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The Association of Mind Diet Adherence with Depression, Anxiety and Stress Levels Among Young Adults

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Abstract

Introduction: Dietary habits significantly impact mental health, especially in young adults who are susceptible to poor eating patterns resulting from changes in their lifestyles. Recent studies indicate that eating patterns like the MIND diet could affect psychological health via biological processes such as reducing inflammation, regulating neurotransmitters, and managing oxidative stress. **Objectives:** This study aimed to evaluate compliance with the MIND diet and investigate its relationship with depression, anxiety, and stress in young adults. **Methodology:** Cross-sectional research was carried out with around 300 young adults aged 18–25 years utilizing a structured, self-administered online survey. Dietary consumption was measured with a validated Food Frequency Questionnaire (FFQ), and mental health was assessed using the DASS-21 scale. Data were examined with SPSS utilizing descriptive statistics, chi-square tests, and multifactorial analysis. **Results:** The findings showed that compliance with the MIND diet differed among participants. Greater adherence was linked to notably reduced stress levels, whereas connections with depression and anxiety were less prominent. Moreover, inadequate sleep quality and minimal physical activity were associated with increased psychological distress. **Conclusion:** The research indicates that following the MIND diet could enhance mental well-being, especially in decreasing stress levels among young adults.

Introduction:

Mental health disorders, particularly depression, anxiety, and stress, have become major public health concerns among young adults worldwide. This stage of life is

characterized by significant academic, social, and lifestyle transitions that often contribute to unhealthy dietary behaviors and increased psychological distress. University students are especially vulnerable because of irregular meal patterns, frequent consumption of processed and fast foods, inadequate intake of fruits and vegetables, and limited nutritional awareness. Emerging evidence from nutritional psychiatry suggests that dietary habits influence mental health through multiple biological mechanisms, including neurotransmitter synthesis, inflammation, oxidative stress, and gut-brain interactions. Consequently, nutrition has emerged as a modifiable lifestyle factor that may play an important role in promoting psychological well-being and preventing mental health disorders.

Recent studies have demonstrated that dietary patterns emphasizing fruits, vegetables, whole grains, legumes, fish, and healthy fats, particularly the Mediterranean and MIND diets, are associated with lower risks of depression, anxiety, and cognitive decline. In contrast, Western dietary patterns characterized by high consumption of processed foods, refined sugars, and saturated fats have been linked to poorer mental health outcomes. Despite growing evidence, limited research has investigated the relationship between adherence to the MIND diet and symptoms of depression, anxiety, and stress among young adults in developing countries. Therefore, the present study aims to assess adherence to the MIND diet and examine its association with depression, anxiety, and stress among young adults using the Depression, Anxiety and Stress Scale-21 (DASS-21).

Previous research consistently supports the association between dietary quality and mental health. Sarris et al. reported that balanced dietary patterns may reduce the risk of mental health disorders, while Mediterranean-style diets have been associated with a lower prevalence of depression. Studies have further shown that diets rich in fruits, vegetables, whole grains, legumes, fish, and omega-3 fatty acids improve emotional well-being by reducing inflammation, enhancing neurotransmitter production, and supporting brain function. Conversely, unhealthy dietary habits, including excessive consumption of processed foods, sugary beverages, and fast foods, have been linked to increased symptoms of depression, anxiety, and stress. University students are particularly susceptible to poor dietary practices due to academic pressures, limited time, and easy access to convenience foods.

Several investigations have also highlighted the combined influence of diet, sleep, and physical activity on mental well-being. Research among young adults demonstrated that healthy lifestyle behaviors collectively contribute to better psychological health, while inadequate sleep and poor dietary quality are associated with increased psychological distress. The MIND diet, which integrates components of the Mediterranean and DASH diets, has gained attention because of its potential neuroprotective effects and its ability to improve cognitive function and emotional health. Studies have reported that greater adherence to the MIND diet is associated with reduced symptoms of depression and anxiety, although evidence among young adult populations remains limited. Therefore, further research is warranted to clarify the relationship between adherence to the MIND dietary pattern and mental health outcomes in this age group.

