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EFFECT OF FAST FOOD CONSUMPTION ON NUTRITIONAL AND HEALTHY STATUS IN PRIMARY SCHOOL FEMALE-CHILDREN

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ABSTRACT

This study aimed to investigate the effect of fast food consumption on the nutritional and healthy status of primary school female-children. The study was conducted on 57 of the female primary school children age ranged from 6 to 12 years, were classified into three groups,(19 female each group) as follows the first group, which Low fast food intake and second group which Moderate fast food intake the third group, which High fast food intake The Information about food items was obtained by using food frequency method , 24 hour recall and calculate the average intake of food the anthropometric measurements were calculated by (Length, Weight, BMI, and Head, Chest, waist circumference) to assess nutritional status, as well as blood tests (hemoglobin level, calcium and some liver function and kidney) to assess the health status Results revealed that Food intake analysis of high fast foods intake of female children, groups recorded high content of cholesterol, fats, carbohydrates and sodium however it contained low content of most of vitamins and minerals the chocolate biscuits were the most preferred high sugar fast food group , followed by ice cream; however karate was the most preferred kinds of low sugar fast food group, followed by potatoes chips in each study groups It also resulted in the results of study to analysis the blood that there is significant decrease in the level of hemoglobin and calcium at $p < 0.05$ for each study groups and also significant decrease in level of liver function. and creatinine at $p < 0.05$ in the second group, which Moderate fast food intake

It can be recommended that the need to limit the consumption of fast foods to female primary school children because of its negative effects on the nutritional and health status

Keywords:Fast Food- female-children –nutritional and healthy – Dietary assessment.

INTRODUCTION

Fast food is defined as any food which may be cooked easily, and sold by restaurants to be eaten quickly or taken away (Marchesini and Fernandez, 2008). Guthrie *et al*., (2002) reported that fast food tend to be high in fat However Bowman and Vinyard .(2004) observed that children fast food meal contained 1400 kcal, 85% of recommended daily fat intake and 73% of recommended saturated fat. People who eat fast foods once per week have an additional 20% risk for developing coronary heart disease compared with those who never consume (Odegaard *et al*., 2012). Barbara and Kitchell,(1984) found that the mice feeding on the junk food diet were highly significant increases in specific liquids in the heart and liver. Rat offspring born to mothers fed the fast food diet rich in fat, sugar and salt develop exacerbated adiposity accompanied by raised circulating triglyceride and cholesterol (Bayol *et al*., 2008). Leslie *et al*., (2008) reported that acidic beverages are thought to increase the potential for dental erosion. Galal *et al*., (2005) found that malnutrition disorders affect more than 30% of school children in Egypt. This problem appears to be largely attributable to poor

dietary quality and micronutrient deficiencies, such as iron and vitamin A. Matheson (2008) mentioned that the diets of Hispanic children are high in fat and low in fruits and vegetables, which may contribute to their high rates of obesity. Results revealed that environmental factors, such as household structure, family attitudes towards food and the social context of food messages influence children's food intake. Ethnicity or level of acculturation in Hispanic families may moderate these relationships, but additional research is needed to more fully understand the effects of the process of acculturation on children's diets. More importantly, intervention research is needed to develop and implement programs that may be used to shape public health practice and policies. The aim of present work is to evaluate the nutritional status of female school-aged children in primary school in relation to their consumption pattern of fast food.

Subjects and Methods

Sample Size and design

The study started from October 2011, to end in December 2011. A random sample of 57 female students aged between 6 and 12 years old representing females were chosen from primary school in Mahalet Hassan, El gharbia Governorate, Egypt. The total number of sample has been classified into three groups (Low fast food intake, moderate fast food intake and high fast food intake group).

Food intake retrieval within 24 hours: Information about food items and snacks were obtained by using food frequency method. Children were asked to give a detailed account about daily, weekly or monthly consumption from different food items and or groups.

Food intake calculation: The intake of each nutrient was calculated and compared To Recommended Dietary Allowances (R.D.A ,2005).

Calculation of nutritive value of consumed diets.

Nutrient values were derived from standard reference table of Diet Analysis Program (1995) for diet analysis for fast foods, Faculty of Home Economics Minufiya University, Version 1, Diet and Statistical Analysis Branch, Unit of special Nature. Calculations were made for the contribution of food to Calories, protein, fat, carbohydrate, calcium, zinc, magnesium, iron, vitamin A, niacin, E, B6, B12, B2, B1, D, C, cholesterol, ash, phosphorus, sodium, and folat.

Assessment of the nutritional status:

Anthropometric measurements:

The anthropometric measurements were carried out according to Jellife (1966) included height, weight, Body Mass Index (BMI) and circumferences.The Anthropometric measurements were estimated as follows

Body height and weight:

The subjects stood on a flat with feet parallel and with hells buttocks, shoulders and back of head touching the upright board. The head had been hold comfortably erect with the lower border of the orbit in the same horizontal plane; the arms were handing at the sides in natural manner. Weight was assessed using abeam type balance, while subject stood with light clothes and bare footed, standards for Jellife

(1966) were used. Body Mass Index (BMI) was then computed using the ratio of weight (kg) / heigh^2 (m^2) according to Raatz *et al.,* (2005)

Laboratory analysis:

Information about hemoglobin level, serum criatien, SGPT and calcium were estimated according to Wintrobe (1965).

