IJASR International Journal of Academic Scientific Research
ISSN: 2272-6446 Volume 3, Issue 3 (September - October 2015), PP 20-31
www.ijasrjournal.org

Effect of Fatty Food on Mood of Children in Saudi Arabia

Bashaier Ahmad [1], Nehal Anam [1], Duoaa Abdoh [1], Hany Abo-Haded [2, 3]

[1] *College of Medicine, Taibah University, Madinah, Saudi Arabia*
[2] *Department of Pediatrics, College of Medicine, Taibah University, Madinah, Saudi Arabia.*
[3] *Department of Pediatrics, College of Medicine, Mansoura University, Mansoura, Egypt.*

ABSTRACT

Background: *Recent evidence now indicates that poor diet quality is clearly associated with mental health problems in young people. These foods can trigger chemical and physiological changes within the brain that alter child's behavior. In contrast, kids who eat healthy diet are able to cope with stress and regulate their emotions better, says the American Psychological Association.*
Objective: *This study investigates how fatty food affect children's mood in Saudi Arabia.*
Material and Methods: A cross sectional study was conducted by using a questionnaire for information gathering about effect of fatty food on children's mood and behaviors. About 300 women and men in different age group from Saudi Arabia volunteered to answer the questionnaire.
Results: *The results of the study revealed that the frequency of junk food consumption is significantly associated with increase the risk of psychiatric and behavioral disturbance among children. In addition, parents have different trials to stop this unhealthy diet behavior and they noticed a positive change in the mood and behavior of their children***.**
Conclusion: *It was found that unhealthy eating behaviors among children particularly daily consumption of junk food may be associated with poorer mental and physical health*

Keywords: *Fatty food – Children – Mood – Saudi Arabia*

INTRODUCTION

Non communicable diseases (NCDs) account for the largest burden of early mortality and are predicted to cost the global community more than US $30 trillion over the next 20 years. Unhealthy dietary habits, in large part driven by substantial changes to global food systems, are recognized as major contributors to many of the common NCDs, including cardiovascular disease, cancer and diabetes [1].

Recent evidence now indicates that poor diet quality is also clearly associated with mental health problems in young people, independently of important familial factors and other health behaviors [2,3].

So, if you think your child behaves differently, for better or worse, after eating certain foods, you might be right. According to Mayo Clinic electronic site, ingredients in the food your child eats fuel many of the factors that affect his behavior. Kids who eat healthy are able to cope with stress and regulate their emotions better, says the American Psychological Association [4].

Since the end of 2009, there has been an exponential rise in the number of published studies examining the possible influence of habitual diet on the risk for Common Mental Diseases (CMD). Both cross-sectional and prospective studies documenting associations between higher diet qualities and a reduced likelihood or risk for CMDs, as well as an increased likelihood or risk for CMDs with higher intakes of unhealthy food products, have been published from countries across the globe in children, adolescents and adults [5].

In recent times there has been an increasing focus on the possible links between diet quality and the common mental disorders, depression and anxiety. To date, only observational data exist, although such studies have now been conducted in children [6,7], adolescents [8-10]and adults[11-15] in multiple countries, with findings that are largely concordant with the hypothesis that poor diet quality is a risk factor for common mental disorders.

The prevention Institute reports that good nutrition not only contributes to young children's physical development, but affects their cognitive development as well. Children who consume unhealthy foods can have trouble concentrating, become easily fatigued, listless or irritable and are likely to face difficulties in learning, which can lead to behavioral and social problems [4].

U.S. News and World Report Health reports that certain foods can affect mood. These foods can trigger chemical and physiological changes within the brain that alter your child's behavior. If your child does not eat regularly, get enough complex carbohydrates, get enough omega-3 fatty acids or consumes too much fat or not enough iron, she could experience mood swings causing her to become cranky, tired and depressed, which can influence her behavior [4].

In this study, there was evidence suggesting consistently great effects of unhealthy diets (fatty foods) on children's mood and mental health outcomes compared to the effects of sufficient healthy food intake. A recent systematic review has now confirmed a relationship between 'unhealthy' dietary patterns and poorer mood in children.

A parallel consequence of poor diet is obesity, which is a pro-inflammatory state. Obesity and depression share a well-established bidirectional relationship; obesity itself increases the risk for CMDs [16] and depression predisposes to the accumulation of excess adipose tissue [17].