This study contributes to the growing field of nutritional psychiatry by providing evidence on the relationship between adherence to the MIND diet and mental health outcomes among young adults. The findings may help healthcare professionals, nutritionists, and educational institutions develop nutrition-based interventions aimed at reducing depression, anxiety, and stress. Furthermore, the study highlights the importance of promoting healthy dietary behaviors as an affordable, non-pharmacological strategy to improve psychological well-being and support long-term mental health among university students.

In conclusion, nutrition plays a significant role in maintaining mental health, particularly during young adulthood when individuals experience substantial

psychological and lifestyle changes. Evidence from previous studies suggests that healthy dietary patterns, especially the MIND diet, may help reduce symptoms of depression, anxiety, and stress through their positive effects on brain function and emotional regulation. By investigating the association between adherence to the MIND diet and mental health outcomes using the DASS-21, this study aims to provide valuable evidence that can support nutrition-focused mental health promotion strategies and encourage healthier eating habits among young adults.

Methodology

A cross-sectional observational study was conducted among 300 young adults (18–25 years) from Superior University, the University of Lahore, and the University of the Punjab over a period of four months. Participants were selected using a random sampling technique, and data were collected through a structured online questionnaire comprising validated tools, including the Food Frequency Questionnaire (FFQ) and the Depression, Anxiety, and Stress Scale-21 (DASS-21). The questionnaire assessed sociodemographic characteristics, eating habits, nutrition-related behaviors, and physical activity. Individuals with chronic diseases, pregnant or lactating women, and those outside the eligible age range were excluded. Ethical approval was obtained from the Institutional Ethical Review Committee, and written informed consent was secured from all participants. Data confidentiality was maintained throughout the study. Data were analyzed using SPSS version 25, with descriptive statistics used to summarize participant characteristics and Chi-square tests performed to examine associations between dietary patterns and mental health outcomes. A p-value of <0.05 was considered statistically significant.

RESULTS:

A total of 300 young adults participated in the study. Participants showed varying levels of adherence to the MIND diet based on the FFQ, with inconsistent consumption of brain-healthy foods such as fruits, vegetables, whole grains, nuts, and fish. DASS-21 findings indicated varying levels of depression, anxiety, and stress, ranging from normal to extremely severe. Chi-square analysis demonstrated significant associations between unhealthy dietary habits and psychological outcomes, particularly stress, depression, and anxiety. Additionally, lower physical activity levels and inadequate sleep were associated with poorer mental health outcomes.

Table 1: Demographic Characteristics of Participants (n = 300)

Description: It presents the demographic characteristics of the study participants. The majority of participants were 21 years old (29.0%), females (96.7%), and reported moderate physical activity levels (97.3%), indicating a predominantly young and physically active study population.

Variable	Category	Frequency (n)	Percent (%)
Age (Years)	18	23	7.7
	19	17	5.7
	20	44	14.7
	21	87	29.0
	22	39	13.0
	23	41	13.7
	24	30	10.0
	25	19	6.3
Gender	Female	290	96.7
	Male	10	3.3

Physical Activity	Low	6	2.0
	Moderate	292	97.3
	High	2	0.7
Total Participants	-	300	100.0

Table 2: Frequency Distribution of Dietary Intake According to FFQ

It summarizes the consumption frequency of MIND diet food components among participants. Whole grains, vegetables, and fruits were consumed more frequently, whereas berries, fish, and olive oil were among the least consumed food items, indicating varying adherence to the MIND dietary pattern.

