

# The Relationship of Parental Mental Health and Dietary Pattern With Adolescent Mental Health

Mohsen Mesgarani,<sup>1</sup> Mohsen Hosseinbor,<sup>2</sup> Shahla Shafiee,<sup>3,\*</sup> and Roghayeh Sarkoubi<sup>4</sup>

<sup>1</sup>Zahedan Health Promotion Research Center, Zahedan University of Medical Sciences, Zahedan, IR Iran

<sup>2</sup>Department of Clinical Psychology, Iranshahr University of Medical Sciences, Iranshahr, IR Iran

<sup>3</sup>Children and Adolescents Health Center, Zahedan University of Medical Sciences, Zahedan, IR Iran

<sup>4</sup>Islamic Azad University, Zahedan Branch, Zahedan, IR Iran

\*Corresponding author: Shahla Shafiee, Children and Adolescents Health Center, Zahedan University of Medical Sciences, Zahedan, IR Iran. Tel: +98-5433442482, Fax: +98-5433442481, E-mail: shaflees h@gmail.com

Received 2015 January 26; Revised 2015 March 01; Accepted 2015 March 01.

## Abstract

**Background:** Today, ensuring people's health and well-being has become a concern for societies. Health status results from an interaction of an individuals' various psychological, social, and physical aspects.

**Objectives:** This study aims to investigate the relationship of parental mental health and dietary pattern with adolescent mental health.

**Patients and Methods:** In this study, 250 high school students in Shiraz were selected using random cluster sampling. The samples were analyzed using the Food Frequency Questionnaire (FFQ) and the General Health Questionnaire (GHQ-28).

**Results:** According to the findings, parental mental health explains 22% of the variance in children's mental health, so that in simultaneous regression, physical dimensions, anxiety, social functioning, and depression predicted 13%, 24%, 11%, and 24% of the variance of criterion variables, respectively. No significant relationship was observed between dietary pattern and adolescent mental health dimensions. There was a significant negative relationship only between depression and vegetable intake. Moreover, fruit ( $r = 0.15$ ,  $P < 0.05$ ) and vegetable ( $r = 0.16$ ,  $P < 0.05$ ) intake had a significant relationship with parental mental health dimensions.

**Conclusions:** Parents' mental health and their psychological characteristics can be related to children's mental health and affect their dietary intake patterns.

**Keywords:** Mental Health, Dietary Pattern, Adolescent

## 1. Background

Family is considered the first place where mental health is provided. Health during adolescence and adulthood is completely related to family behavior patterns during childhood and adolescence (1). Family health and functioning can also play a significant role in children's future behavior (2). Studies show that parental psychological symptoms and problems as risk factors are related to externalizing and internalizing problems in children (3, 4). Physical and psychological characteristics, as well as conditions governing family member relationships (such as depression, aggression, and emotional coldness) endangers the physical and psychological health of family members, especially children. Those living in families with high levels of conflict, misbehavior, coldness, and lack of support will suffer poor mental health (5, 6) and face a wide range of physical and mental health problems (7). In a study on children with eating disorders, Bosco et al. (8) found that there was a relationship between parental psychological symptoms and children's psychological symp-

toms. Appropriate dietary patterns is another factor that affects well-being and enjoyment of a long healthy life (7). Family environment and parents play a significant role in dietary patterns and eating behaviors (9). Children's first experiences towards their eating habits and behaviors occur in the family environment, and this behavioral modeling is under the influence of parents (10). In his studies, Bruch and Touraine (11) found that parental, especially maternal, mental disorders (anxiety and depression) are related to high levels of dietary intake. In another study on children with eating disorders, LaPorte and Stunkard (12) found that parents' understanding and awareness of dietary behaviors are related to the successful treatment of their children. About half of premature deaths under the age of 65 are related to dietary factors (13). Healthy eating, intake of nutrients required for the body, and having a healthy lifestyle are among the factors associated with the outbreak of chronic diseases such as cancer, hypertension, and cardiovascular diseases. Accountability and individual choices play a significant role in creating a healthy lifestyle and dietary pattern during life.

## 2. Objectives

This study aims to investigate mental health and dietary pattern in parents and adolescents.

