

Influence of Food Habits on Mental Health among Young Adults

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Abstract: A critical time period for various physical and psychological issues is young adulthood and thus it is important to have a healthy state of mental health. The purpose of the study is to assess whether food habits is a lifestyle factor which can have a relation with aspects of mental health which includes Depression, Anxiety, Inwardly and Outwardly directed Irritability. An empirical study using random sampling technique was conducted among young adults between the ages of 18 and 24 in India for data collection. Among respondents, there were a total of 229 females and 168 males. Using Pearson's Chi square test the p-value obtained were as follows: depression (0.622), anxiety (0.329), inner irritability (0.255) and outer irritability (0.849). Thus, indicating that there is a negative association between food habits and aspects of mental health. However, the study exhibits that majority of Indian young adults follow a moderate food habit pattern and also sets the groundwork for varied research which tests different lifestyle factors with dietary habits among young adults in India. This can serve as a way to impede and heal existing problems or depression, anxiety and excessive inwardly and outwardly directed irritability.

Keywords: Food Habits, Young Adults, Mental Wellbeing, Depression, Anxiety, Irritability

1. INTRODUCTION

This study aims to contribute to this growing area of research by exploring the relationship between healthier eating habits and improved mental health among young adults. *Mental Health* can be defined as the absence of mental disease or it can be defined as a state of being that also includes the biological, psychological or social factors which contribute to an individual's mental state and ability to function within the environment (Carter JW, Hidreth HM, Knutson AL et al 1959). Young adulthood represents a significant time of development when rates of obesity and being overweight present dramatic increase and behaviors such as physical lethargy and increase in consumption of fast food. (Gordon-Larsen P et al, 2004; Park MJ, Scott JT et al, 2014). Mental Health and well-being are imperative contributors to quality of life, allowing people to experience a meaningful life and to be citizens that are active and creative. (WHO European Ministerial Conference on Mental Health 2005). Healthy eating is defined as eating practices and behaviors that are consistent with improving, maintaining, and /or enhancing health (Raine, 2005).

Nutritional factors are necessary for mental well-being. Especially, maintaining a balanced diet on a regular basis and consumption of nutrients for better mental health such as omega-3 FAs, antioxidants, niacin, folate, vitamin B6, and vitamin B12 at suggested dietary intake levels are recommended. Mental health disorders which include anxiety, depression, and attention-deficit/hyperactivity disorder (ADHD) are at a lesser risk when correlated with a rich diet involving vitamins and minerals (So Young Lim, Eun Jin Kim et al 2016). Data accumulated of women show that a healthier-quality diet is associated with better mental health results. (Jacka FN, Pasco JA, Mykletun A et al 2010)

Recent studies conducted on the topic show that symptoms of depression significantly reduced after they followed a Mediterranean-style pattern of eating for three weeks according to a study conducted among more than 10,000 Spanish young adults published in the journal PLOS ONE. Researchers from Columbia University Medical Center found that the risk of developing depression and insomnia in postmenopausal women is associated to consumption of refined carbohydrates. Low concentrations of CSF 5-HIAA (due to low concentrations of a marker of brain serotonin turnover due to low concentrations of docosahexaenoic acid, an essential fatty acid found in fish) are strongly associated with depression and suicide. (Joseph R Hibbelm, 1998). A study conducted by Giuseppe Grosso, Fabio Galvano et al in 2014 show that individuals that engage in regular consumption of Omega-3 are less likely to be depressed. People who take Omega-3 supplements show reduced symptoms of depression and anxiety (Kiecolt-Glaser JK, 2011). The February 2012 issue of the “Canadian Journal of Psychiatry” found that there is a link between mood disorders and low levels of vitamin B-6 and other nutrients. Eating breakfast along with increased intake of fruits and vegetables along with other healthier behaviour patterns was associated with higher scores of happiness among college students.

Research on the topic has been extensively covered on children, adolescents, and adults. The aim of the present research is to test the relationship between food habits and general view on mental health which focuses on young adults mostly living in India. Some studies were unsuccessful in identifying links between mental health and eating behaviour (Milligan et al., 1997). The association between dietary habits and depression using the Beck Depression Inventory was used for two other researches, however they focused on food habits in terms of consumption of fish (Tanskanen et al., 2001) or fruit intake (Allgo“wer et al., 2001). The study is not restricted to a particular mental health problem but refers to the overall mental state with a focus on Outer and Inner Irritability, Depression and Anxiety. It is important to understand the eating habits of young adults, majority of whom are college students and whether their unhealthy nutrition intake could possibly result in a poor mental state. There are a few studies with relation to particular food habits and its influence on depression, irritability, and anxiety. However, not many studies have been specifically investigated on the association between food habits and the irritability of individuals.

