

Impact of nutrition counseling on consumption pattern of junk foods among adolescent girls of working mothers

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Sixty adolescent girls of working mothers aged 16-18 years who used to eat junk foods frequently were selected from two schools in Ludhiana and divided equally into two groups viz., Experimental (E) and control (C). The data on demographic information, junk food consumption pattern and nutrient intake were recorded before and after nutrition counseling. Nutrition counseling was in vernacular imparted for a period of three months. The practice of high consumption of junk foods like noodles, burgers, pao-bhaji, sandwiches, hot dogs, patties, pastries, pop-corn, potato chips, carbonated drinks, biscuits, muffins, toast, kulcha-channa, samosa, chocolates etc. have become common feature of adolescent's diet. It was observed that 86.7 and 93.3 per cent of subjects spent their monthly pocket money on junk foods in group E and C and majority ate junk foods once a week at least. Junk foods contributed to 54 and 57 per cent and 50 and 54.32 per cent to total energy intake in group E and C before and after nutrition counseling, respectively. The daily intake of energy and protein was less than ICMR (2010) recommendations, while intake of fats was adequate in group E after nutrition counseling. The results of present investigation suggested that there is need to impart nutrition counseling for longer duration to improve their dietary habits and healthy lifestyle.

Key Words : Adolescent girls, Junk food, Nutrition counseling, Working mothers

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INTRODUCTION

Junk foods are usually characterized as convenience foods, low in micronutrients, high in simple sugars, salt, non nutritious and highly palatable. These are mainly made up by using a lot of saturated fats which are unhealthy after digestion and release a lot of toxins into the body. Moreover, it lacks vitamins and minerals which are necessary to have good health and immunity to fight diseases. Ill effects of regular intake of junk foods are mainly obesity leading to inferiority complex, depression, heart diseases, high cholesterol, stunted growth, premature aging and tooth decay (Chhibber, 2010).

In India, adolescents accounts for one-fourth of the world's population (UNICEF, 2011). Adolescent's eating

behaviours are strongly influenced by their social environments, which include family, peer networks, schools, advertising, religion and knowledge. They frequently overconsume fast foods and underconsume fruits, vegetables and dairy products. School canteens are offering foods high in fat and sugar which might stop the children from taking healthy meals either at school or at home (Singh, 2010). Working mothers have less attention to their children's nutrition and health outcomes. Therefore, children of working mothers tend to consume more processed junk foods, fats, meat, milk, fish and less fruit juice (Fernandez, 2006).

Nutrition counseling is a process by which beliefs, attitudes, environmental influences and knowledge about food and health are channelized into actual practices which are sound and consistent with the individual needs, purchasing power, food availability, health and socio-cultural background. It is one of the most effective tool of changing the food habits without affecting their sentiments (Monga *et al.*, 2008). Adolescent girls and their mothers are ignorant about the ill effects of junk foods, right choice of healthy and nutritious foods in their daily diet. Nutrition counseling regarding the

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importance of having proper nutrition, balanced diet and the harmful effects of eating junk foods will help to curb the junk foods addiction and improving their nutritional and health status among adolescents. Hence, the present study has been undertaken to find out impact of nutrition counseling on consumption pattern of junk foods among adolescent girls of working mothers.

METHODOLOGY

Selection of subjects:

A sample of 60 adolescent girls of working mothers aged 16-18 years who eat junk foods frequently were selected randomly from two different schools and divided equally into two groups viz., Experimental (E) and control (C). Nutrition counseling was imparted to group E who were selected from Khalsa Girls Senior Secondary School, while subjects of group C were selected from Governmental Senior Secondary School and were not given any nutrition counseling.

Nutrient intake:

Nutrient intake was calculated using Michigan State University (MSU) Nutriguide Computer Programme given by Song *et al.* (1992) before and after nutrition counseling and was compared with RDA by ICMR (2010).

Nutrition counseling:

Nutrition counseling was imparted to the subjects of group E in the form of modules, as well as lectures, visual aids like charts and posters for a period of three months (fortnightly) on the balanced diet, nutritional requirements, nutritional disorders, their control and prevention, cooking practices, ill effects of junk foods and also how to make junk foods healthy.

Statistical analysis of data:

The data were analyzed statistically by using appropriate statistical tools such as percentage.