Health status represented as analysis of levels of hemoglobin, serum creatinine, SGPT and calcium and some problems occurring during children.

Statistical analysis:

The collected data were subjected to find out standard deviation, significant differences this analysis was completed at Minufiya University using SPSS statically program (SPSS, 1998).

RESULTS AND DISCUSSION

Volume of high sugar fast food consumption for children females throughout 24 hours are represented in Table (1). Results show that Chocolate biscuits was the most consumption of high sugar fast food (116±6.8 gm), followed by Ice Cream (114±6.7 gm), Plain biscuit (107±6.5 gm), then Asaleya (109±5.45 gm). However ice cream recorded the high consumption (136±6.01 gm) for the moderate intake of fast food group, followed by plain biscuits (127±6.15 gm) and chocolate biscuits (127±6.35 gm). Low fast food intake group showed high consumption of chocolate biscuits (121±5.05 gm), plain biscuit (109±5.45 gm) and ice cream (103±5.15 gm).

Klazine *et al*., (2008) indicated that the children's attitudes, subjective norms, parental and peer modeling, and intentions were positively associated with soft drink and snack consumption while Zhong and Sanford (2010) indicated that fast food can have a far broader impact on individual behaviors and choices. Randy *et al*., (2009) supported the hypothesis that depiction of behaviors that closely resemble behavior associated with substance-using behavior is present in the televised food commercials examined in this study approximately one in 12 of the commercials across all of the food categories depicted an exaggerated pleasure response to eating a food product defined as beyond the normal pleasurable sensation typically associated with consumption.

Amount of low sugar fast food consumption for female children throughout one week are represented in Table (2). Data show that luncheon (109±5.45 gm) was the most preferred kinds of low sugar fast food, followed by potatoes chips (105±6.1gm), sunflower seeds (101±5.94 gm) then karate (122±6.58 gm). potatoes chips also recorded the highest consumption (98±4.9 gm) for the moderate fast food intake group, followed by luncheon (102±5.1 gm) , sunflower seeds (111±5.55 gm), then Karate (113±5.65 gm) .Low fast food intake group showed high consumption of frozen liver (46±2.7 gm) of , karate (93±4.65 gm) potatoes chips (95±4.7 gm), and luncheon (86±5.05 gm).

World Health Organization and the Food & Agriculture Organization concluded that the heavy marketing of fast food and high caloric snack foods and beverages is a probable causal factor in weight gain and obesity in children) Anderson and Butcher , 2006).

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Niva, (2006) emphasized the role of functional foods as a socially and culturally shaped phenomenon instead of mere products to be accepted or rejected in urban areas, higher proportions of available fast-food restaurants out of total restaurants in predominantly black versus predominantly white neighborhoods may contribute to racial differences in obesity rates (Lisa *et al*, 2007).

Data in Table (3) show macronutrient content of daily intake of primary school female children daily diet compared to RDA (2005). It is noticed that the cholesterol intake of females was 154.17±26.27 ,264.27±19.22 and 417.58±26.48 mg, for low, moderate and high fast food intake group, respectively. were significantly higher at $p<0.01$ and 0.001 in moderate and high fast food intake group compared to RDA (2005) Total protein of female children for the same three groups was 18.22±1.20, 19.71±4.57 and 22.64±4.26 gm, respectively. Data also show that mean intake of total fat of female children school was 72.37±7.29, 77.68±7.14 and 102.49±19.73 gm in three groups, respectively. A significant increase can be observed between moderate fast food intake group comparing to RDA of total fat. at $p<0.05$, 0.01and 0.001 respectively It can be noticed from the same table that mean intake of carbohydrate of females children school was 206.25±66.18, 266.16±83.14 and 379.3±75.33 gm for low, moderate and high fast food intake group respectively. A significant decrease can be observed between low and moderate fast food intake group comparing to RDA of total carbohydrate. at $p<0.05$, 0.01 but A significant increase can be observed in the high fast food intake group at $p<0$. 0.01. And it is noticed that mean intake of fiber of female children school was in three groups 6.06±1.47, 6.47±1.12 and 8.58±1.23 gm, respectively. Calories intake of female children in low and moderate fast food intake group was 1549.21±104.56 (Kcal),and1842.60±122.71 (Kcal), was significant decrease at $p>0.05$ compared to to RDA however it was 2530.11±155.40 (Kcal) in the high fast food intake group. A significant increase at $p<0.001$ compared to R.D.A of energy.

Swaiffy (1987), Calloway *et al*., (1988) and Allen *et al*., (1992) reported that protein intake by school age children was more than adequate. Lisa *et al*., (2013) referred that the Fast-food and full-service restaurant consumption was associated with a net increase in daily total energy intake of 126.29 kcal and 160.49 kcal for children and with higher intake of regular soda (73.77 g and 88.28 g) and sugar-sweetened beverages generally. Fast-food consumption increased intake of total fat (7.03-14.36 g), saturated fat (1.99-4.64 g), and sugar (5.71-16.24 g) and sodium (396.28 mg). Full-service restaurant consumption was associated with increases in all nutrients examined. Additional key findings were (1) adverse effects on diet were larger for lower-income children, (2) increased soda intake was twice as large when fast food was consumed away from home than at home and (3) fast-food and full-service restaurant consumption is associated with higher net total energy intake and poorer diet quality.

