

Association of Dietary Patterns with Depression, Anxiety, and Stress among Degree College Students in Central Karnataka

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Abstract:

Background: Dietary habits are a major aspect of people's lifestyles that influence health, morbidity and mortality. Patterns of food consumption and their relation to mental health have received some attention in research recently. Students pursuing a bachelor's or master's degree have greater freedom over their lifestyles while also being exposed to significant stress. This study was undertaken to discern college students' pattern of food consumption and its relation to mental health.

Objectives: (1) To determine the prevalence of depression, anxiety and stress; (2) To assess the association between dietary pattern and depression, anxiety and stress among degree students.

Materials and Methods: A cross-sectional survey was conducted at two select degree colleges in Davangere. Around 200 students were given self-administered questionnaires which included a Food Pattern and Frequency Questionnaire and the DASS 42-item scale. All statistical analyses were performed using SPSS 16.0.

Results: A total of 200 college students with a mean age of 18.8 years participated in the study. 53% of them were male. Consumption of sweet and salty junk food was more common among female students (mean scores 8.7 and 13.6 respectively) compared to their male counterparts (8.3 and 12.4). Students showed high levels of depression (76.5%), anxiety (66%) and stress (57.5%).

Conclusion: The results showed higher prevalence of depression, anxiety and stress compared to previous studies, and salty junk food consumption was positively associated with these states. Stress was significantly associated with consumption of sweet junk food.

Keywords: Diet Habits; Depression; Anxiety; Stress, Psychological; Fast Food; Snacks.

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Introduction

Mental illnesses are one among the leading causes of morbidity according to the Global Burden of Disease data, and have recently been known to significantly contribute to the number of life-years lost. [1,2] Some evidence also suggests that depression shares some common mechanisms with the development of cardiovascular disease. [3] According to the World Health Organization, around 25% of individuals worldwide develop at least one mental or behavioural disorder during their lifetimes. [4]

There is evidence that modifiable lifestyle factors, particularly one's diet, have a beneficial effect on the occurrence and recurrence of mental diseases including depression. [5,6] The association between mental health and dietary pattern can be evaluated by a variety of methods, such as focusing on single dietary components, dietary patterns or on single nutrients. [7] Depression is often related to appetite

changes. Increased intake of trans-fatty acids or the consumption of foods rich in trans fats, viz., fast food or bakery products, have been reported as contributors to higher depression risk. [8] Unhealthy food practices and diet habits could impose health risks later in life that could be passed on to the following generations. While carbohydrate ingestion has been hypothesized to relieve depressive moods, these effects should best be mediated through psychological factors rather than through the nutrient content of sweets. [9]

Several studies have concluded that poor nutritional habits are associated with the development of depression, stress and anxiety among young adults and college students. [7-9] Owing to the fact that these students who are under various forms of stress, have a greater say in terms of what they choose to eat over the child and adolescent populations, it is evident that there is a need to understand their

pattern of consumption of food groups and the prevalence of associated mental illnesses among them.

Objectives

The objectives of the study were:

1. To determine the prevalence of depression, anxiety and stress, and
2. To assess the association between dietary pattern and depression, anxiety, stress among Degree College students included in the study.

Material and Methods

A cross-sectional survey was conducted at two select degree colleges in Davangere city through a questionnaire that was developed in English. Approval of the study and data collection at the participating colleges took place in July 2022. The institutions included in the study were determined based on willingness to participate.

The protocol followed was the same across both colleges. 200 students were given a self-administered questionnaire towards the end of a course lecture. Students were informed about the objectives of the study and by completing the questionnaire they provided their informed consent to participate in the study. Participation was voluntary and anonymous. Withdrawal from the study was possible at any stage.

Assessment of Diet Patterns: Dietary intake was assessed by giving the students a Food Pattern and Frequency Questionnaire which assessed their pattern of consumption of cereals, fresh fruit, raw and cooked vegetables, salads, meat, fish, milk and milk products, sweet junk food, and salty junk food. These questions were framed keeping in mind the local dietary habits as well as what is frequently employed in similar research studies.

Assessment of Depression, Anxiety and Stress:

Depression, anxiety and stress were measured using the Depression, Anxiety and Stress Scale (DASS-42). The rating scale is as follows: 0 = Did not apply to me at all; 1 = Applied to me to some degree; 2 = Applied to me to a considerable degree; 3 = Applied to me very much.

Statistical Analysis: The analysis was done using SPSS 16.0 software. Descriptive data was presented using percentages. Odds ratio with 95% CI and Chi-squared test were determined for association.

Results

The mean age of the participants was 18.8 years among which 53% were male and 47% were female. Majority of the participants practiced Hinduism and were from urban areas. Most participants lived at home, whereas, 16% stayed in hostels. Around 28% of the students belonged to Class III socio-economic status according to Modified B. G. Prasad classification. Majority of the parents of these students were either illiterate or had only completed their primary schooling (details in Table 1).

The DASS-42 survey revealed that 153 (76.5%) participants had some degree of depression, while 132 (66%) and 115 (57.5%) participants had experienced anxiety and stress respectively. The majority of cases were of the mild to moderate category across all three conditions with 67%, 58% and 56% of the cases of depression, anxiety and stress being as such (see Table 2). Only 4%, 12% and 17% of the DASS-42 submissions turned up extremely severe results, and these participants were reached out to in order to ensure their safety and offer any help that may have been needed to deescalate their mental crises at the time of taking the questionnaire.