OBSERVATIONS AND ASSESSMENT

The result of the present study have been discussed and presented under the following heads:

Demographic information of the subjects:

Table 1 depicted the demographic information of the subjects. In the present study, 36.7 and 53.4 per cent of the subjects fell in age group of 16 years, followed by 17 years *i.e.* 50 and 26.6 per cent and rest were in 18 years. It was also observed that majority of fathers (60 and 60 per cent) and mothers (80 and 50 per cent) were involved in service, while 13.3 and 33.3 per cent of fathers were engaged in business and 20 and 50 per cent of mothers were involved in self employment

Table 1. Demographic information of study subjects

Parameters	Group E (n=30)		Group C (n=30)	
	Frequency	Percentage	Frequency	Percentage
Age (years)				
16	11	36.7	16	53.4
17	15	50	8	26.6
18	4	13.3	6	20
Father's occupation				
Business	4	13.3	10	33.3
Service	15	60	18	60
Expired	11	36.7	2	6.7
Mother's occupation				
Service	24	80	15	50
Self employment	6	20	15	50
Total income(Rs./Month)				
<20,000	22	73.3	18	60
20,000 to 40,000	5	16.7	2	6.7
>40,000	3	10	10	33.3
Per capita income (Rs./Month)				
<10,000	28	93.3	24	80
10,000 to 20,000	1	3.4	3	10
>20,000	1	3.4	3	10
Skipped meals				
Breakfast	15	50	6	20
Lunch	10	33.3	10	33.3
Dinner	0	0	2	6.7
No	5	16.7	12	40
How often				
Once a day	15	50	11	36.7
Once a week	4	13.3	3	10
Twice a week	2	6.7	3	10
>twice a week	4	13.3	1	3.4
Reason for skipping meals				
Lack of time	14	46.7	6	20
Lack of appetite	9	30	8	26.7
Do not find it tasty	2	6.7	4	13.3
Consumption of junk foods				
Yes	28	93.3	28	93.3
No	2	6.7	2	6.7
How often				
Daily	1	3.4	1	3.4
Weekly	16	53.3	7	23.3
Twice a week	4	13.3	8	26.7
Thrice a week	6	20	10	33.3
Fortnightly	1	3.4	2	6.7
Pocket money				
Yes	26	86.7	28	93.3
No	4	13.3	2	6.7

Table 2. Consumption pattern of junk foods before and after nutrition counseling

Food items	Group E (n=30)		Group C (n=30)	
	Before	After	Before	After
South Indian foods				
Dosa*	15(50)	8(26.7)	12(40)	12(40)
Idli*	15(50)	6(20)	15(50)	15(50)
Uttapam*	6(20)	0(0)	6(20)	6(20)
Chinese foods				
Noodles*	18(60)	9(30)	15(50)	15(50)
Macroni*	18(60)	10(33.4)	22(73.4)	22(73.4)
Manchurian*	16(53.3)	8(26.7)	12(40)	12(40)
Pasta*	12(40)	8(26.7)	12(40)	12(40)
Spring rolls*	11(36.7)	6(20)	8(26.7)	8(26.7)
Chaupsy*	5(16.7)	2(6.7)	1(3.4)	1(3.4)
Fried foods				
Potato chips*	30(100)	25(83.3)	30(100)	30(100)
Kurkure*	30(100)	25(83.3)	30(100)	30(100)
Kulcha channa*	30(100)	23(76.7)	22(73.4)	22(73.4)
Paneer pakora*	24(80)	18(60)	27(90)	27(90)
Bread pakora*	19(63.4)	8(26.7)	22(73.4)	22(73.4)
Cutlets*	20(66.7)	13(43.4)	24(80)	24(80)
Tikki*	13(43.4)	4(13.3)	16(53.3)	16(53.3)
Samosa*	13(43.4)	5(16.7)	12(40)	12(40)
Pao – bhaji*	11(36.7)	8(26.7)	8(26.7)	8(26.7)
Kachori*	8(26.7)	2(6.7)	4(13.3)	4(13.3)
Burger*	8(26.7)	5(16.7)	11(36.7)	11(36.7)
Bakery items				
Bread*	14(46.7)	8(26.7)	5(16.7)	5(16.7)
Cakes*	10(33.4)	3(10)	10(33.4)	10(33.4)
Petties*	9(30)	5(16.7)	5(16.7)	5(16.7)
Pastry*	7(23.4)	4(13.3)	7(23.4)	7(23.4)
Biscuits*	6(20)	4(13.3)	6(20)	6(20)
Pizza*	6(20)	4(13.3)	5(16.7)	5(16.7)
Sweet dish				
Pinni*	20(66.7)	13(43.4)	24(80)	24(80)
Chocolate*	25(83.3)	18(73.4)	22(73.4)	22(73.4)
Gajrela*	20(66.7)	13(43.4)	24(80)	24(80)
Halwa*	15(50)	8(26.7)	27(90)	27(90)
Kheer*	13(43.4)	9(30)	12(40)	12(40)
Sweet meats*	13(43.4)	8(26.7)	1(3.4)	1(3.4)
Pudding*	6(20)	3(10)	11(36.7)	11(36.7)
Ice-cream*	4(13.3)	3(10)	6(20)	6(20)
Beverages				
Tea *	19(63.3)	15(50)	25(83.3)	25(83.3)
Coffee*	12(40)	9(30)	10(33.3)	10(33.3)
Carbonated drink *	13(43.3)	11(36.7)	8(26.7)	8(26.7)