Basically the science of food's effect on mood is based on this: Dietary changes can bring about changes in our brain structure (chemically and physiologically), which can lead to altered behavior. The connection between carbohydrates and mood is all about tryptophan, a nonessential amino acid. As more tryptophan enters the brain, more serotonin is synthesized in the brain, and mood tends to improve. Serotonin, known as a mood regulator, is made naturally in the brain from tryptophan with some help from the B vitamins. So it's important to make smart carbohydrate choices like whole grains, fruits, vegetables, and legumes, which also contribute important nutrients and fiber [18].

In recognition of the substantial burden of lifestyle-related NCDs, the World Health Organization (WHO) developed the Global Strategy on Diet, Physical Activity and Health (DPAS) in 2004 [19]. DPAS identified the need for integrated multi-sectorial policy action to improve food environments and population diets, and highlighted the need for government policy intervention at regional, national, and local levels [20].

Policies likely to be effective interventions include restrictions on the marketing of unhealthy foods and beverages to children, improved and interpretive nutrition labeling (e.g. using colors or stars on the front-of-pack), and taxes on unhealthy foods (e.g. sugar sweetened drinks)[21]. While it is clear that these policy actions are not currently designed specifically to address mental health problems, they may serve as 'stealth

interventions' to address CMDs indirectly [22]. However, we would argue that more direct action is now needed to directly address mental health via nutrition-related policy and initiatives.

In conclusion, increased consumption of unhealthy processed and fatty foods were positively related to the risk for common mental disorders in children particularly mood swinging.

Objectives:

This study investigates how fatty food affect children's mood in Saudi Arabia.

SUBJECTS AND METHODS

Study design:

This cross sectional study was conducted through random sampling. The population was general people male and female parents from different cities in Saudi Arabia like, Al-Madinah Al-Munwarah, Jeddah, and in Riyadh. The Research and Ethical Committee at the study location approved the study protocol. People were provided with information on the study aims and methods. The volunteer people were selected randomly from different cities in Saudi Arabia.

Data were collected by using self-administered electronic questionnaires. The questionnaire consisted of 30 questions about age, sex, nationality, educational level, number of children and their ages, many questions about diet habit and the effect of fatty food on children mood and if they will decrease eating fatty food after knowing their bad effect or not.The study sample size was 310 parents. The Saudi and married participants accounted for of 95 % of the sample. The non-Saudi (5%) were excluded from the analyses.

Statistical analysis:

The children age was expressed as mean ± standard error of the mean (SEM). Statistical analysis was performed using unpaired Student t-test. The values are means S.D for the students in each group. p value <0.05 was considered as significant.

Descriptive and differential statistical measures were adapted for the analysis of the collected data. Data are expressed as proportions and Chi-square test was used for comparison of two proportions.

RESULTS

The study included 310 parents, 95 % of them were Saudi. As shown in table 1, about 96 % of the parents were married while 68 % of them were university educated. Almost 72 % of the parents have more than one child (table 1).

Table 1. Demographic data of the study population.

Descriptive characteristics	Percentage	
Nationality	Saudi (95 %)	Non-Saudi (5 %)
Marital Status	Married (96 %)	Unmarried (4 %)
Educational state	University educated (68 %)	Other (32 %)
Working status	Working (46 %)	Non-working (54 %)
Number of children	One child (28 %)	More than one (72 %)

Table 2, figure 1.Shows the age of the children involved in the study. There was significant difference (P=0.0127) between fast food consumers and non-fast food consumers.

Table 2. The age of the children.

	All	Fast food consumers	Non fast food consumers
Age	8.6 ± 0.26	9.8 ± 0.39	7.9 ± 0.51

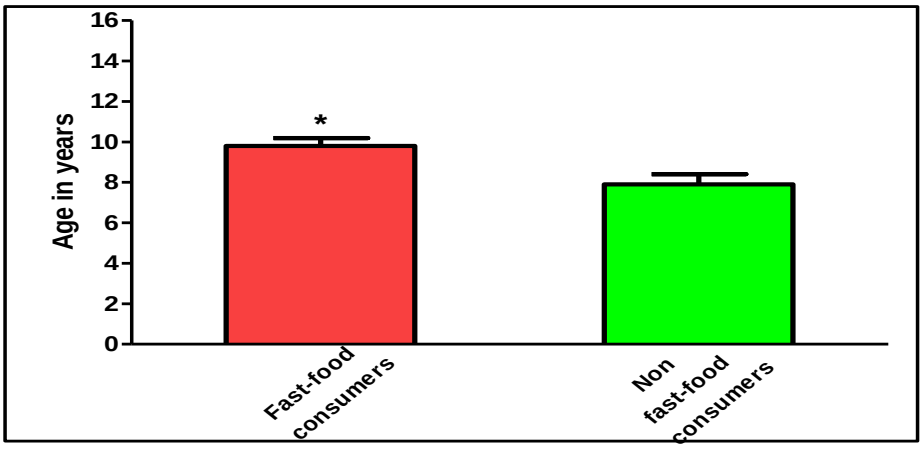

Figure 1. The age of the children.