## 3. Patients and Methods

The statistical population of this descriptive-correlational study includes all guidance school and high school students of Shiraz and their parents. The study aimed to investigate the relationship of parental mental health and dietary pattern with adolescent mental health. The samples included 250 individuals who were selected using random cluster sampling from the schools in four educational districts in Shiraz. First, five schools out of all existing public schools were selected. Then, two classes out of each school were selected, and all students and their parents were investigated.

### 3.1. Assessment Tools

In addition to a demographic characteristics checklist, the Food Frequency Questionnaire (FFQ) and the General Health Questionnaire (GHQ-28) were used in this study.

### 3.2. The Food Frequency Questionnaire (FFQ)

The Food Frequency Questionnaire (FFQ) is generally the most appropriate long-term assessment method. Ease of use, relatively low cost, and comparatively quick assessment of people's usual intake have turned this questionnaire into a fully functional tool. Since this questionnaire is the best possible tool to classify people based on their usual food and nutrition intake, accurately measuring intake through the questionnaire is very important (14). This questionnaire consists of 54 food items across the six major food groups (breads and cereals, dairy products, fruits, vegetables, meats and proteins, and others). Content validity was used to assess the validity of the questionnaire. Before administration, the questionnaire was assessed by some nutrition experts. As previously mentioned, the questionnaire is able to assess family dietary patterns. Chronbach's alpha was used to assess the reliability of the questionnaire, which included 0.6, 0.43, 0.85, 0.77, 0.32, and 0.82 respectively.

### 3.3. The General Health Questionnaire (GHQ-28)

The General Health Questionnaire (GHQ-28) was designed by Goldberg and Hillier in 1979 (15). This questionnaire has been translated into 138 different languages, and many studies have been conducted in 70 countries using this questionnaire (16). The questionnaire consists of four subtests, each with seven questions. Questions 1-7, 8-14, 15

-21 and 22-28 are related to the subtests of physical symptoms, anxiety, social dysfunction, and depression, respectively. Several studies have assessed the validity and reliability of this test. Taghavi (17) calculated the validity of this questionnaire through factor analysis with varimax rotation and presented coefficients between 0.71 and 0.84 for the above-mentioned subscales. The study also assessed the reliability of this test using Chronbach's alpha and reported that this coefficient was 0.84, 0.71, 0.84 and 0.84 for the subscales of physical symptoms, anxiety, social functioning, and depression, respectively. Given these coefficients and the emphasis on repeated administration of the general health questionnaire in Iranian society, the validity and reliability of the questionnaire has been confirmed.

## 4. Results

The samples consisted of male students (33%) and female students (67%). The average age of the students was 15.52 years.

The results of dietary pattern analysis in the students showed that the highest and lowest intakes belonged to dairy products and vegetables with an average of 2.57 and 2.04, respectively. Simultaneous entry multiple regression analysis was used to assess the relationship between parental mental health and adolescent mental health. Parental mental health and adolescent mental health were analyzed as predictor and criterion variables, respectively. Table 2 shows the results of this analysis.

Parental mental health has a significant positive relationship with children's mental health. It explains 22% of the variance in children's mental health. To assess the relationship between parental mental health and children's mental health, the results of simultaneous entry multiple regression analysis showed that physical anxiety, social functioning, depression, and general health dimensions predicted 13%, 24%, 11%, 24%, and 23% of the variance of criterion variables, respectively. These results also showed that each parental mental health dimension is related to the same dimension in adolescent mental health. Simultaneous entry multiple regression analysis was also used to assess the relationship between dietary pattern and adolescent mental health. First, dietary pattern and children's mental health dimensions were analyzed as predictor and criterion variables, respectively. In analyzing the findings in the physical ( $R = 0.04$ ,  $R^2 = 0.19$ ), anxiety ( $R = 0.2$ ,  $R^2 = 0.04$ ), and social functioning ( $R = 0.22$ ,  $R^2 = 0.05$ ) dimensions, no significant relationship was observed between the dimensions of dietary pattern and children's mental health. Among dietary pattern dimensions, only vegetable intake had a significant negative relationship with adolescent depression ( $R = 0.27$ ,  $R^2 = 0.07$ ). In other words, in-