The data in Table (4) showed minerals content of daily intake of primary school female students compared with RDA (2005). It is noticed that sodium intake of females was 2.73±0.13, 3.63±0.34and 3.82±0.55 (g),for low,

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moderate and high fast food intake group respectively. The difference in sodium content of three groups was significant increase at (p< 0.05, 0.01, and 0.001) respectively Potassium of female children school for the same three groups was 1.44±0.92, 2.01±0.42and 3.04±0.62 (g), respectively. The differences in potassium content of groups were significant decrease at (p<0.001 ,0.01 and 0.05) respectively

It can be noticed from the same table that mean intake of T. Iron school female children of low and moderate fast food intake group was non significantly difference at p>0.05 compared to RDA but T. Iron school female children high fast food intake was significantly increase at p>0.01 compared to RDA . Also the same table show that mean intake of zinc of children female for three groups was 5.47±0.87, 7.44±0.32 and 10.22±2.31 (mg), respectively. Calcium content of children females in low group was 323.92±10.19 (mg), while in second group it was 455.67±26.03 (mg), however it was 619.01±22.83 (mg) in the third group. It is noticed that the phosphor was 832.23±31.32, 1488.52±206.51 and 1496.25±350.88 (mg), respectively for low, moderate and high fast food intake group. Pollitt (1981) and Pollitt *et al .,* (1989) found that there was a positive association between iron stat and language school achievement and that iron deficiency caused complex forms of school learning. Bowman and Vinyard (2004) found that many fast foods are high in energy, total and saturated fat, cholesterol, and sodium (over consumed nutrients) and low in vitamins A and C, folic acid, calcium, and fiber (under consumed nutrients).This nutrient profile is evident in traditional fast food meal combinations, such as a hamburger, french fries, fried fruit turnover, and soft drink; or fried chicken, mashed potatoes and gravy biscuit and soft drink fat accounts for 45 to 65% of total energy in some fast foods.:

Vitamins content of daily intake of primary school female students groups represented in Table (5) and (6). It is noticed that the Niacin (mg) intake of females was 6.43±0.31 (mg), 10.46±0.62 (mg) and 16.21±1.29 (mg) for low, moderate and high fast food intake, respectively. The difference in niacin content of first group (low) were significant .Also the same table show that mean intake of vit.B2 of children female for three groups was 1.1±0.05 (mg), 1.49±0.03 (mg) and 2.48±0.31 (mg), respectively . It can be noticed from the same table that intake of Vit.B1 of children females was 0.83±0.05 (mg) , 0.75±0.03 (mg) and 1.03±31 (mg) for low, moderate and high fast food intake group, respectively. Vit.C content of children females in low group was 44.07±4.41 (mg) while in second group it was 70.10±6.18 (mg), however it was 94.99±8.89 (mg) in the third group, respectively. The differences in Vit.C content of moderate group were significant. It can be noticed from the same table that mean intake of folat of female children was 137.45±6.66 (µg) , 169.69±7.24 (µg) and 242.36±17.15 (µg) for low, moderate and high fast food intake group, respectively. The differences in folate content of high group were significant. Vit.B12 content of female children in low group was1.78±0.28 (µg) while in second group it was 2.90±0.56 (µg) however it was 4.42±0.26 (µg) in the third group.

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The differences in Vit.B12 content of first group (low) were significant. It is noticed that the vit.B6 intake of females was 1.01±0.35 (mg), 1.24±0.49 (mg) and 2.05±0.60 (mg) for low, moderate and high fast food intake, respectively. The differences in Vit.B6 content of high group were significant. Also the same table show that the mean intake of Vit. E in three groups was 11.69±1.82 (mg), 15.23±1.61 (mg) and 20.73±1.19 (mg) respectively. Vit. D of female children school was 0.93±0.09 (mg), 1.06±0.59 (mg) and 1.58±0.67 (mg) for the same three groups respectively. The difference in Vit. D content of moderate group were significant .It can be noticed from the same table that mean intake of Vit.A of children female was in three groups 188.70±5.82 (µg), 234.52±50.05 (µg) and 300.94±79.12 (µg), respectively. The differences in Vit .A content of first group (low) were significant.