* Multiple Responses

Figures in () parenthesis are percentage

like boutique, beautician, tutor, packing of tiffin system etc. It was observed that 50 per cent of subjects skipped breakfast daily due to lack of time in group E, while in group C, 33.3 per cent skipped lunch daily due to lack of appetite. Further, 33.3 per cent too skipped lunch in group E and 20 and 6.7 per cent skipped breakfast and dinner in group C, respectively. However, after nutrition counseling, more number of the subjects in group E started taking regular meals at proper time, instead of eating junk foods. It was also seen that majority of the subjects (86.7 and 93.3 per cent) spent their monthly pocket money on junk foods in group E and C, respectively. Further, 53.3 and 23.3 per cent consumed junk foods once a week and 20 and 33.3 per cent thrice a week in both the groups, respectively. It was observed that adolescents were not having healthy eating pattern and dietary habits before nutrition counseling, but, after nutrition counseling, the subjects preferred low fat, nutritious and fiber rich foods.

Consumption pattern of junk foods:

Consumption of various junk foods among adolescent girls before and after nutrition counseling is given in Table 2. The results revealed that 50 and 40 per cent, 50 and 50 per cent and 20 and 20 per cent of subjects consumed south Indian foods like dosa, idli and uttapam once a week in group E and C before nutrition counseling, respectively. The most common Chinese food items were noodles (60 and 50 per cent), macroni (60 and 73.4 per cent) and pasta (40 and 40 per cent) in both the groups, respectively. Table 2 depicted that 100 and 100 per cent, 100 and 100 per cent, 100 and 73.4 per cent, 80 and 90 per cent, 63.4 and 73.4 per cent, 66.7 and 80 per cent and 43.4 and 40 per cent of subjects consumed fried foods like potato chips, kurkure, kulche/bhatura channe, paneer pakora, bread pakora, cutlets and samosa in group E and C before nutrition counseling, respectively. It was observed that frequency of consumption of junk foods decreased after nutrition counseling in group E, as they were motivated to decrease the consumption of high fat foods, market foods, ready to eat foods, junk foods like pizza, burger, fried foods etc. and were taught to consume healthy junk foods like fermented foods, wheat noodles by adding lots of vegetables, sprouted pulses, grilled sandwiches filled with vegetables, vegetable samosa, cutlets, wheat and multigrain bread sandwiches and use of less oil in cooking to remain healthy and fit. However, negligible change in the food habits was found among subjects of group C.

Most commonly consumed bakery products were bread, cakes, pizza, pastry, biscuits and petties. The data revealed in the present study that 46.7 and 16.7 per cent 33.4 and 33.4 per cent, 30 and 16.7 per cent, 23.4 and 23.4 per cent, 20 and 20 per cent and 20 and 16.7 per cent of subjects consumed bakery items in group E and C before nutrition counseling, respectively. After nutrition counseling, there was reduction in consumption, the corresponding figures were 16.7, 33.4, 16.7, 23.4, 20 and

16.7 per cent in group E, while no improvement was observed in group C. The subjects were also taught to consume brown bread (wheat bread) and multigrain bread. They were advised to prefer to cook at home like pizza (wheat bread with vegetable) being more nutritious and also taught to avoid these foods.

Most commonly eaten sweet dishes were pinni, chocolate, gajrela, halwa, kheer, sweet meats, pudding and ice-cream. The data revealed in the present study that 66.7 and 80 per cent, 83.3 and 73.4 per cent, 66.7 and 80 per cent, 50 and 90 per cent, 43.4 and 40 per cent, 43.4 and 3.4 per cent, 20 and 36.7 per cent and 13.3 and 20 per cent of subjects consumed sweet dishes like pinni, chocolate, gajrela, halwa, kheer, sweet meats, pudding and ice-cream in group E before nutrition counseling, respectively. After nutrition counseling, there was reduction in consumption, the corresponding figures were 43.4, 73.4, 43.4, 26.7, 30, 26.7, 10 and 10 per cent in group E, while no improvement was observed in group C.