**Table 1.** The Mean and Standard Deviation for Age, Height, Weight, and BMI According to Sex

Demographic Variables	Male		Female		Total	
	Mean ± SD	N	Mean ± SD	N	Mean ± SD	N
Age, y	15 ± 1.69	66	15.79 ± 1.43	129	15.52 ± 1.57	195
Height	162.41 ± 17.11	46	163.73 ± 5.98	85	163.27 ± 11.17	131
Weight	60.46 ± 15.13	48	56.24 ± 9.98	89	57.72 ± 12.15	137
BMI	23.86 ± 6.47	45	21.06 ± 3.25	85	22.03 ± 6.26	130

**Table 2.** Simultaneous Entry Multiple Regression to Assess the Relationship Between Parental Mental Health and Adolescent Mental Health

Variable	B	$\beta$	R	R <sup>2</sup>	t	P Value
Parental mental health	48.0	47.0	47.0	22.0	17.7	0.0001

creased vegetable intake is accompanied by decreased adolescent depression. On the whole, predictor variables explain 7% of the variance in adolescent depression. The results showed that the two pattern dimensions of fruit ( $r = 0.15, P < 0.05$ ) and vegetable ( $r = 0.16, P < 0.05$ ) intake have a significant negative relationship with overall parental mental health. In other words, increased fruit and vegetable intake is accompanied by increased parental mental health.

**Table 3.** Pearson's Correlation Coefficient Assessing the Relationship Between Overall Parental Mental Health and Dietary Pattern

Dimension	r	n	P Value
Meat	0.05	173	0.54
Dairy products	0.2	173	0.80
Fruits	0.15	168	0.05
Vegetables	0.16	165	0.04
Bread	0.03	176	0.71
Other	0.9	163	0.26

The results also showed that parental depression has a significant positive relationship with meat intake. In other words, increased parental depression is accompanied by increased meat intake. Predictor variables explain 4% of the variance in this criterion variable (Table 4).

There is no significant relationship between the dimensions of parental mental health and dairy products intake. According to the results shown in Table 4, there is a significant negative relationship between the anxiety and social dysfunction dimensions and fruit intake. In other words, increased fruit intake is accompanied by decreased anxiety and social dysfunction. Predictor variables explain about 7% of the variance in this criterion variable.

The results of simultaneous regression analysis to predict vegetable intake in terms of parental mental health showed that the intake of vegetables ( $R = 0.21, R^2 = 0.04$ ), breads and cereals ( $R = 0.15, R^2 = 0.02$ ), and other foods ( $R = 0.09, R^2 = 0.01$ ) has no significant relationship with the dimensions of parental mental health.

## 5. Discussion

This study aimed to investigate the relationship between parental mental health and dietary pattern of adolescents. Parental mental health, and the mental and emotional atmosphere within families, have a significant relationship with children's mental health. Studying risk factors shows that parents' psychological symptoms and problems are related to the externalizing and internalizing of problems in children (3, 4, 7). Stressors resulting from parental psychopathology, family conflicts and disputes, marital discord, and emotional coldness can cause and intensify children's psychological problems (4, 18). Through environmental impacts, parents increase the risk of similar problems in their children (19). Tension and aggression (20-24), emotional coldness (24), neuroticism (6), marital discord and economic constraints (8, 9), stress, anxiety, and depression (6, 25-27) are among the factors influencing the mental health of family members, especially children. In a study entitled "The relationship between parental psychological problems and characteristics with obesity in adolescents", Favaro and Santonastaso (6) found that maternal neurotic traits and expressed anxiety through physical (somatic) symptoms were related to some degree to obesity in children. Perceived parent-induced stress by children can be related to nutritional behavior and food pattern (25-27) and intake. This is observed in 30% - 43% of adults and adolescents (26). Sometimes,

**Table 4.** The Results of Simultaneous Regression to Predict Meat Intake in Terms of Parental Mental Health<sup>a</sup>

Variables	B	$\beta$	t	P Value
Somatic symptoms	0.15	0.2	1.06	0.29
Anxiety	0.14	0.12	1.07	0.29
Social dysfunction	0.5	0.03	0.43	0.67
Depression	0.22	0.2	2.15	0.03

<sup>a</sup>R = 0.2; R<sup>2</sup> = 0.04.