Bhaskaram and Reddy (1973) explain that several studies have shown that vitamin deficiency may lower resistance to infection in experimental animals. Mwaniki *et al*., (2002) found that multi-micronutrient supplementation reduction in mansion egg output increased serum retinol, irrespective of initial serum retinol. Jean *et al*., (2004) justified that the predominant dietary form of vitamin K, phylloquinone (K1), is present in certain plant oils. During hydrogenation of these plant oils, K1 is converted to another form of vitamin K, dihydrophylloquinone (dK). The fast foods and snack foods may be important contributors to vitamin K intake in the US diet. However, those fast foods and snack foods that contain high amounts of dK may not have equivalent contribution to vitamin K status compared to foods containing high amounts of K1 due to differences in biological activity. Francisco *et al*., (2002) indicated that more elevated aluminum (Al) concentrations were detected in foods with a greater content of spices and aromatic herbs, pasta, certain vegetables and additives, and foods packaged in Al vessels. The absorbable fraction of Al estimated with in vitro assays were between 0.85 and 2.15%. The growing popularity of these products in recent years requires additional data and a periodical control.

Data presented in Table (7) show values of anthropometric measurements of primary school female students. It is noticed that the length of females was 137.8±3.23 (cm), 135.2±4.90 (cm) and 137.8±4.23 (cm) in low, moderate and high fast food intake group, respectively. A significant decrease $p<0.05$ aim (low) group compared with normal value. Wight of female children school was by the same three groups was 30.95±1.83 (cm), 32.6±1.53 (cm) and 36.45±1.85 (cm), respectively. Also data showed that the mean ±SD of BMI was16.59±1.04 (Kg/m2), 17.48±1.07 (Kg/m2) and 19.00±1.58(Kg/m2), respectively for low, moderate and high groups , The difference in BMI content of second group (moderate) significantly increased $p<0.01$ compared with normal value . It can be noticed from the same table that mean of Head circumference of female children was 52.95±2.70(cm), 55.2±2.83 (cm) and 54.35±2.83(cm) for low, moderate and high group respectively. Chest circumference content of children females in low group was 62.1±5.72 (cm) while in second group it was 75.8±5.68 however it was 74±3.17 (cm) in the third group. The differences in Chest circumference content of second group (moderate) were highly significant. Also the same

table show that mean of waist circumference of female children for three groups was 64.1±6.97(cm), 66.7±4.40 (cm) and70.75±4.44(cm) respectively.

Abo El-soud (1992) reported that mean children weight from Giza Governorate was 32.50kg, while khaleel (1981) found that mean weights of studied children from Menofia Governorate was 28.80kg. Spurr *et al.,* (1983) reported that social and economic class of the family had an influence on physical growth of children. Heude *et al*., (2003) determined the prevalence of overweight and obesity according to the gender and age specific cut-offs of the new international reference (IOTF). In girls, obesity defined by IOTF criteria increased from 1.6 to 4.4% ($p < 0.03$) and overweight from 14.1 to 18.6% ($p < 0.11$). In female, the change in prevalences was significant only when the less stringent criteria (i.e. the 90th percentile of French references) was used (13.8% in 1992 vs 20% in 2000, $p = 0.03$). Over an 8 years period, there was an increase in height and BMI in both boys and girls. These results show that the increase in the prevalence of obesity is accompanied by a global trend of accelerated growth.

Table (7): Mean ± SD of anthropometric measurements of normal levels and females primary School Students groups.

groups / Variables	Normal level	Students groups		
		Low fast food intake	Moderate fast food intake	High fast food intake
		Mean ±SD	Mean ±SD	Mean ±SD
Length (cm)	144.5	137.8±4.23	135.2±4.90	137.8*±3.23
Weight (cm)	36.5	36.45±1.85	32.6±1.53	30.95±1.83
BMI(cm)	22.5	19.00±1.58	17.48**±1.07	16.59±1.04
Head circumference (cm)	52.07	54.35±2.83	55.2±2.83	52.95±2.70
Chest circumference(cm)	73.33	74**±3.17	75.8±5.68	62.1±5.72
waist circumference (cm)	66.66	70.75±4.44	66.7±4.40	64.1±6.97

Significant with normal level *p <0.05; **p<0.01; ***p<0.001.

Data in Table (8) shows values of hemoglobin, creatainin, SGPT and calcium levels of three groups (low, moderate and high) of primary school female students. It is noticed that the blood hemoglobin of females was 10.22±0.71, 10.34±0.83 and 10.29±0.21 (g/100ml), for low, moderate and high group, respectively. A significant difference in hemoglobin can be observed between all groups and normal level. Creatinine of female children school was by the same three groups was 0.95±0.30, 0.74±0.13 and 0.82±0.11 (mg/dl), respectively. The difference in creatainin content of second group (moderate) were highly significant $p<0.01$. Also the same table show that mean of SGPT of female children for three groups was 32.4±4.33 , 35.2±4.91 and 31.63±2.43 (u/l), respectively. A significant decreased and

increased can be observed between second group (moderate) .While, the difference in SGPT content of second group (moderate) were highly significant. Calcium content of female children in low group was 8.68±0.47 (mg/dl) while in second group it was 8.5±0.12(mg/dl) however it was 8.74±0.32(mg/dl) in the third group. A significant difference was found in calcium for second group (moderate) when compared to RDA of analysis. Pollitt and lebiel, (1976) indicated that the iron deficiency reduce scholastic achievement and cause behavioral disturbances in children. Leenstra *et al*., (2005) found that the prevalence and severity of anemia and iron deficiency they found that iron deficiency and anemia in school attending girls in western Kenya were more prevalent than in developed countries. Maria *et al* ., (2004) mentioned that dietary iron density (from 6 to 9 months) and weight gain rate (from 9 to 12 months) significantly affected the probability of the infant having anemia. It was concluded that the probability curve for anemia obtained from dietary iron density and weight gain rate can be used to identify the risks of anemia, and together with the risk factors identified are important for anemia prevention programs.