The parents declared the percentage of the daily/weekly food regimen included in the children's fast food (table 3, figure 2)

Table 3. Percentage of Fast food intake.

Descriptive characteristics	Yes	No	P value
Does the daily food regimen contain fast food?	77% (237)	23% (73)	< 0.0001*
Weekly fast food intake	70%	30%	< 0.0001*

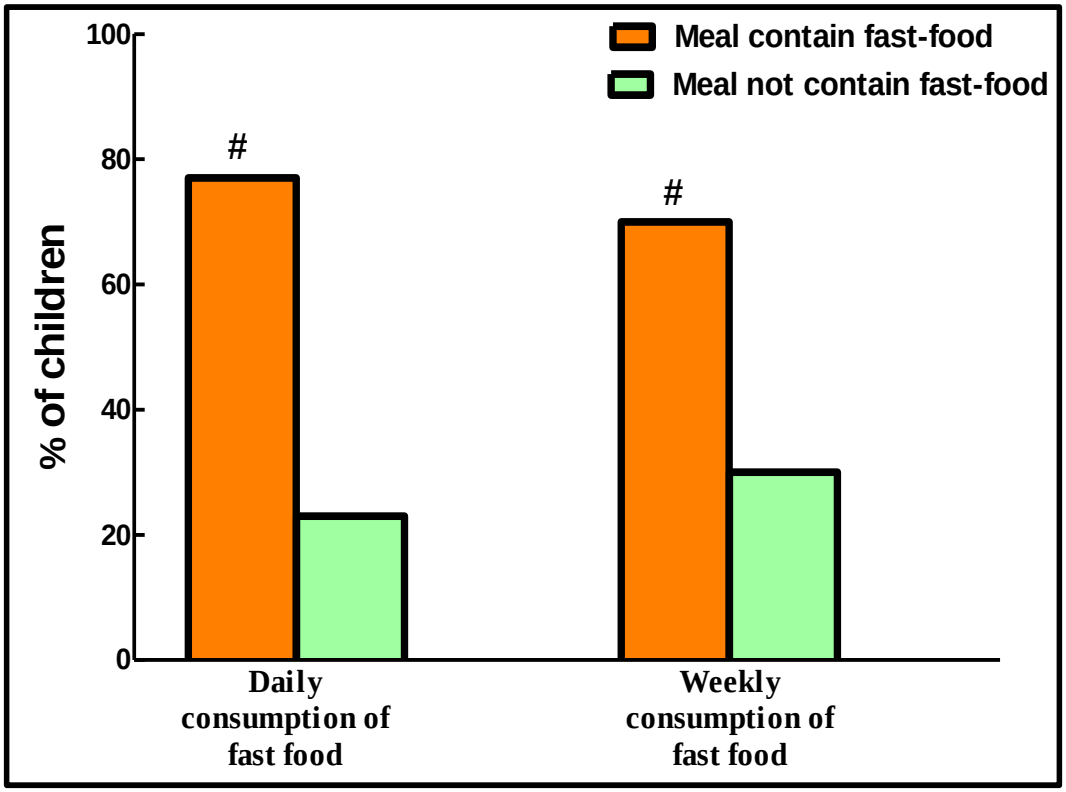

Figure 2. Daily/Weekly children's meal content of the fast food

Furthermore, about 68 % of the children have more than 2 meals of fast food/week, 9% more than 3 meals as compared to 29 % don't consume any fast food/week. The majority of the children prefer fast food over any other one while the parents are opposing to this (Table 4.)

Table 4 .Children and parents' opinion in fast food.

Descriptive characteristics	Yes	No	P value
The child prefer fast food over home healthy food	62% (193)	38% (117)	0.0011 *
The parent approval to child fast food intake	12% (38)	88% (272)	< 0.0001*

The parents showed that their children are suffering from different symptoms like, lethargy (15 %), hyperactivity (40 %), and obesity (14 %), mood disturbance (42 %).Although 42 % of the parents declared that their kids are suffering from mood disturbance, they did not correlate this with their nutritional habits (figure 3).