It was also observed that daily consumption of coffee was most common in 40 and 30 per cent in group E before and after nutrition counseling, respectively. The subjects were taught to reduce the intake of caffeinated beverages as it directly affects the brain and also causes acidity. It was also observed that 43.3 and 36.7 per cent of subjects in group E preferred carbonated drinks and potato chips along with meals before and after nutrition counseling, respectively. They were also taught to reduce the intake of carbonated drinks and chips as it would increase the risk for obesity, acidity and tooth decay. It was also observed that in the present study that 83.3 and 73.4 per cent and 13.3 and 20 per cent, respectively consumed chocolates and ice cream. It was noticed that in spite of nutrition counseling, there was no decrease in the intake of ice cream after nutrition counseling. It was also seen that high popularity of junk foods, aerated beverages and ice creams were likely to precipitate obesity, being less dense in micronutrients and by contributing calories. Mahajan (2011) also observed that the frequency of consumption of fast food items like pakora, burger, macroni, manchurian, magi, noodles, samosa significantly decreased after nutrition intervention.

Junk foods contributed to 54 and 57 per cent and 50 and 52.20 per cent to total energy intake in group E and C before and after nutrition counseling, respectively (Table 3). Further, the results of the present study revealed that fat from junk foods contributed to total energy intake as 37 and 39 per cent and 33 and 38.52 per cent in both the groups before and after

Table 3. Per cent contribution of carbohydrates, protein and fats to the total energy intake from junk food intake before and after nutrition counseling

Nutrient	Group E (n=30)		Group C (n=30)	
Carbohydrate	54.00	50.00	57.00	52.20
Protein	9.00	11.00	9.80	9.50
Total fat	37.00	33.00	39.00	38.52

nutrition counseling, respectively. Chhabra (2003) reported that fried snacks, fast foods and beverages contributed 20.9 per cent of their total energy intake.

Nutrient intake:

The mean daily nutrient intake by the subjects before and after nutrition counseling is given in Table 4. The per cent adequacy of energy in group E and C was 70 and 58.10 per cent and 74 and 60.25 per cent before and after nutrition counseling, respectively. The correspondingly mean daily intake of protein in group E and C was 46.07 and 55 per cent and 65.45 and 58.34 per cent before and after nutrition counseling, respectively. It was observed that energy and protein intake was less when compared to RDA's. The subjects were taught to increase the consumption of whole grain cereals, multigrain bread, whole pulses, sprouted pulses and soyabean products during nutrition counseling sessions. The per cent adequacy of fat decreased from 123.23 to 107 per cent in group E, it could be due to reduction of fats in their diet as the subjects were advised to reduce fat intake, while in group C, adequacy increased from 161.05 to 172 per cent before and after nutrition counseling respectively which was higher than RDA's. Savitha and Narayanan (2007) reported that 75 and 95 per cent of RDA's was met by school girls and college going girls which was higher as compared to present study. There was significant increase in intake of all the nutrients except ascorbic acid, thiamine and fats, but did not meet the recommendations. Inadequate nutrient intake might be due to lack of knowledge, ignorance and higher consumption of junk foods.

Table 4. Per cent adequacy of nutrient intake by the subjects before and after nutrition counseling

Nutrient	Group E (n=30)		Group C (n=30)	
	Percentage		Percentage	
	Before	After	Before	After
Energy (kcal)	70.8	74	58.10	60.25
Protein (g)	46.07	65.45	55	58.34
Total fat (g)	123.23	107	161.05	172
β- carotene(μg)	57.39	65	73	73
Thiamine (mg)	75	79	118	115
Riboflavin (mg)	33.3	34.2	76	76
Niacin (mg)	42	45	48.36	49
Vitamin B ₁₂ (μg)	18	28	42	42
Folic acid (μg)	35.2	36.1	45.1	45.05
Ascorbic acid (mg)	108	133.3	120	129.05
Iron (mg)	30	36	44	43.5
Calcium (mg)	57	64.4	68.4	66.3
Phosphorus (mg)	55	62.3	60	60
Zinc (mg)	9	8.3	8	8.1

Summary:

In the light of above discussion, the scrutiny of the data indicated that there is mushrooming growth of junk food corners in the city and school canteens. Faulty food habits, more intake of junk foods, inadequate intake of fibrous foods and lack of knowledge of well balanced diet leading to nutrient deficiency symptoms was more prevalent in all the subjects. The perusal of data clearly indicated that nutrition counseling had a significant and positive effect on the dietary habits, junk food consumption pattern of the subjects in group E.

Recommendations:

- It is recommended that all the meals should be nutritious and in adequate amounts. Lunch should be taken from home rather than buying it from school canteen. Limit the use of butter, bakery products, fried and processed snacks and no meal should be skipped.
- It is recommended that Junk foods could be made nutritious by adding lots of vegetables, sprouted pulses, fermented foods and sun dried green leafy vegetables. Stress on whole grain and multigrain cereal products should be given in place of processed foods and less cooking fat should be used for home made preparations.
- It was suggested that nutrition counseling session must be imparted to adolescent girls and their mothers for longer duration to improve the dietary habits, healthy lifestyle .

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