Table (8: The mean value ±SD of blood hemoglobin and Serum Creatinine , SGPT and Calcium of normal value and females primary school students groups

Groups / Parameters	Normal value	Students groups		
		Low fast food intake	Moderate fast food intake	High fast food intake
		Mean± SD	Mean± SD	Mean± SD
Hemoglobin (g/100ml)	13	*10.29±0.21	*10.34±0.83	*10.22±0.71
Creatinine (mg/dl)	1	0.82±0.11	*0.74±0.13	0.95±0.30
S.GPT (u/l)	38	**31.63±2.43	*35.2±4.91	**32.4±4.33
Calcium (mg/dl)	9.4	*8.74±0.32	*8.5±0.12	*8.68±0.47

Significant with normal value *p <0.05 **p<0.01 ***p<0.001.

REFERENCES

Abo El-Soud, N.H. (1992):- Cephalometric Anthropometric and IQ Assessment of Normal Child 6-12 years of Age ph. D. Dissertation Institute of post-graduate Childhood Studies Ain Shams University Egypt.

Allen, L.H.; Backstand, J.R.; Chavez, A. and Pelto, G.H.(1992): people cannot live by tortillas Alone. The Collaborative Research Support Program in Mixico, 'CRSP' final Report, U.S. Agency for International Development Grant.

Anderson, P. M. and Butcher, K. F. (2006): Childhood obesity: Trends and potential causes. The future of Children. (16). 19-45.

Barbara, B. and Kitchell. E. (1984): Cascading tropic inter action and lake activity. Department of Surgery Duke University Medical Center, Durham, North Carolina, USA, Life Sciences 34(17): 1613-1620.

Bayol,S.A.; Farrington, S.J. and Sticland, N.C.(2008): A maternal junk food diet in pregnancy and lacation promotes an exacerbated taste for junk food and a greater propensity for obesity in rat offspring. British *journal of Nutrition*, 99 (6):1391-2.

Bhaskaram, C. and Reddy, V. (1973): Cell-mediated Immunity in Iron and Vitamin-deficient Children. *J.* of Tropical Pediatrics and Environmental Child Health. In press.

Bowman, S.A. and Vinyard, B.T. (2004): Fast food consumption of U.S. adults: impact on energy and nutrient intakes and overweight status. *J Am Coll Nutr168*-23:163;2004.

Calloway, D.H.; Murphy, S.P. and Beaton, G.H.(1988): Food Intake and Human Function. The Collaborative Research Support program in Egypt. "CRSP", Final Report, U.S.Agency for international Development Grant.

Diet Analysis Program (1995) : Computer Diet Analyis of Ready to Eat Foods .Original 1 . copyright 1995 ;Faculty of Home Economic Minufia University .

Francisco ,F. L.; Carmen ,C.; Luisa ,L.M. and Carmen , L. (2002) : Aluminum levels in convenience and fast foods: in vitro study of the absorbable fraction . The Science of the Total Environment 300 (2002) 69–79.

Galal,O.M.; Ismail,I.; Gohar, A.S. and Foster, Z.(2005): schoolteacher's awareness about scholastic performance and nutritional status of Egyptian school children .Food-and nutrition-Bulletin. 26(Suppl.2)S275-S280.

Guthrie, J.F., Lin, B.H. and Frazão, E. (2002): Role of food prepared away from home in the American Diet, 1977–78 versus 1994–96: changes and consequences. Journal of

Nutrition Education & Behavior 34 (3), 140–150

Heude , B.; Lafay ,L.; Borys ,J.M.; Thibult ,N.; Lommez ,A.; Romon ,M.; Ducimetière, P. and Charles ,M.A.(2003): Time trend in height, weight, and obesity prevalence in school children from Northern France, 1992-2000.Diabetes Metab 2003,29,235-40.

Jean , R.N .; Borradaile , K.E.; Tester , J.; Foster , G.D. and Gittelsohn , J.(2004) : Healthy food availability in small urban food stores a comparison of four US cities. Public Health Nutr.2010;13(7):1031–1035.

Jelliffe, D. B. (1966): The assessment of the nutritioizal status of the conznzunity. Geneva: W.H.O. Mono- graph Series, No. 53.

Khaleel, H.B.(1981): Assessment of Growth and Development of primary school Children in Menofia Governorate. M.Sc. Thesis, Faculty of Medicine, Al- Azhar University, Egypt.

Klazine ,V.H; Timperio,A; Crawford, D; Roberts,R.;Brug,J. and Oenema, A.(2008): The School Food Environment Associations with Adolescent Soft Drink and Snack Consumption , 35(3):217–223American J. of Preventive Medicine.