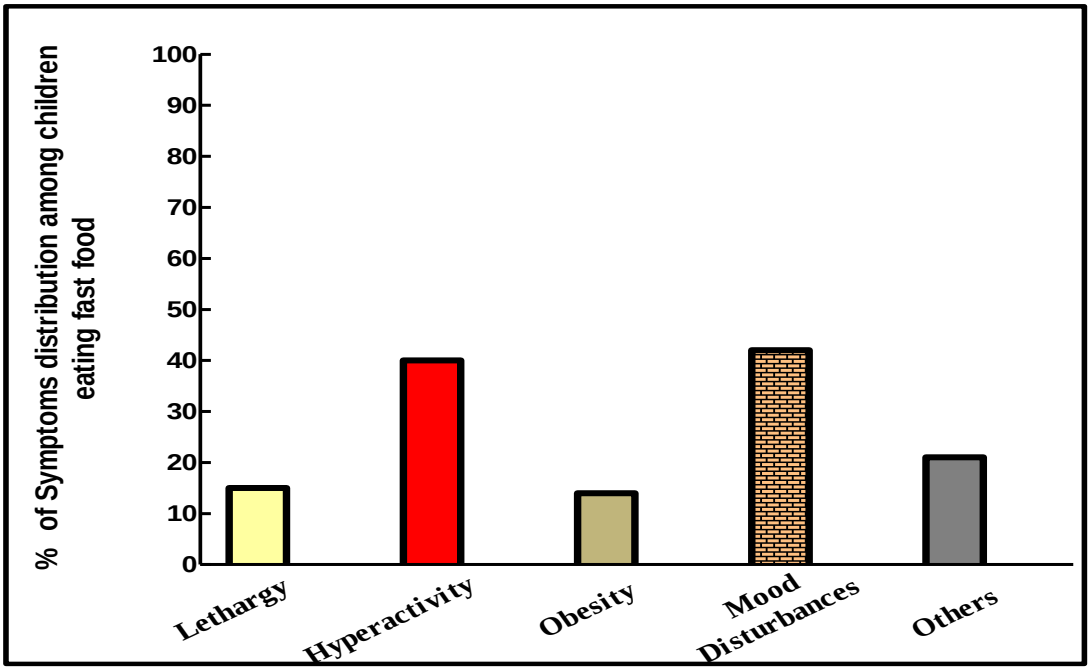

Figure 3. Symptoms related to fast food intake.

When asking about the preferred type of food, 55 % of the parent's choose the fast food as the preferred one for their kids (figure 3). The parents also suggested many reasons for preferring fast food. For example, its convenience, delicious taste.

