the study are more into drinking than smoking and other substance use. According to male and female categorization, it was seen that females smoked more than men whereas men drink more (as shown in table.3 and figure.3). In a study conducted by Murphy JG, et al., (2005) it was concluded that how alcohol use and problems linked to it affected a number of life satisfaction (LS) dimensions in a sample of 353 college students. In women, alcohol consumption was linked to lower levels of overall contentment and future satisfaction expectations. The drinking habits of female students had little bearing on their social, familial, romantic, or intellectual success. Men's drinking was unrelated to other LS variables but had a positive, curvilinear relationship with social fulfilment. Reduced LS was linked to alcohol-related issues in both men and women. These results imply that young people' alcohol consumption is linked to both favorable and unfavorable consequences, some of which may be gender-specific.[14]

An attempt was made to understand the relation between mental health and nutrition status among the study subjects involved as it is believed that there is a substantial positive link with adherence to the diet and a significant negative correlation with knowledge of nutrition and physical status, anxiety, and depression levels. The same was described in the study done by Junqueira-Goncalves MP et al., (2023), where they have also concluded that the primary stated

obstacles to adopting a healthier diet were cost, time, convenience, and the lack of healthy options in campus restaurants and canteens. Despite having little understanding of how nutrition may affect mental health, the majority of students expressed a strong desire to learn more about nutrition in order to enhance both their physical and mental well-being. [15]

Analyzing factors affecting nutrition status of youth, corresponding to mental health disturbances, Stress was taken as the first parameter where,195 subjects were found to have proper nutritional habits and 134 subjects had improper nutritional habits(as show in table.4 and figure.4). Considering Depression, 193 subjects were found to have proper nutritional habits and 124 subjects had improper nutritional habits (as show in table .5 and figure.5) Final factor being, anxiety, 201 subjects were found to have proper nutritional habits and 128 subjects had improper nutritional habits(as show in table.6 and figure.6).

Comparison of mental health disturbances with nutritional status indicated that nutrition status is not much affected by mental health occurring among the subjects. Mann-Whitney u test was done on the data to assess the correlation between stress, depression and anxiety with nutrition status and a non-significant relation was identified comparing the p- values.

In the attempt made to understand the relation between substance use and nutrition status among the study subjects involved, out of substance users 63 subjects were found to have proper nutritional habits whereas 60 subjects were following an improper nutritional habit. Chi-square test was done to assess the correlation between substance use and nutrition status and the chi-square statistic with Yates correction is 5.0602. p-value is .024482, which indicates that there is a significant relation between nutritional status and substance use. This assumption is similar to the study one by Năsui BA et al., (2021) where, they have concluded that , drinking alcohol was found to have positive relation with fast food consumption. According to the study. addiction to drugs and unhealthy eating practices are two of the biggest public health issues facing young individuals starting college. Using multivariate statistical analysis, we assessed and statistically analyzed the relationship between alcohol use and lifestyle characteristics using a reliable online questionnaire. A total of 79.9% of the students who were enrolled in the study reported drinking alcohol. Alcohol intake was found to be positively correlated with gender ($p < 0.001$), amount of physical activity ($p = 0.009$), number of cigarettes ($p < 0.001$), and fast food consumption ($p < 0.001$).[16]

Addressing the complex interplay between mental health, substance use, and nutrition in youth requires a comprehensive and integrated approach. This may involve mental health interventions, substance use treatment, nutritional counselling, and support systems that consider the interconnected nature of these factors. Early intervention and holistic care can help break the cycle and promote positive health outcomes for young individuals.

5. Conclusion

A total of 365 participants were included in the study, which spanned 3 months from, May 2023 to July 2023 and the study reveals that the majority of subjects were under the influence of substance use and had improper nutritious lifestyle. Based on the results of mental health analysis, it was observed that Females experience more mental health disturbances than Males.

In the Assessment of nutritional status, participation of females (53%) are more than men (47%) with women being more likely to be nutritionally vulnerable than men.

It was identified that there was a substantial negative link of nutritional status, with stress, anxiety, and depression levels, thus an understanding was made that nutritional status is not affected with mental health.

In the attempt made to understand the relation between substance use and nutrition status among the study subjects involved

Mann-Whitney u test was done on the data to assess the correlation between stress, depression and anxiety with nutrition status and a non-significant relation was identified comparing the p- values.

The study highlights the importance of nutrition to overall health and well-being, and how gender can affect access to nutritious foods and nutrition status. For women, it is especially important to make sure that they are getting enough of the essential micronutrients and proteins from a variety of sources. This could include eating a variety of fruits and vegetables, increasing intake of dairy and fish, and increasing physical activity. Overall, it is clear that nutrition is an important factor in overall health and well-being, and that women are disproportionately affected by inadequate

nutrition status. It is important for women to prioritize nutrition in their lives and ensure that they are getting all the essential micronutrients and proteins they need for optimal health.

Limitation

This study has certain limitations.

- The heterogeneity of the study sample and the total number of samples collected could not be used to fully study the population they represent; in that we could only find few people from certain subsets This does not give us draw conclusive results regarding that population.
- This study does not actually measure or diagnose psychiatric disorders, it only measures and categorizes psychological distress. The scores of psychological distress do not equal disorder, it only shows that they are at greater risk for psychiatric disorders.
- The DASS-21 relies on individuals accurately and honestly reporting their own symptoms. However, people may understate or overstate their symptoms due to various reasons, such as social desirability bias or lack of insight into their own mental health.
- The interpretation of the scale can be subjective, as individuals may perceive and express their emotions differently. This subjectivity can affect the reliability and validity of the results.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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