Leslie, A.; Ehlen, T.; Marshall,A.; Fang, Q.; James, S.; Wefel ,J. and Warren, k .l . (2008) Acidic beverages increase the risk of in vitro tooth erosion, College of Dentistry, University of Iowa, USA.

Leenstra, T.; Petersen, L.T.; Kariuki, S.K.; Oloo, A.J.; Kager, P.A. and Kuile, F.O. .(2005): Prevalence and severity of Malnutrition and age at menarche, cross-sectional studies in adolescent schoolgirl in western Kenya European-Journal-of-Clinical-Nutrition. 59(1):41-48.

Lisa ,M. Powell .;Rebecca ,M; Schermbeck ,M.S.; Glen ,S.;Frank.B.A.; Chaloupka ,J.; Chaloupka ,L. and Braunschweig (2007): The Availability of Fast-Food and Full-Service Restaurants in the United States, American J. of Preventive Medicine 33(4S):S240–S245.

Lisa , M. ;Powell.; Binh , T. and Nguyen, M.A.(2013) : Fast-Food and Full-Service Restaurant Consumption Among Children and Adolescents Effect on Energy, Beverage, and Nutrient Intake FREE . *JAMA Pediatr.* 2013;167(1):14-20. doi:10.1001/jamapediatrics.2013.417.

Marchesini, M. and Fernandez, M. (2008). The Effect of Soft Drink Availability in Elementary Schools on Consumption. Journal of the American Dietetic Association. Vol 108.

Matheson, D.(2008): Factors influencing food intake of Hispanic children, Progress in Pediatric Cardiology. 25 .143–146.

Maria, C. M.; Hadler, M.H.; Fernando , A.B.; Colugnati, M. ; Dirce, M. and Sigulem,K. (2004) .Risks of anemia in infants according to dietary iron density and weight gain rate . Preventive Medicine 39 (2004) 713 – 721.

Mwaniki, D.;Coon, K.A. and Tucker, K.L.H. (2002). Effects on serum retinol of multi-micronutrient supplementation and multi-helminthes chemotherapy. Europea -J. of-Clinical- Nutrition. 2002; 56(7): 666-673.

Niva. M.(2006). All foods affect health Understandings of functional foods and healthy eating among health-oriented Finns , National Consumer Research Centre (NCRC), PO Box 5 (Kaikukatu 3), FIN-00531 Helsinki, Finland, Appetite. (48) . pp 384–393.

Odegaard ,k.; Coon , K.A. and Tucker , K.L. (2012) .Television and children's consumption patterns. A review of the literature. Minerva Pediatr 2002; 54: 423-36 .

Pollitt, E. and Leibel, R.L.(1976): Iron Deficiency and Behavior. J Pediatr. 88(13-72):371-381.

Pollitt, E.; Leibel, R and Greenfield ,D . (1981) .Brief Fasting ,stress and cognition in children . Am.J.Clin.Nutr. 34:1526-1533.

Pollitt ,E; Hathirat ,P.; Kotchabhakdi ,N.J.; Missell . and Valyasevi ,A. (1989). iron deficiency and educational achievement in Thailand .Am.J.Clin.Nutr.,50:68-697.

Raatz, S. K., C. J. Torkelson, J. B. Redmon, and K. P. Reck,(2005).Reduced glycemic index and glycemic load diets do not increase the effects of energy restriction on weight loss and insulin sensitivity in obese men and women. J. Nutr., 135: 2387-2391

Randy ,M .;Aaron ,D . and Brewster , F . (2009) .Depiction of food as having drug like properties in Televised food advertisements directed at children portrayals as pleasure enhancing and addictive .Journal of pediatric health care .Vol 23 .pp 244-248 .

R.D.A.(2005). Recommended Dietary Allowances 10th Ed., Food and Nutrition Board ,National Academy of Sciences Press , USA .

SPSS (1998) . Statistical package for Social Science, Computer software ver .10,SPSS company, London, UK.

Spurr, G.B.; Reina, J.C.and Baracnieto, M.(1983) Marginal Malnutrition in School-aged Colombian Boys Anthropometric and Malnutrition.Am.j.Clin.Nutr., 37(1):119-132.

Swaiffy, E.M.(1987) . Effect of Nutritional Status on Some psychosocial parameters in Some primary School Children.PH.D. Dissertation, Nutrition, Faculty of Home Economics Helwan University Egypt.

Wintrobe , M .M. (1965). Clinical Haematology. Lea and Febiger, Philadelphia.

Zhong,C and Sanford ,E. D.(2010). You Are How You Eat Fast Food and Impatience Psychological Science 21(5) 619–622.