**Table 5.** Simultaneous Regression to Predict Fruit Intake in Terms of Parental Mental Health<sup>a</sup>

Variables	B	$\beta$	T	P Value
Somatic symptoms	0.1	0.04	0.35	0.73
Anxiety	0.63	0.27	2.42	0.01
Social dysfunction	0.53	0.18	2.33	0.02
Depression	0.25	0.11	1.17	0.24

<sup>a</sup>R = 0.26; R<sup>2</sup> = 0.07.

changes in healthy food intake patterns and high-energy, high-fat, and high-sugar foods can be also considered as an avoidance coping mechanism against stress (28). Johnson et al. (29) also considered family dietary patterns as a coping mechanism against negative emotions in adolescents. Through the increasing of negative mood and feeling of loss of control, stress can also result in diet failure (30). Therefore, a family's quality and functioning, as well as their psychological health, can be considered an important predictor variable that is related to emotional and behavioral problems in adolescents (31, 32), including poor dietary habits (25, 26), obesity and weight gain (30), risky behaviors and substance abuse (33). In studying family and parent-child psychodynamics, three states are most highlighted: 1) parenting practices and creating a healthy lifestyle without useless rules, strict regulations, and emotional coldness (22, 24); 2) parental, especially maternal, mental health (6, 11); and 3) children's problems concerning education and learning, which sometimes includes irritable mood and internal reaction (feeling of anxiety, depressed mood, psychosomatic symptoms) or external reaction (suicidal behavior, aggression, oppositional behavior) (34). In the individual vulnerability model inadequate care, attachment, low self-esteem, and poor social skills are mentioned. According to this model, parental psychopathology and parenting practices are more effective in increasing the risk of eating disorders. Parental feeding practices (35-37) and intake of different types of foods are under the influence of the family (38-41). In addition to modeling food choice, the family creates feeding practices

and food acceptance patterns. In the psychopathological model, the first stage is to help patients with eating disorders using cognitive approaches and stopping unhealthy diets. The next stages deal with management, stress control, problem solving, and impulse control techniques in order to increase self-control (30). Therefore, it is necessary to pay attention to psychological factors in treatment programs and eating disorder prevention. Given the limitations of this study, such as retrospective data collection, there might be some errors in recalling past behaviors.

## Acknowledgments

We would like to acknowledge all the adolescents and their parents.

## References

1. Repetti RL, Taylor SE, Seeman TE. Risky families: family social environments and the mental and physical health of offspring. *Psychol Bull.* 2002;128(2):330-66. [PubMed: 11931522].
2. Springer A, Parcel G, Baumler E, Ross M. Supportive social relationships and adolescent health risk behavior among secondary school students in El Salvador. *Soc Sci Med.* 2006;62(7):1628-40. doi: 10.1016/j.socscimed.2005.08.018. [PubMed: 16169644].
3. Stein JA, Newcomb MD. Children's internalizing and externalizing behaviors and maternal health problems. *J Pediatr Psychol.* 1994;19(5):571-93. [PubMed: 7807291].
4. Compas BE, Howell DC, Phares V, Williams RA, Giunta CT. Risk factors for emotional/behavioral problems in young adolescents: a prospective analysis of adolescent and parental stress and symptoms. *J Consult Clin Psychol.* 1989;57(6):732-40. [PubMed: 2600244].