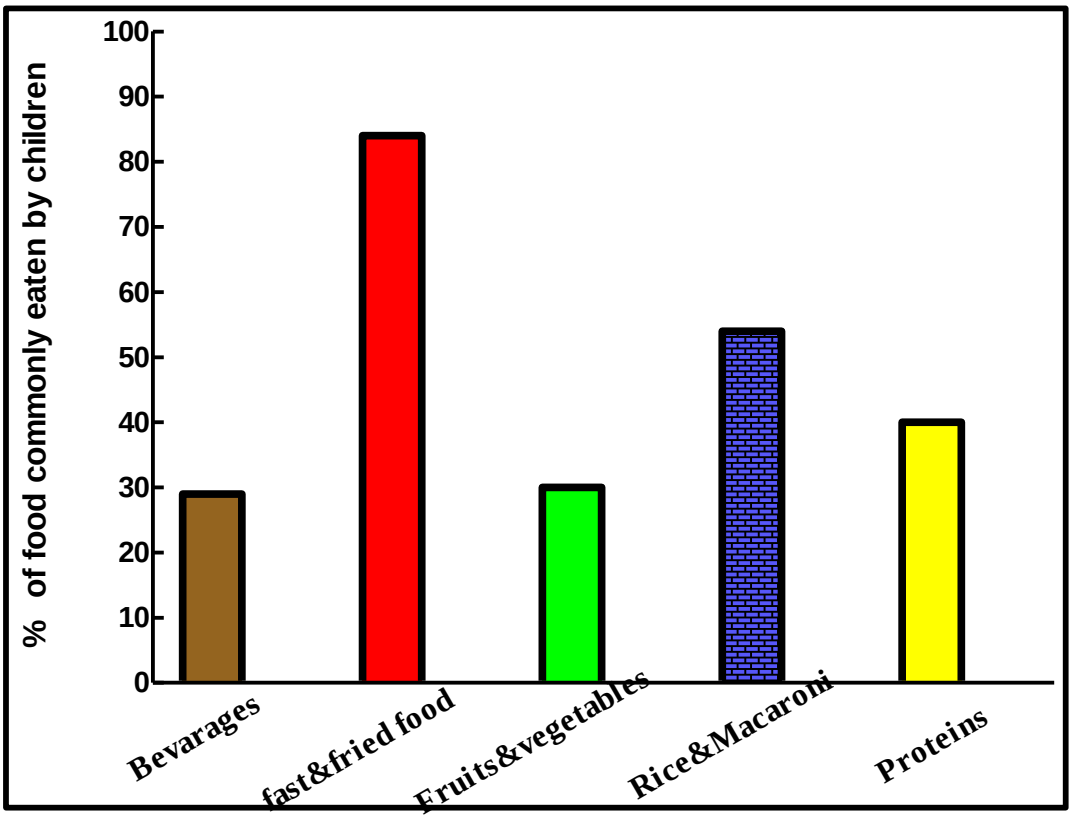

Figure 4. Type of food that commonly eaten by children.

Table 5. Parents' opinion about relation of fast food to chronic diseases.

Descriptive characteristics	Yes	No	P value
Parents thinking that food containing saturated fats has a role in pathogenesis of chronic diseases like hypertension or obesity	94 (292)	6 (18)	< 0.0001*
Parents thinking that fast food has a role in prevalence of diabetes or obesity especially in children	94 (292)	6 (18)	< 0.0001*
Mood disturbance upon stopping fast food &Mood improvement after taking fast food	58 (180)	42 (130)	0.0336 *
Trial to stop your child from eating fast food	81 (251)	19 (59)	< 0.0001*

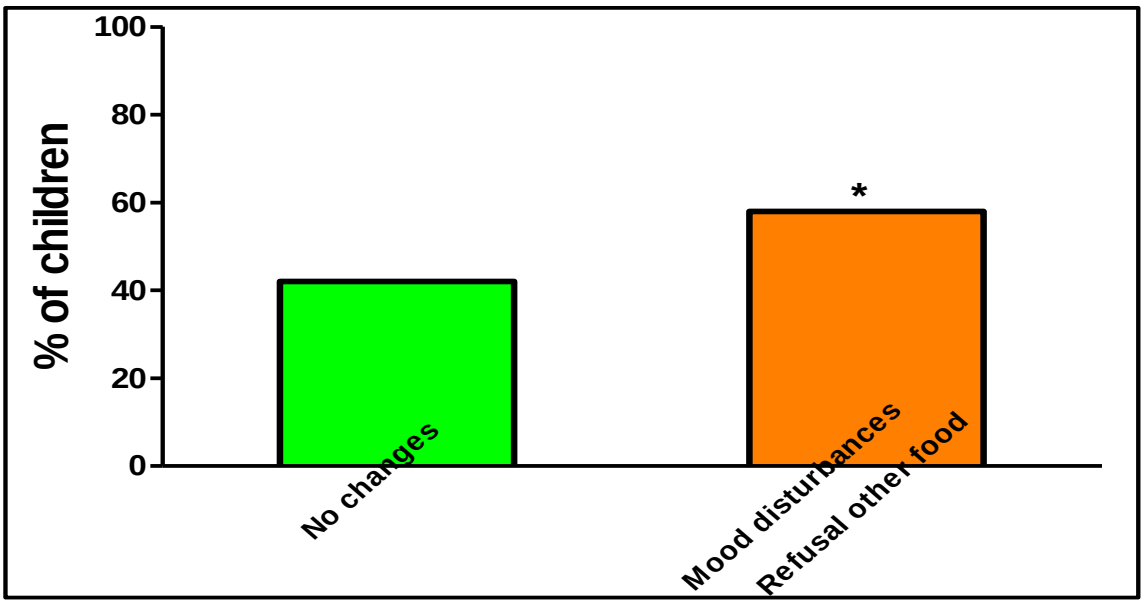

Figure 5. Regarding what happened to your child when stopping fast food.

Table 6.

Descriptive characteristics	Yes	No	P value
Parents thinking that fast food affect mood	55 (171)	45 (139)	0.2030
Parents satisfied with children nutrition	37 (116)	63 (194)	0.0004 *
Child full of energy till the end of the day	68 (212)	32 (98)	<0.0001 *
Natural food consumption “vegetables and fruits”	39 (120)	61 (190)	0.007 *
Mal nutrition disorders	18 (56)	82 (254)	<0.0001 *
Schools are one of the reasons for fast food	58 (179)	42 (131)	0.0336

Future prospective (%) of parents determinant to decrease fast food upon knowing its injuries, 86% (268) will decrease fast food content in their children diet, while 14% (42) will take no action (significant p value <0.0001 *), (figure 6).