تـاثير اسـتهلاك الاطعمـه السـريعه علـى الحالـه الغذائيـه والصـحيه فـى انـاث أطفـال مدارس المرحلة الابتدائية

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تهدف الدراسة للتقيم اثر تناول الاطعمه السريعه علي الحالة الغذائية والصحيه لاناث اطفال مدارس المرحله الابتدائية حيث اجريه .الدراسة على ٥٧ من اناث اطفال مدارس المرحله الابتدائيه التى يتراوح اعمارهن بين ٦ و١٢ سنه , قسمت الى ثلاث مجموعات تحتوى كل مجموعه على ١٩ تلميذة كما يلى المجموعه الاولى التلميذات الاتى تتناولن الاطعمه السريعه بكميات منخفضه والمجموعه الثانيه التى تتناول الاطعمه السريعه بكميات متوسطه والمجموعه الثالثه التى تتناول الاطعمه السريعه بكميات مرتفعه

وتم استخدام استمارة استرجاء يوم كامل للحصول علي المعلومات الغذائية من خلال جمع المعلومات الخاصة بجميع الاطعمه المتناوله فى اليوم وحساب متوسط المتناول من الغذاء خلال ايام الدراسه وتم تقديرالمقياس الجسميه (الطول –الوزن –فهرس كتلة الجسم – ومحيط كل من الرائس والصدر والخصر) للتقيم الحالة الغذائية وكما اجرية بعض التحاليل للدم لتقدير مستوى كل من(الهيموجلوبين والكالسيوم وبعض وظائف الكبد والكلى) لتقيم الحاله الصحيه

.واسفرت نتائج الدراسه المتحصل عليها من خلال تحليل المتناول من الاطعمه ان الاطعمه السريعة تحتوى على نسبة عاليه من الكولسترول,الدهون ,الكربوهيدرات والصوديوم و نسبة منخفضة من الفيتامينات والمعادن وذلك فى كل مجموعات الدراسه وكانت واكثر وضوح فى المجموعه التى تتناول الاطعمه السريعه بكميات مرتفعه وكما ان بسكويت الشيكولاته هو الأكثر تفضيلا في المجموعة المتناولة للأغذية مرتفعه السكريات ,يليه الايس كريم ,بينما كان الكاراتيه هو أكثر الأنواع تفضيلا في المجموعة المتناولة للأغذية المنخفضة السكريات,ويلى ذلك رقائق الشيبسي .

كما أسفرت نتائج الدراسه لتحليل الدم ان هناك نقص معنوى فى مستوى الهيموجلوبين الدم و الكالسيوم لكل مجموعات الدراسه ونقص معنوى ايضا فى مستوى وظائف الكبد ومستوى الكرياتنين فى المجموعه الثانيه التى تتناول الاطعمه السريعه بكميات متوسطه

وتوصى الدراسه بضرورة تقليل تناول الاطعمه السريعه للاطفال المدراسه لما لها من اثار سلبيه على الحاله الغذائيه والصحيه لهم

الكلمات المفتحيه الاطعمه السريعه – اناث الاطفال – الحاله الغذائيه والصحيه – تقيم الوجبات

Table (1) Mean values ± SD of: Amount consumed of high sugar fast foods of female children weekly.

Children groups	Fast foods type (gm)												
	Coca-Cola	Pepsi	Pastry	Plain biscuits	Chocolate biscuits	Lollipop	Asaleya	Gum	Synthetic strawberry	Synthetic juices	Boenbaun	Ice Cream	Chocolate
High fast food intake	100 ± 5.11	63 ± 3.7	67 ± 3.9	107 ± 6.5	116 ± 6.8	112 ± 6.58	109 ± 5.45	121 ± 7.11	104 ± 5.2	80 ± 4.7	136 ± 8	114 ± 6.7	127± 6.35
Moderate fast food intake	82 ± 4.8	68 ± 3.4	74 ± 3.7	127 ± 6.15	127 ± 6.35	93 ± 4.65	95 ± 4.75	123 ± 6.15	70 ± 3.5	93 ± 4.65	97 ± 4.85	136 ± 6.01	83 ± 4.88
Low fast food intake	52 ± 2.6	36 ± 1.8	51 ± 2.55	109 ± 5.45	121 ± 5.05	98 ± 3.95	78 ± 4.58	85 ± 4.25	54 ± 3.17	86 ± 4.3	51 ± 2.55	103 ± 5.15	63 ± 3.15

Table (2): Mean ± SD of Amount consumed of low sugar fast foods of primary school female students weekly.

Groups	Fast foods type (gm)										
	potatoes Chips	Hamburger	Frozen liver	Shawerma	Sausage	Kentucky	Pizza	luncheon	Indomie	Sun flower seeds	Karate
High fast food intake	105 ± 6.1	55 ± 2.75	62 ± 3.1	32 ± 1.6	34 ± 2	33 ± 1.9	59 ± 2.95	109 ± 5.45	51 ± 2.55	101 ± 5.94	122 ± 6.58
Moderate fast food intake	98 ± 4.9	38 ± 1.9	57 ± 2.85	24 ± 1.4	27 ± 1.35	36 ± 1.8	23 ± 1.3	102 ± 5.1	41 ± 2.05	111 ± 5.55	113 ± 5.65
Low fast food intake	95 ± 4.7	26 ± 1.5	46 ± 2.7	7 ± 0.35	17 ± 0.85	18 ± 0.9	22 ± 1.1	86 ± 5.05	20 ± 1.1	38 ± 1.09	93 ± 4.65

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Table (3): Mean ±SD and %RDA energy and macronutrient content of daily intake of normal and primary School female students