2. METHODOLOGY

Study gained results through an online survey based on empirical study among the young adults in the city of current Bangalore situated in South India. The main aim of the study is to gain a comprehensive picture on the eating habits and well-being of young adults between the ages of 18 and 24 in India. The survey collected data from 397 participants through the random sampling technique, with informed consent to participate in the study. There was a total of 42 questions and the survey would take around 10 to 15 minutes to complete. The response rate involved 229 females and 168 males, mostly college students, with 2 participants who chose to not reveal their gender.

Mental health was measured using the adult well-being scale based on the Irritability, Depression, and Anxiety (IDA) Scale developed by Snaith et al consisting of 18 questions. The scale allows respondents four possible responses to each item. There are four aspects of wellbeing that is covered: Depression, Anxiety and Inwardly and Outwardly directed Irritability. Food Habits was measured using the adolescents food habits questionnaire (AFHQ) developed by F. Johnson, J. Wardle, & J. Griffith, and was validated using measures of dietary fat and fibre intake, fruit and vegetable consumption, dietary restraint, nutrition knowledge and a measure of family income. This questionnaire had to be used as a valid and reliable questionnaire to check the food habits of young adults have not been devised yet as of date. The questionnaire comprises of 23 items which allows the respondents to answer True or False to each item.

Descriptive statistics and chi square test were used for the statistical analysis to determine the association between food habits and mental health aspects.

3. RESULTS

Descriptive Statistics:

Table 1: Percentage of gender representation across intensity of Depression categories

Gender	Low Depression	Borderline Depression	High Depression	Total
Male	31 (18.5%)	104 (61.9%)	33 (19.6%)	168 (100.0%)
Female	45 (19.7%)	142 (62.0%)	42 (18.3%)	229 (100.0%)
Total	76 (19.1%)	246 (62.0%)	75 (18.9%)	397 (100.0%)

Table 2: Percentage of gender representation across intensity of Anxiety categories

	Low Anxiety	Borderline Anxiety	High Anxiety	Total
Male	107 (63.7%)	41 (24.4%)	20 (11.9%)	168 100.0%
Female	100 (43.7%)	88 (38.4%)	41 (17.9%)	229 100.0%
Total	207 (52.1%)	129 (32.5%)	61 (15.4%)	397 100.0%

Table 3: Percentage of gender representation across Outward Irritability categories

	Low Out Irr	Borderline Out Irr	High Out Irr	Total
Male	59 (35.1%)	50 (29.8%)	59 (35.1%)	168 (100.0%)
Female	68 (29.7%)	74 (32.3%)	87 (38.0%)	229 (100.0%)
Total	127 (32.0%)	124 (31.2%)	146 (36.8%)	397 (100.0%)

Table 4: Percentage of gender representation across Inward Irritability categories

	Low Inward Irr	Borderline Inward Irr	High Inward Irr	Total
Male	13 (7.7%)	67 (39.9%)	88 (52.4%)	168 (100.0%)
Female	18 (7.9%)	89 (38.9%)	122 (53.3%)	229 (100.0%)
Total	31	156	210	397

	(7.8%)	(39.3%)	(52.9%)	(100.0%)
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Inferential Results:**Hypothesis # 1:**

H₁: Intensity of Depression is associated (dependent) with the type of Food Habits practiced.

Chi-Square Test Result:

Table 5: Cross tabulation between type of Food Habits and intensity of Depression among the respondents

Type of food habits	Intensity of Depression			Total
	High	Border Line	Low	
Unhealthy	29 (23.0)	75 (59.5)	22 (17.5)	126 (100.0)
Moderate	44 (17.2)	162 (63.3)	50 (19.5)	256 (100.0)
Healthy	2 (13.3)	9 (60.0)	4 (26.7)	15 (100.0)
Total	75 (18.9)	246 (62.0)	76 (19.1)	397 (100.0)

Note: Percentages are given in parenthesis.

Pearson Chi-Square Value = 2.625

Asymptotic significance (p-value) = 0.622

From the Chi-square test result (Table 5), it is observed that p-value is 0.622 (chi-square = 2.625) which is greater than the significant alpha level of 0.05 (at 95 percent confidence level). Hence, the hypothesis (H₁) is rejected. In other words, there is no statistical evidence to conclude that there is an association between type of Food Habits and intensity of Depression among the respondents. In essence, there is no statistical evidence that as one move from an unhealthy food habits to moderate and Healthy food habits, there is a likelihood of increase in the percentage of respondents (students) from a higher intensity of depression to a lower intensity of depression. This is supported by the percentage of representation in each class interval of type of food habits. It is observed that there is no significant difference the percentage of respondents under each cell of intensity of depression across each category of food habits. Hence, the inference that could be drawn is that intensity of depression among the sample respondents doesn't necessarily depend on the type of food habits and might be dependent on some other external factors.