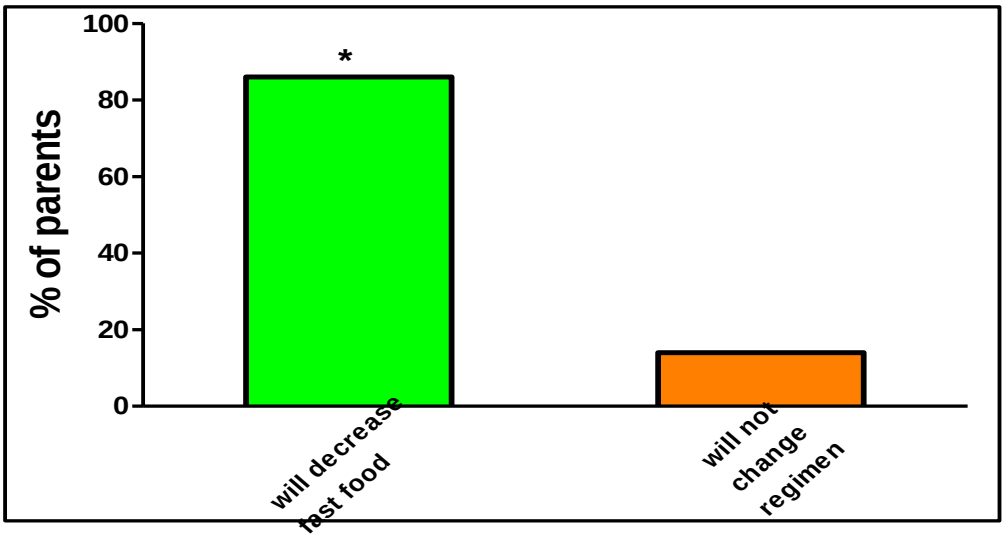

Figure 6. Parents' opinion on knowing the dangers of fast food.

DISCUSSION

Both research and experience are proven without a doubt that there is a connection between how we eat and how we think. The biochemical basis of this food-mood relationship lies in the neurotransmitters, these chemical messengers which relay thoughts and actions along the trillions of neural pathways in the brain. It seems logical that since food affects neurotransmitter action and changes in neurotransmitters are responsible for changes in moods, that food does affect mood. It also seems that food affects some people's moods more than others. Some children we call them "vulnerable kids" are exquisitely sensitive to junk foods in their diets, while others seem to breeze through fast-food joints without any mood change [23].Since this kind of food is widespread in our society, this study mainly focused on the impact of these foods on the mood of our children.

The current study indicated that 62% of the children prefer fast food over home healthy foods that require neither the structure nor the preparation of a formal meal, although most of their parents (88%) refuse that(table 4).Other research was done in UK report that 2.9% reported never eating regularly and while 17.2% reported daily consumption of junk food. Young people who reported eating irregularly and consuming junk food daily were at a significantly greater risk of poorer mentaland physical health [24]. While another research done by Nisar et al, reported that nearly 97% reported consumption of junk food [25].

Furthermore, more than half of the children involved in this study have more than 2 meals of fast food per week. This can be attributed to the availability of junk food and snacks at low prices and marketing as stated in the study done by Jackson et al, 2004which was about Junk food consumption and child nutrition [24]. But parents also suggested other reasons for preferring fast food for example, its convenience and delicious taste. Further they think schools are one of the reasons for daily unhealthy food consumption by children (table 6).

We also found that the most common Type of foods that commonly eaten by children were fast and fried food, followed by rice and macaroni (figure 4).Other research done by Angela Haupt, 2011 found that only complex carbohydrates - high in fiber and packed with whole grains - have a positive effect on mood, whereas simple carbs (think candy, cake, cookies, and other sugary choices) bring you down [26]. On the other hand, only 39% of the involved children eat vegetables and fruits and this category of them do not suffer from mental disorders as Improvement of eating habits toward healthier diets may be an effective approach for improving mental health[27](table 6)as proved by a previous study by Zahedi et al which reported that

Junk food consumption may increase the risk for psychiatric distress and violent behaviors in children and adolescents. Improvement of eating habits toward healthier diets may be an effective approach for improving mental health [27].