Groups / Nutrients	normal RDA	Students groups					
		Low fast food Consumption		Moderate fast food Consumption		High fast food Consumption	
		Mean±SD	RDA%	Mean±SD	RDA%	Mean±SD	RDA%
Calories(Kcal)	1924	*1549.21±104.56	80.52	*1842.60±122.71	95.76	**2530.11±155.40	131.5
A.protin(gm)		8.4±0.95		8.95±0.98		9.78±2.09	
P.protin(gm)		9.82±0.75		10.75±1.51		12.86±4.68	
T.protin(gm)	48	18.22±1.20	37.95	19.71±1.57	41.06	22.64±4.26	47.16
A.fat(gm)		38.54±4.78		40.78±4.23		45.65±9.23	
P.fat(gm)		33.83±3.9		36.9±5.83		56.83±6.11	
T.fat(gm)	53	*72.37±7.29	136.54	**77.68±7.14	146.56	***102.49±19.73	193.37
Carbohydrates(gm)	313	**206.25±66.18	65.89	*266.16±83.14	85.03	**379.3±75.33	121.18
Fiber(gm)		6.06±1.47		6.47±1.12		8.58±1.23	
Cholesterol(mg)	150	154.17±26.27	102.78	**264.27±19.22	176.18	***417.58±26.48	278.38

Significant with normal value *p <0.05 **p<0.01 ***p<0.001.
A. protein :animal protein A. fat: animal fat T .protein: total protein
P. protein: plant protein P. fat: plant fat T .fat : total fat

Table (4)Mean ±SD of some minerals content of daily consumption of normal and primary school female students

Groups / Minerals	normal RDA	Students groups					
		Low fast food Consumption		Moderate fast food Consumption		High fast food Consumption	
		Mean± SD	RDA%	Mean± SD	RDA%	Mean± SD	RDA%
sodium(g)	1.9	*2.73±0.13	143.68	**3.63±0.34	191.05	***3.82±0.55	201.05
potassium(g)	4.15	***1.44±0.92	34.69	**2.01±0.42	48.43	*3.04±0.62	73.25
calcium(mg)	1050	***323.92±10.19	30.84	***455.67±26.03	43.39	**619.01±22.83	58.95
phosphor(mg)	875	832.23±31.32	95.11	**1488.52±206.51	170.11	**1496.25±350.88	171.01
magnesium(mg)	275	**217.66±10.47	79.14	*253.39±15.07	92.14	328.50±11.91	119.45
Zinc(mg)	8.5	**5.47±0.87	64.35	7.44±0.32	87.52	**10.22±2.31	120.23
Iron.A		2.77±0.98		5.12±0.09		8.54±1.23	
Iron.p		10.29±1.14		9.25±1.42		10.47±2.716	
T.Iron(mg)	12.5	13.06±2.37	104.48	14.37±2.24	114.96	**19.01±3.90	152.08

Significant with normal RDA *p <0.05 **p<0.01 ***p<0.001.
Iron. A: iron animals Iron. p: iron plant T. Iron: total iron

Table (5): Means ± SD of some water soluble vitamins content of daily consumption of normal and primary school female students groups.

Groups / Vitamins	normal RDA	Students groups					
		High fast food consumption		Moderate fast food consumption		Low fast food consumption	
		Mean± SD	RDA%	Mean± SD	RDA%	Mean± SD	RDA%
B1 (mg)	0.95	0.83±0.05	87.36 ±7.22	0.75±0.03	78.94±3.41	1.03±31	108.42±8.21
B2 (mg)	0.95	1.1±0.05	115.78±11.10	1.49±0.03	156.84±19.11	2.48±0.31	255.78±15.17
B6 (mg)	1.1	1.01±0.35	91.81±9.61	1.24±0.49	112.72±10.22	2.05±0.60	186.36±13.71
B12(µg)	2.1	1.78±0.28	84.76±8.22	2.90±0.56	138.09±13.44	4.42±0.26	210.47±16.1 0
Nicin mg)	13	6.43±0.31	49.46±4.11	10.46±0.62	80.46±7.61	16.21±1.29	124.69±12.17
Folat (µg)	350	137.45±6.66	39.27±4.14	169.69±7.24	48.48±4.15	242.36±17.15	69.24±8.10

Significant with normal RDA *p <0.05 **p<0.01 ***p<0.001.

Table (6): Means ± SD of some fat soluble vitamins content of daily Consumption of normal and females primary School Students groups.

Groups / Vitamins	normal RDA	Students groups					
		High fast food intake		Moderate fast food intake		Low fast food intake	
		Mean± SD	RDA%	Mean± SD	RDA%	Mean± SD	RDA%
Vit.A(µg)	500	188.70±5.82	37.74±3.61	234.52±50.05	46.90±5.11	300.94±79.12	60.18±6.14
Vit.D(mg)	5	0.93±0.09	18.6±2.20	1.06±0.59	21.2±2.14	1.58±0.67	31.6±3.41
Vit.E(mg)	12	11.69±1.82	97.41±9.14	15.23±1.61	126.91±13.41	20.73±1.19	172.75±16.22

Significant with normal RDA *p <0.05 **p<0.01 ***p<0.001.