5. Chorpita BF, Barlow DH. The development of anxiety: the role of control in the early environment. *Psychol Bull.* 1998;**124**(1):3-21. [PubMed: 9670819].
6. Favaro A, Santonastaso P. Effects of parents' psychological characteristics and eating behaviour on childhood obesity and dietary compliance. *J Psychosom Res.* 1995;**39**(2):145-51. [PubMed: 7595872].
7. Kral TV, Rauh EM. Eating behaviors of children in the context of their family environment. *Physiol Behav.* 2010;**100**(5):567-73. doi: 10.1016/j.physbeh.2010.04.031. [PubMed: 20457172].
8. Bosco GL, Renk K, Dinger TM, Epstein MK, Phares V. The connections between adolescents' perceptions of parents, parental psychological symptoms, and adolescent functioning. *J Appl Dev Psychol.* 2003;**24**(2):179-200.
9. de Castro JM. Heredity influences the dietary energy density of free-living humans. *Physiol Behav.* 2006;**87**(1):192-8. doi: 10.1016/j.physbeh.2005.10.001. [PubMed: 16310814].
10. Birch LL, Davison KK. Family environmental factors influencing the developing behavioral controls of food intake and childhood overweight. *Pediatr Clin North Am.* 2001;**48**(4):893-907. [PubMed: 11494642].
11. Bruch H, Touraine G. Obesity in Childhood: V. The Family Frame of Obese Children\*. *Psychosom Med.* 1940;**2**(2):141-206.
12. LaPorte DJ, Stunkard AJ. Predicting attrition and adherence to a very low calorie diet: a prospective investigation of the eating inventory. *Int J Obes.* 1990;**14**(3):197-206. [PubMed: 2341226].
13. Robertson E. [Food products, nutrition and health in the Russian Federation]. *Vopr Pitan.* 2000;**69**(3):38-42. [PubMed: 10971952].
14. Esfahani FH, Asghari G, Mirmiran P, Azizi F. Reproducibility and relative validity of food group intake in a food frequency questionnaire developed for the Tehran Lipid and Glucose Study. *J Epidemiol.* 2010;**20**(2):150-8. [PubMed: 20154450].
15. Goldberg DP, Hillier VF. A scaled version of the General Health Questionnaire. *Psychol Med.* 1979;**9**(1):139-45. [PubMed: 424481].
16. Goldberg DP, Gater R, Sartorius N, Ustun TB, Piccinelli M, Gureje O, et al. The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychol Med.* 1997;**27**(1):191-7. [PubMed: 9122299].
17. Taghavi S. Validity and reliability of the general health questionnaire (ghq-28) in college students of shiraz university. *J psychol.* 2002;**5**(4):20.
18. Epstein LH, Klein KR, Wisniewski L. Child and parent factors that influence psychological problems in obese children. *Int J Eat Disord.* 1994;**15**(2):151-8.
19. Dodge KA. Developmental psychopathology in children of depressed mothers. *Dev Psychol.* 1990;**26**(1):3.
20. Moens E, Braet C, Bosmans G, Rosseel Y. Unfavourable family characteristics and their associations with childhood obesity: a cross-sectional study. *Eur Eat Disord Rev.* 2009;**17**(4):315-23. doi: 10.1002/erv.940. [PubMed: 19452495].
21. Golan M, Crow S. Parents are key players in the prevention and treatment of weight-related problems. *Nutr Rev.* 2004;**62**(1):39-50. [PubMed: 14995056].
22. Sleddens EF, Gerards SM, Thijs C, de Vries NK, Kremers SP. General parenting, childhood overweight and obesity-inducing behaviors: a review. *Int J Pediatr Obes.* 2011;**6**(2-2):e12-27. doi: 10.3109/17477166.2011.566339. [PubMed: 21657834].
23. Moens E, Braet C, Soetens B. Observation of family functioning at mealtime: a comparison between families of children with and without overweight. *J Pediatr Psychol.* 2007;**32**(1):52-63. doi: 10.1093/jpepsy/jsl011. [PubMed: 16801324].
24. Bruch H. Obesity and anorexia nervosa: psychosocial aspects. *Aust N Z J Psychiatry.* 1975;**9**(3):159-61. [PubMed: 1060446].
25. d'Autume C, Musher-Eizenman D, Marinier E, Viarme F, Frelut ML, Isnard P. [Eating behaviors and emotional symptoms in childhood obesity: a cross-sectional exploratory study using self-report questionnaires in 63 children and adolescents]. *Arch Pediatr.* 2012;**19**(8):803-10. doi: 10.1016/j.arcped.2012.05.001. [PubMed: 22795779].