Table1: Socio-demographic characteristics of the study population

Variables	Number (n)	Percentage (%)	Variables	Number (n)	Percentage (%)
Age (in years)			Gender		
18-20	185	92.5	Male	106	53
21-27	15	7.5	Female	94	47
Residence			Place of living		
Urban	111	56	Day scholar	169	84
Rural	89	44	Hostelite	31	16
Type of Family			Socio-Economic Status		
Nuclear	173	87	Class I	27	13
Joint	27	13	Class II	14	7
Religion			Class III	49	24.5
Hindu	169	84.5	Class IV	56	28
Other	31	15.5	Class V	38	19
Father's Education			Mother's Education		
Illiterate	43	21.5	Illiterate	61	30.5
Primary school	65	32.5	Primary school	60	30
High school	54	27	High school	58	29

PUC/ Diploma	26	13	PUC/Diploma	14	7
Graduate and above	15	7.5	Graduate and above	7	3.5
Father's Occupation			Mother's Occupation		
Unemployed	8	4	Unemployed	153	76.5
Unskilled	34	17	Unskilled	20	10
Semi-skilled	29	14.5	Semi-skilled	1	0.5
Skilled	123	61.5	Skilled	25	12.5
Professional	6	3	Professional	1	0.5

Table 2: Prevalence of depression, anxiety and stress among the participants

Categories	Depression N (%)	Anxiety N (%)	Stress N (%)
Mild to Moderate	103 (67)	76 (58)	64 (56)
Severe	44 (29)	40 (30)	32 (28)
Extremely Severe	6 (4)	16 (12)	19 (17)
Total	153 (100)	132 (100)	115 (100)

The average scores for consumption of sweet and salty junk food were 8.64 and 13.12 respectively. Salty junk food was more commonly consumed by female students compared to males (13.6 vs. 12.4), as was the case with sweet junk food (8.7 vs. 8.3). Significant association was seen between sweet junk food consumption and stress. There was a positive association seen with the increased intake of salty junk food and depression, anxiety and stress, however, the results of statistical analysis were not significant.

Table 3: Association of junk food consumption with depression, anxiety and stress

		Sweet Junk food Consumption		Salt Junk food Consumption		Total
		>Average	<Average	>Average	<Average	
Depression	Present	87	66	88	65	153
	Absent	22	25	21	26	47
	Total	109	91	91	109	200
		OR: 1.49, 95% CI [0.77, 2.88] χ^2 : 1.46 p = 0.22		OR: 1.67, 95% CI [0.86, 3.23] χ^2 : 2.38 p = 0.12		
Anxiety	Present	69	63	74	58	132
	Absent	40	28	35	33	68
	Total	109	91	91	109	200
		OR: 0.76, 95% CI [0.42, 1.38] χ^2 : 0.77 p = 0.37		OR: 1.20, 95% CI [0.66, 2.16] χ^2 : 0.381 p = 0.53		
Stress	Present	56	59	67	48	115
	Absent	53	32	42	43	85
	Total	91	109	91	109	200
		OR: 0.57, 95% CI: 0.32-1.01 χ^2 : 3.67 p = 0.05		OR: 1.42, 95% CI: 0.81-2.51 χ^2 : 1.54 p = 0.21		

Discussion

This cross-sectional study was suggestive of a higher prevalence of depression (76.5%), anxiety (66%), stress (57.5%) among degree students today as compared to existing data. A 2018 study undertaken in New Delhi estimated a prevalence of merely 32%, 40% and 44% of depression, anxiety and stress among undergraduate students respectively. [10] Similarly, a study conducted in Brazil in 2017 found the prevalence of depression, anxiety and stress to be 35%, 37% and 47% in order. [11] While a similar study conducted in Odisha showed a prevalence of anxiety and stress of 66.9% and 53% which is very nearly the same as our findings, the prevalence of depression at 51% is far less in comparison. [12] The striking contrast between our study findings and that of previous research could be due to differences in sample size,

characteristics of the study population, lifestyle in the region, or simply the decline in mental health consequent to the changing times our current generation of youth is living in.

In the present study, it was noted that the majority of the students (69%) preferred to indulge in the consumption of varied junk foods, which was similar to the findings of a 2023 study conducted by Biswas et al. [13] that found 64% of graduate students opted for fast food when given the choice, and the results of another study conducted by Vaida et al. in Kashmir [14]. This trend was further corroborated by the results of a 2023 Northern Karnataka study that also showed a higher level (61.8%) of junk food consumption among college students. [15]

Our study described stress as being significantly associated with the consumption of sweet junk food, whereas, depression and anxiety failed to show any significant correlation to the same. Kandiah J. et al. found that the majority of female college students enrolled in their study (81%) experienced a change in appetite and were more likely to choose sweet junk food when feeling stressed. [16]

A cohort study conducted among Iranian adults in 2020 revealed a positive association between fast food/ fried food consumption and increased depressive/ stress symptoms. It also showed an inverse association between sweetened drinks consumption and depressive symptoms. [17]

People suffering from mood disorders often have poor quality diets which are low in fruits and vegetables but high in fat and sugar which is similar to the diet patterns seen in our study. [18] In a study conducted by Nitturi et al., women showed greater anxiety with higher levels of junk/ fast food consumption [19] which our findings are in agreement with.

This study throws light on the need to educate students about the relationship between mental disorders and food consumption, as well as on the relatively easy measures that can be taken to preserve their mental health by practicing diet control.

Conclusion

Our study showed a higher prevalence of depression, anxiety and stress among students pursuing a college degree compared to previous research. The results revealed a significant association between the occurrence of stress and the consumption of sweet junk food. Salty junk food consumption was rampant among the participants who were found to suffer from varying degrees of depression, anxiety and stress but the positive association failed to achieve statistical significance. All in all, programmes addressing mental health in the youth may stand to benefit by encouraging the consumption of healthier foods.

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