In our study, theparents declared that their children who have unhealthy eating behaviors suffering from mood disturbance with different symptoms like, lethargy, hyperactivity and obesity. With a significant change in mood and behavior of their children after stopping fatty meals(table 5),(figure 5).This finding comes in concordance with a previous study byFelice Jacka, 2013 who was investigating the effect of fatty food on the mental health of children, and it shows that the frequency of junk food consumption was significantly associated with increase the risk of psychiatric distress (worry, depression, confusion, insomnia, anxiety, aggression, and worthless) and violent behaviors (physical fighting) in children and adolescents[27].

Ina study by Carissa, 2013 found that the diet quality has a significant effect on mental health outcomes and may play a role in the prevention and treatment of common psychiatric disorders and children who ate more unhealthy foods in early life or who did not eat sufficient amounts of nutrient-rich foods during the first years of life exhibited more of these "externalizing" behaviors as well as increased "internalizing" behaviors, indicative of depression and anxiety[28].Because of that, most of the parents who involved in our study have a trial to stop their children from eating fast food by different ways and this idea was supported before by many studies which states the following; consumption of junk food should be reduced via restricting TV advertisements and increasing taxes on junk foods [27], and education about junk food consumption and healthy eating habits in the family, starting since childbirth and public policies about healthy lifestyles should be strengthened[24].

In addition, this study has suggested that the increase in junk food consumption is associated with an increase in obesity, diabetes and other chronic diseases among children and this was confirmed bya study which has suggested that the increase in snack consumption is associated with an increase in obesity, tooth decay and other chronic diseases among children and adolescents.The hypothesis suggests a link between the pattern of snack consumption and an increase in the energy density of food consumed a decrease in satiety, passive over consumption, and an increase in obesity. The frequency of non-transmissible chronic diseases is increasing due primarily to a westernized diet that is high in fat, cholesterol, sodium, and sugar and a sedentary life style [24].
Not only that; a significant association was found between fast food consumption and Blood Pressure levels as reported in a study of junk food consumption with high blood pressure and obesity in Iranian children and adolescents: the CASPIAN-IV Study[27].

CONCLUSION

Fatty food consumption may increase the risk of psychiatric problems and mood disturbance among children in Saudia Arabia and Interventions to change this dietary habit by stop eating this kind of food will bean effective approach for improving mental and physical health.

Recommendation

We advise the community to reduce the consumption of junk food among children by increasing awareness of its bad effect via different ways using media and health education sessions in different places may be helpful.

Study Limitations:

- The number of the study population need to be increased and involves more Saudi regions and populations.
- The cross sectional design of the study did not allows measurement of the actual future improvement after stop eating fatty food. Further intervention researches are needed to study pre and post- effects of junk food consumption among children.