26. Nguyen-Rodriguez ST, Chou CP, Unger JB, Spruijt-Metz D. BMI as a moderator of perceived stress and emotional eating in adolescents. *Eat Behav.* 2008;**9**(2):238-46. doi: 10.1016/j.eatbeh.2007.09.001. [PubMed: 18329603].
27. Stice E, Presnell K, Spangler D. Risk factors for binge eating onset in adolescent girls: a 2-year prospective investigation. *Health Psychol.* 2002;**21**(2):131-8. [PubMed: 11950103].
28. Macht M. How emotions affect eating: a five-way model. *Appetite.* 2008;**50**(1):1-11. doi: 10.1016/j.appet.2007.07.002. [PubMed: 17707947].
29. Johnson B, Brownell KD, St Jeor ST, Brunner RL, Worby M. Adult obesity and functioning in the family of origin. *Int J Eat Disord.* 1997;**22**(2):213-8.
30. Braet C, O'Malley G, Weghuber D, Vania A, Erhardt E, Nowicka P, et al. The assessment of eating behaviour in children who are obese: a psychological approach. A position paper from the European childhood obesity group. *Obes Facts.* 2014;**7**(3):153-64. doi: 10.1159/000362391. [PubMed: 24820848].
31. Jensen AL, Weisz JR. Assessing match and mismatch between practitioner-generated and standardized interview-generated diagnoses for clinic-referred children and adolescents. *J Consult Clin Psychol.* 2002;**70**(1):158-68. [PubMed: 11860042].
32. Achenbach TM, Becker A, Dopfner M, Heiervang E, Roessner V, Steinhausen HC, et al. Multicultural assessment of child and adolescent psychopathology with ASEBA and SDQ instruments: research findings, applications, and future directions. *J Child Psychol Psychiatry.* 2008;**49**(3):251-75. doi: 10.1111/j.1469-7610.2007.01867.x. [PubMed: 18333930].
33. Hosseinbor M, Bakhshani NM, Shakiba M. Family functioning of addicted and non-addicted individuals: a comparative study. *Int J High Risk Behav Addict.* 2012;**1**(3):109-14.
34. Britz B, Siegfried W, Ziegler A, Lamertz C, Herpertz-Dahlmann BM, Remschmidt H, et al. Rates of psychiatric disorders in a clinical study group of adolescents with extreme obesity and in obese adolescents ascertained via a population based study. *Int J Obes Relat Metab Disord.* 2000;**24**(12):1707-14. [PubMed: 11126229].
35. Pliner P, Loewen ER. Temperament and food neophobia in children and their mothers. *Appetite.* 1997;**28**(3):239-54. doi: 10.1006/appe.1996.0078. [PubMed: 9218097].
36. Galloway AT, Lee Y, Birch LL. Predictors and consequences of food neophobia and pickiness in young girls. *J Am Diet Assoc.* 2003;**103**(6):692-8. doi: 10.1053/jada.2003.50134. [PubMed: 12778039].
37. Beauchamp GK, Mennella JA. Early flavor learning and its impact on later feeding behavior. *J Pediatr Gastroenterol Nutr.* 2009;**48** Suppl 1:S25-30. doi: 10.1097/MPG.0b013e31819774a5. [PubMed: 19214055].
38. Sylvestre MP, O'Loughlin J, Gray-Donald K, Hanley J, Paradis G. Association between fruit and vegetable consumption in mothers and children in low-income, urban neighborhoods. *Health Educ Behav.* 2007;**34**(5):723-34. doi: 10.1177/1090198106290758. [PubMed: 17142242].
39. Rasmussen M, Krolner R, Klepp KI, Lytle L, Brug J, Bere E, et al. Determinants of fruit and vegetable consumption among children and adolescents: a review of the literature. Part I: Quantitative studies. *Int J Behav Nutr Phys Act.* 2006;**3**:22. doi: 10.1186/1479-5868-3-22. [PubMed: 16904006].
40. Coulthard H, Blissett J. Fruit and vegetable consumption in children and their mothers. Moderating effects of child sensory sensitivity. *Appetite.* 2009;**52**(2):410-5. doi: 10.1016/j.appet.2008.11.015. [PubMed: 19110019].
41. Papas MA, Hurley KM, Quigg AM, Oberlander SE, Black MM. Low-income, African American adolescent mothers and their toddlers exhibit similar dietary variety patterns. *J Nutr Educ Behav.* 2009;**41**(2):87-94. doi: 10.1016/j.jneb.2008.01.005. [PubMed: 19304253].