Dietary Intake	1/W	2/W	3/W	4/W	Daily (D)	Never (N)	Total
Whole Grains	10 (3.3%)	45 (15.0%)	52 (17.3%)	27 (9.0%)	152 (50.7%)	14 (4.7%)	300
Vegetables	33 (11.0%)	42 (14.0%)	56 (18.7%)	78 (26.0%)	91 (30.3%)	0	300
Leafy Vegetables	53 (17.7%)	107 (35.7%)	65 (21.7%)	42 (14.0%)	32 (10.7%)	1 (0.3%)	300
Fruits	28 (9.3%)	53 (17.7%)	84 (28.0%)	54 (18.0%)	81 (27.0%)	0	300
Berries	102 (34.0%)	22 (7.3%)	33 (11.0%)	4 (1.3%)	11 (3.7%)	128 (42.7%)	300
Nuts	128 (42.7%)	68 (22.7%)	8 (2.7%)	15 (5.0%)	24 (8.0%)	57 (19.0%)	300
Beans or Legumes	74 (24.7%)	101 (33.7%)	64 (21.3%)	26 (8.7%)	11 (3.7%)	24 (8.0%)	300
Fish	133 (44.3%)	6 (2.0%)	16 (5.3%)	6 (2.0%)	0	139 (46.3%)	300
Poultry	44 (14.7%)	37 (12.3%)	92 (30.7%)	65 (21.7%)	55 (18.3%)	7 (2.3%)	300
Red Meat	106 (35.3%)	69 (23.0%)	53 (17.7%)	0	3 (1.0%)	69 (23.0%)	300
Fried Food	38 (12.7%)	89 (29.7%)	69 (23.0%)	52 (17.3%)	23 (7.7%)	29 (9.7%)	300
Fast Food	53 (17.7%)	104 (34.7%)	76 (25.3%)	16 (5.3%)	17 (5.7%)	34 (11.3%)	300
Sweets and Pastries	149 (49.7%)	27 (9.0%)	27 (9.0%)	39 (13.0%)	12 (4.0%)	46 (15.3%)	300

Table 3: Frequency and Percentage Distribution of Responses on DASS-21 Items

Item	0 n (%)	1 n (%)	2 n (%)	3 n (%)
I found it hard to wind down	90 (30.0%)	126 (42.0%)	67 (22.3%)	16 (5.3%)
I was aware of dryness of my mouth	75 (25.0%)	103 (34.3%)	79 (26.3%)	43 (14.3%)

I could not seem to experience any positive feeling at all	115 (38.3%)	85 (28.3%)	61 (20.3%)	39 (13.0%)
I experienced breathing difficulty	134 (44.7%)	85 (28.3%)	37 (12.3%)	44 (14.7%)
I found it difficult to work up the initiative to do things	68 (22.7%)	101 (33.7%)	90 (30.0%)	41 (13.7%)
I tended to over react to situations	82 (27.3%)	109 (36.3%)	69 (23.0%)	40 (13.3%)
I experienced trembling	98 (32.7%)	130 (43.3%)	49 (16.3%)	23 (7.7%)
I felt that I was using a lot of nervous energy	85 (28.3%)	90 (30.0%)	85 (28.3%)	40 (13.3%)
I was worried about situations in which I might panic	65 (21.7%)	88 (29.3%)	87 (29.0%)	55 (18.3%)
I felt that I had nothing to look forward to	115 (38.3%)	109 (36.3%)	44 (14.7%)	32 (10.7%)
I found myself getting agitated	113 (37.7%)	86 (28.7%)	59 (19.7%)	38 (12.7%)
I found it difficult to relax	90 (30.0%)	87 (29.0%)	65 (21.7%)	58 (19.3%)
I felt down-hearted and blue	115 (38.3%)	119 (39.7%)	33 (11.0%)	33 (11.0%)
I felt I was close to panic	119 (39.7%)	92 (30.7%)	48 (16.0%)	41 (13.7%)

I was intolerant of anything that interrupted my activities	92 (30.7%)	112 (37.3%)	53 (17.7%)	43 (14.3%)
I was unable to become enthusiastic about anything	124 (41.3%)	98 (32.7%)	57 (19.0%)	21 (7.0%)
I felt I was not worth much as a person	114 (38.0%)	89 (29.7%)	60 (20.0%)	37 (12.3%)
I felt that I was rather touchy	120 (40.0%)	88 (29.3%)	60 (20.0%)	29 (9.7%)
I was aware of the action of my heart	91 (30.3%)	99 (33.0%)	62 (20.7%)	46 (15.3%)
I felt scared without any good reason	130 (43.3%)	70 (23.3%)	70 (23.3%)	30 (10.0%)
I felt that life was meaningless	142 (47.3%)	62 (20.7%)	36 (12.0%)	54 (18.0%)

Description: It presents participants' responses to the 21 items of the Depression, Anxiety, and Stress Scale (DASS-21). The findings demonstrate varying levels of psychological symptoms, with several participants reporting mild to moderate experiences of stress, anxiety, and depressive symptoms

Table 4: Chi-Square Association between Depression and Dietary Variables
Description: It illustrates the relationship between dietary intake and depression levels. Significant associations were observed for fried food ($p = 0.039$), fast food ($p = 0.023$), and soft drink consumption ($p = 0.030$), suggesting that unhealthy dietary habits may be linked to higher levels of depression.