Hypothesis # 2:

H₂: Intensity of Anxiety is associated (dependent) with the type of Food Habits practiced.

Chi-Square Test Result:

Table 6: Cross tabulation between type of Food Habits and intensity of Anxiety among the respondents

Type of food habits	Intensity of Anxiety			Total
	High	Border Line	Low	
Unhealthy	26 (20.6)	38 (30.2)	62 (49.2)	126 (100.0)
Moderate	32 (12.5)	86 (33.6)	138 (53.9)	256 (100.0)
Healthy	3 (20.0)	5 (33.3)	7 (46.7)	15 (100.0)
Total	61	129	207	397

	(15.4)	(32.5)	(52.1)	(100.0)
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Note: Percentages are given in parenthesis.

Pearson Chi-Square Value = 4.612

Asymptotic significance (p-value) = 0.329

From the Chi-square test result (Table 6), it is observed that p-value is 0.329 (chi-square = 4.612) which is greater than the significant alpha level of 0.05 (at 95 percent confidence level). Hence, the hypothesis (H_2) is rejected. In other words, there is no statistical evidence to conclude that there is an association between type of Food Habits and intensity of Anxiety among the respondents. In essence, there is no statistical evidence that as one move from an unhealthy food habits to moderate and Healthy food habits, there is a likelihood of increase in the percentage of respondents (respondents) from a higher intensity of Anxiety to a lower intensity of Anxiety. This is supported by the percentage of representation in each class interval of type of food habits. It is observed that there is no significant difference the percentage of respondents under each cell of intensity of Anxiety across each category of food habits.

Hypothesis # 3:

H_3 : Intensity of Outward Irritability is associated (dependent) with the type of Food Habits practiced.

Chi-Square Test Result:

Table 7: Cross tabulation between type of Food Habits and intensity of Outward Irritability among the respondents

Type of food habits	Intensity of Outward Irritability			Total
	High	Border Line	Low	
Unhealthy	55 (43.7)	33 (26.2)	38 (30.2)	126 (100.0)
Moderate	87 (34.0)	84 (32.8)	85 (33.2)	256 (100.0)
Healthy	4 (26.7)	7 (46.7)	4 (26.7)	15 (100.0)
Total	146 (36.8)	124 (31.2)	127 (32.0)	397 (100.0)

Note: Percentages are given in parenthesis.

Pearson Chi-Square Value = 5.336

Asymptotic significance (p-value) = 0.255

From the Chi-square test result (Table 7), it is observed that p-value is 0.255 (chi-square = 5.336) which is greater than the significant alpha level of 0.05 (at 95 percent confidence level). Hence, the hypothesis (H_3) is rejected. In other words, there is no statistical evidence to conclude that there is an association between type of Food Habits and intensity of Outward Irritability among the respondents. In essence, there is no statistical evidence that as one move from an unhealthy food habits to moderate and Healthy food habits, there is a likelihood of increase in the percentage of respondents (respondents) from a higher intensity of Outward Irritability to a lower intensity of Outward Irritability. This is supported by the percentage of representation in each class interval of type of food habits. It is observed that there is no significant difference the percentage of respondents under each cell of intensity of Outward Irritability across each category of food habits.

Hypothesis # 4:

H_4 : Intensity of Inward Irritability is associated (dependent) with the type of Food Habits practiced.

Chi-Square Test Result:

Table 8: Cross tabulation between type of Food Habits and intensity of Inward Irritability among the respondents

Type of food habits	Intensity of Inward Irritability			Total
	High	Border Line	Low	
Unhealthy	62 (49.2)	52 (41.3)	12 (9.5)	126 (100.0)
Moderate	140 (54.7)	98 (38.3)	18 (7.0)	256 (100.0)
Healthy	8 (53.3)	6 (40.0)	1 (6.7)	15 (100.0)
Total	210 (52.9)	156 (39.3)	31 (7.8)	397 (100.0)

Note: Percentages are given in parenthesis.