REFERENCES

1. Felice N Jacka, Gary Sacks, Michael Berk and Steven Allender(2014). Food policies for physical and mental health, BMC Psychiatry 2014, 14:132.
2. Jacka F, Kremer P, Leslie E, Berk M, Patton G, Toumbourou J, Williams J (2010). Associations between diet quality and depressed mood in adolescents: results from the Australian healthy neighbourhoods study. Aust N Z J Psychiatry , 44(5):435-442.
3. Jacka FN, Kremer PJ, Berk M, de Silva-Sanigorski AM, Moodie M, Leslie ER, Pasco JA, Swinburn BA (2011). A prospective study of diet quality and mental health in adolescents. PLoS One , 6(9):e24805.
4. Donna Ricketts, Demand Media (2014).The Effects of Good Nutrition on Children's Behavior. http://healthyeating.sfgate.com/effects-good-nutrition-childrens-behavior-9126.html
5. Jacka FN, Mykletun A, Berk M (2012). Moving towards a population health approach to the primary prevention of common mental disorders. BMC Med , 10:149
6. Kohlboeck G, Sausenthaler S, Standl M, Koletzko S, Bauer CP, et al (2012). Food Intake, Diet Quality and Behavioral Problems in Children: Results from the GINI-plus/LISA-plus Studies. Ann NutrMetab 60: 247–256
7. Jacka F, Ystrom E, Brantsaeter AL, Karevold E, Roth C, et al (2013). Maternal and Early Postnatal Nutrition and Mental Health of Offspring by Age 5 Years: A Prospective Cohort Study. Journal of the American Academy of Child and Adolescent Psychiatry 52(10): 1038–47. doi: 10.1016/j.jaac.2013.07.002
8. Jacka FN, Kremer PJ, Leslie E, Berk M, Patton G, et al (2010). Associations between diet quality and depressed mood in adolescents: results from the Healthy Neighbourhoods study. Aust N Z J Psychiatry 44: 435–442. doi: 10.3109/00048670903571598
9. Jacka F, Kremer PJ, Berk M, de Silva-Sanigorski A, Moodie M, et al (2011). A prospective study of diet quality and mental health in adolescents. PLoS One 6: e24805. doi: 10.1371/journal.pone.0024805
10. Weng TT, Hao JH, Qian QW, Cao H, Fu JL, et al (2011). Is there any relationship between dietary patterns and depression and anxiety in Chinese adolescents? Public Health Nutr: 1–10
11. Jacka FN, Mykletun A, Berk M, Bjelland I, Tell GS (2011). The association between habitual diet quality and the common mental disorders in community-dwelling adults: the Hordaland Health study. Psychosom Med 73: 483–490. doi: 10.1097/psy.0b013e318222831a
12. Jacka FN, Pasco JA, Mykletun A, Williams LJ, Hodge AM, et al (2010). Association between western and traditional diets and depression and anxiety in women. Am J Psychiatry 167: 305–311. doi: 10.1176/appi.ajp.2009.09060881
13. Akbaraly TN, Brunner EJ, Ferrie JE, Marmot MG, Kivimaki M, et al (2009). Dietary pattern and depressive symptoms in middle age. Br J Psychiatry 195: 408-413. doi: 10.1192/bjp.bp.108.058925
14. Sanchez-Villegas A, Delgado-Rodriguez M, Alonso A, Schlatter J, Lahortiga F, et al (2009). Association of the Mediterranean dietary pattern with the incidence of depression: the Seguimiento Universidad de Navarra/University of Navarra follow-up (SUN) cohort. Arch Gen Psychiatry 66: 1090–1098. doi: 10.1001/archgenpsychiatry.2009.129
15. Nanri A, Kimura Y, Matsushita Y, Ohta M, Sato M, et al (2010). Dietary patterns and depressive symptoms among Japanese men and women. Eur J ClinNutr 64: 832-839. doi: 10.1038/ejcn.2010.86
16. Sanderson K, Patton GC, McKercher C, Dwyer T, Venn AJ (2011). Overweight and obesity in childhood and risk of mental disorder: a 20-year cohort study.*Aust N Z J Psychiatry*, 45(5):384-392.
17. Williams LJ, Pasco JA, Henry MJ, Jacka FN, Dodd S, Nicholson GC, Kotowicz MA, Berk M (2009). Lifetime psychiatric disorders and body composition: a population-based study. *J Affect Disord* , 118(1–3):173-179.
18. Elaine Magee, MPH, RD How Food Affects Your Moods .Can your diet help put you in a good mood (or a bad one)?. Reviewed by BrunildaNazario, MD. WebMD Weight Loss Clinic - Expert Column.
19. World Health Organisation (2004). Global strategy on Diet, Physical Activity and Health. Geneva: World Health Organisation;2004.
20. United Nations: Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases. New York: United Nations, General Assembly; 2011.
21. Gortmaker SL, Swinburn BA, Levy D, Carter R, Mabry PL, Finegood DT, Huang T, Marsh T, Moodie ML (2011). Changing the future of obesity: science, policy, and action.Lancet, 378(9793):838-847.
22. Robinson TN (2010). Save the world, prevent obesity: piggybacking on existing social and ideological movements. Obesity, 18(Suppl 1):S17-22.
23. Dr.Sear.sears parenting library. How Food Affects Your Mood. October 17, 20140.
24. Zahra J, Ford T, Jodrell D (2014). Cross-sectional survey of daily junk food consumption, irregular eating, mental and physical health and parenting style of British secondary school children. Child Care Health Dev. Jul;40(4):481-91. doi: 10.1111/cch.12068. Epub 2013 Apr 18.
25. Angela Haupt (2011). Best Foods to Eat for Your Mood-and a Few Bad Ones. Aug. 31, 2011 | 3:01 p.m. EDT
26. Nisar N1, Qadri MH, Fatima K, Perveen S (2009). Dietary habits and life style among the students of a private medical university Karachi. J Pak Med Assoc. Feb;59(2):98-101.

27. Zahedi H, Kelishadi R, Heshmat R, Motlagh ME, Ranjbar SH, Ardalan G, Payab M, Chinian M, Asayesh H, Larijani B, Qorbani M (2014). Association between junk food consumption and mental health in a national sample of Iranian children and adolescents: the CASPIAN-IV study. Nutrition. Nov-Dec;30(11-12):1391-7. doi: 10.1016/j.nut.2014.04.014. Epub 2014 May 9.
28. Carissa. The link between Food & Mood in Children.August 31, 2013. The study was published online August 17 in the Journal of the American Academy of Child and Adolescent Psychiatry.