Dietary Variable	1/W	2/W	3/W	4/W	Daily	Never	p-value
Whole Grains	10 (3.3)	45 (15.0)	52 (17.3)	27 (9.0)	152 (50.7)	14 (4.7)	0.908

Vegetables	33 (11.0)	42 (14.0)	56 (18.7)	78 (26.0)	91 (30.3)	0	0.249
Fruits	28 (9.3)	53 (17.7)	84 (28.0)	54 (18.0)	81 (27.0)	0	0.383
Berries	102 (34.0)	22 (7.3)	33 (11.0)	4 (1.3)	11 (3.7)	128 (42.7)	0.856
Nuts	128 (42.7)	68 (22.7)	8 (2.7)	15 (5.0)	24 (8.0)	57 (19.0)	0.885
Beans/Legumes	74 (24.7)	101 (33.7)	64 (21.3)	26 (8.7)	11 (3.7)	24 (8.0)	0.468
Fish	133 (44.3)	6 (2.0)	16 (5.3)	6 (2.0)	0	139 (46.3)	0.797
Poultry	44 (14.7)	37 (12.3)	92 (30.7)	65 (21.7)	55 (18.3)	7 (2.3)	0.810
Red Meat	106 (35.3)	69 (23.0)	53 (17.7)	0	3 (1.0)	69 (23.0)	0.346
Fried Food	38 (12.7)	89 (29.7)	69 (23.0)	52 (17.3)	23 (7.7)	29 (9.7)	0.039*
Fast Food	53 (17.7)	104 (34.7)	76 (25.3)	16 (5.3)	17 (5.7)	34 (11.3)	0.023*
Sweets & Pastries	149 (49.7)	27 (9.0)	27 (9.0)	39 (13.0)	12 (4.0)	46 (15.3)	0.222
Butter & Margarine	94 (31.3)	53 (17.7)	31 (10.3)	32 (10.7)	12 (4.0)	78 (26.0)	0.092

Cheese	100 (33.3)	30 (10.0)	60 (20.0)	14 (4.7)	3 (1.0)	93 (31.0)	0.622
Olive Oil	67 (22.3)	34 (11.3)	9 (3.0)	16 (5.3)	26 (8.7)	148 (49.3)	0.355
Soft Drinks	100 (33.3)	52 (17.3)	34 (11.3)	60 (20.0)	7 (2.3)	47 (15.7)	0.030*

Table 4.9: Chi-Square Association between Anxiety and Dietary Variables

Description: It shows the association between dietary variables and anxiety levels among participants. Fast food consumption ($p = 0.028$) and soft drink consumption ($p = 0.030$) were significantly associated with anxiety, whereas no significant associations were observed for the other dietary variables.