Pearson Chi-Square Value = 1.372

Asymptotic significance (p-value) = 0.849

From the Chi-square test result (Table 8), it is observed that p-value is 0.849 (chi-square = 1.372) which is greater than the significant alpha level of 0.05 (at 95 percent confidence level). Hence, the hypothesis (H_4) is rejected. In other words, there is no statistical evidence to conclude that there is an association between type of Food Habits and intensity of Inward Irritability among the respondents. In essence, there is no statistical evidence that as one move from an unhealthy food habits to moderate and Healthy food habits, there is a likelihood of increase in the percentage of respondents (respondents) from a higher intensity of Inward Irritability to a lower intensity of Inward Irritability. This is supported by the percentage of representation in each class interval of type of food habits. It is observed that there is no significant difference the percentage of respondents under each cell of intensity of Inward Irritability across each category of food habits.

4. DISCUSSION

The purpose of the study conducted was to evaluate whether there is a relationship between the food habits practiced and intensity of depression, anxiety, inward irritability, and outer irritability, respectively. While research in this field was mainly focused on patients with serious mental health conditions (WHO, 2001), the present study tries to understand whether food habits can impact minor or personal and subjective mental health problems, especially among young adults. Although there have been indications of a relationship between unhealthy food habits and mental health problems such as an association between diet quality and adolescent depression that exist over and above the influence of socioeconomic, family, and other potential confounding factors (Jacka N et al, 2010) and research that suggests that a diet that is high in essential fatty acids is associated with improved mood and cognitions as propounded by Hallahan and Garland, 2005.

The present study is one of the very few that has been conducted in India and the results indicate that depression, anxiety, inner and outer irritability has a negative relationship with the dietary habits. It can be noted that 61.9% of males and 62% of females fall under borderline depression category, 63.7% of males and 43.7% of females fall under the low anxiety category. There is also an equal number of males (35.1%) that exhibit low and high outer irritability and 38% of females exhibit outer irritability, 52.4% of males and 53.3% of females experience high inward irritability as compared to the other categories.

The inferential results obtained through the study shows there is no significant statistical indications to conclude whether there is an association between food habits and depression (p-value is 0.622), anxiety (p-value is 0.329), inner irritability (p-value is

0.255) and outer irritability (p-value is 0.849). Thus, the hypotheses are rejected. The end result can be due to the survey conducted among the cohort of young adults who are generally in their healthiest stage of their life span when food is a source of enjoyment for them. The consequences of their food habits in their mental well-being can be assessed in the later stages of their lives instead of the current stage. Majority of the respondents are students from India who live with their family and thus would be provided a balanced meal with vegetables, pulses, and fruits for at least one of their meals which creates variations in their diet. Thus, majority of respondents fall in the moderate category of food habits even though there is a very low number of respondents who fall in the healthy food habits category. Emerging adulthood appears to be linked with an increased risk for weight gain (Deforche B et al, 2015). Common barriers to healthy eating were unhealthy snacking, time constraints, stress, easy access to junk food, convenience high-calorie food, and high prices of healthy food (Giovanni Sogari et al, 2018).

The sample was predominantly Indian- a diverse country with large variations in dietary patterns between regions and therefore, there is little value to attempting to define an average diet for the entirety of India (Rosemary Green et al, 2016). Another limitation is that there is no food habits questionnaire for young adults in particular which limits the research. Thus, additional research using more formal assessments of food habits may be warranted. An objective assessment of depression, and anxiety symptoms or a structured Clinical interview could probably fortify the outcomes.

There can be other lifestyle factors such as exercise, family support systems, internal coping mechanisms, and levels of stress, socio-economic factors that significantly contribute and are more crucial to having an association with mental wellbeing other than food habits. Thus, creating further avenues for research by understanding the relationship between mental health with other lifestyle factors among young adults. Such researches can contribute to improve the lifestyle of young adults and can be used as a means to prevent or reduce the incidence of depression, anxiety, and excessive irritability.

5. CONCLUSION

This empirical study conducted focuses on whether there is an association between aspects of mental health and individual food habits among young adults in India with a focus on depression, anxiety, outwardly and inward irritability using a random sampling technique through a survey. However, the result obtained shows that there is no statistical evidence to present an association between food habits and either of the aspects of mental health. There are indications that majority of the respondents follow moderate food habits as they consume a mix of healthy and unhealthy food items rather than having a single food preference. Despite the limitations, the study brings out the food habits of young adults in India and provides groundwork for further research on influence of different lifestyle factors other than dietary habits on mental health among young adults which is an age in transition to adulthood that is an important determinant for their future state of mental well-being. This can be a method used for prevention and treatment of existing mental health challenges faced by individuals.

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