Dietary Variable	1/W	2/W	3/W	4/W	Daily	Never	p-value
Whole Grains	10 (3.3)	45 (15.0)	52 (17.3)	27 (9.0)	152 (50.7)	14 (4.7)	0.318
Vegetables	33 (11.0)	42 (14.0)	56 (18.7)	78 (26.0)	91 (30.3)	0	0.368
Fruits	28 (9.3)	53 (17.7)	84 (28.0)	54 (18.0)	81 (27.0)	0	0.971
Berries	102 (34.0)	22 (7.3)	33 (11.0)	4 (1.3)	11 (3.7)	128 (42.7)	0.771
Nuts	128 (42.7)	68 (22.7)	8 (2.7)	15 (5.0)	24 (8.0)	57 (19.0)	0.536
Beans/Legumes	74 (24.7)	101 (33.7)	64 (21.3)	26 (8.7)	11 (3.7)	24 (8.0)	0.355
Fish	133 (44.3)	6 (2.0)	16 (5.3)	6 (2.0)	0	139 (46.3)	0.865
Poultry	44 (14.7)	37 (12.3)	92 (30.7)	65 (21.7)	55 (18.3)	7 (2.3)	0.655
Red Meat	106 (35.3)	69 (23.0)	53 (17.7)	0	3 (1.0)	69 (23.0)	0.943
Fried Food	38 (12.7)	89 (29.7)	69 (23.0)	52 (17.3)	23 (7.7)	29 (9.7)	0.517
Fast Food	53 (17.7)	104 (34.7)	76 (25.3)	16 (5.3)	17 (5.7)	34 (11.3)	0.028*
Sweets & Pastries	149 (49.7)	27 (9.0)	27 (9.0)	39 (13.0)	12 (4.0)	46 (15.3)	0.645
Butter & Margarine	94 (31.3)	53 (17.7)	31 (10.3)	32 (10.7)	12 (4.0)	78 (26.0)	0.285
Cheese	100 (33.3)	30 (10.0)	60 (20.0)	14 (4.7)	3 (1.0)	93 (31.0)	0.180
Olive Oil	67 (22.3)	34 (11.3)	9 (3.0)	16 (5.3)	26 (8.7)	148 (49.3)	0.266
Soft Drinks	100 (33.3)	52 (17.3)	34 (11.3)	60 (20.0)	7 (2.3)	47 (15.7)	0.030*

DISCUSSION:

The present study investigated the relationship between dietary intake and mental health outcomes among young adults aged 18–25 years using the DASS-21. A total of 300 participants were included, with females representing the majority of the sample. The findings revealed a high prevalence of anxiety, depression, and stress, with anxiety being the most common psychological problem. These results are consistent with previous studies reporting that university students are particularly vulnerable to psychological distress due to academic, social, and lifestyle challenges.

Assessment of dietary habits showed variable adherence to the MIND dietary pattern. While whole grains, fruits, and vegetables were consumed relatively frequently, foods such as berries, fish, nuts, and olive oil were consumed less often, indicating suboptimal adherence to a brain-healthy diet. Similar dietary patterns have been reported among university students, where convenience, financial constraints, and limited nutritional awareness influence food choices.

The study found that only a few dietary variables were significantly associated with mental health outcomes. Fried food consumption was significantly associated with stress ($p = 0.045$). Depression was significantly associated with fried food ($p = 0.039$), fast food ($p = 0.023$), and soft drink consumption ($p = 0.030$), while anxiety showed significant associations with fast food ($p = 0.028$) and soft drink intake ($p = 0.030$). These findings support previous evidence suggesting that diets high in processed foods, saturated fats, and sugary beverages may contribute to inflammation, oxidative stress, and altered neurotransmitter function, thereby increasing the risk of psychological distress.

In contrast, no significant associations were observed between most healthy MIND diet components, including fruits, vegetables, whole grains, legumes, fish, nuts, and olive oil, and depression, anxiety, or stress. This may be explained by the cross-sectional design, reliance on self-reported dietary data, and the relatively young age of participants, where the long-term benefits of healthy dietary patterns may not yet be evident.

Overall, the findings suggest that unhealthy dietary habits may have a stronger association with poor mental health than healthy foods have with improved psychological well-being. Although the cross-sectional design prevents causal inference and self-reported data may introduce recall bias, this study provides valuable evidence that reducing the consumption of fried foods, fast foods, and soft drinks may help improve mental health among young adults. Further longitudinal and intervention studies are recommended to confirm these findings and evaluate the effectiveness of dietary interventions in promoting psychological well-being.

CONCLUSION:

This study examined the relationship between dietary intake and mental health among young adults aged 18–25 years. The findings indicated a high prevalence of anxiety, depression, and stress, while adherence to the MIND diet varied among participants. Most healthy dietary components were not significantly associated with mental health outcomes; however, frequent consumption of fried foods, fast foods, and soft drinks was significantly associated with higher levels of stress, anxiety, and depression. These findings suggest that unhealthy dietary habits may contribute to poorer psychological well-being. Overall, the study highlights the importance of promoting healthier eating habits and reducing the intake of processed foods as part of comprehensive strategies to improve mental health among young adults. Further longitudinal studies are needed to confirm these associations and establish causal relationships.

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