J. Indian Dietetic Association Volume 39, No.2, pp. 39-52, 2016

IMPACT OF MASS MEDIA ON FOOD CHOICES, FOOD HABITS AND NUTRITIONAL STATUS OF GIRLS IN A METROPOLITAN CITY OF HARYANA

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Abstract

The present study was undertaken in Gurgaon district of Haryana state. D.S.D Govt. College and DPG Institute of Technology and Management were selected purposively and from each college, 50 girls of 17-21 year age were selected randomly. Data revealed that mobile phones were used for more than three hours daily by 51 per cent of the respondents and 46 per cent of the respondents preferred to watch daily soap often on TV. It was found that 32 per cent of the respondents wanted to lose weight and 30 per cent desired to attain figure like a fashion model. New products were tried by 28 per cent of the respondents after watching advertisements and 18 per cent ate without hunger very often. Majority of the respondents never had fruits/vegetables/juices or soft drinks/fast foods as a meal outside home. *Samosa/bread pakora* and tea/coffee were the foods preferred by 39 and 37 per cent of the respondents very often in college canteen, respectively. Most (42%) of the respondents had one meal outside home and 24 per cent skipped a meal daily. It was found that respondents consumed milk (68%), curd (41%), milk and other shakes (34%), breakfast cereals (43%), vegetables (80%), green leafy vegetables (39%), other vegetables (78%), rice (30%) and pulses (53%) once daily. Mean intake of roots and tubers, other vegetables, green leafy vegetables were significantly lower than their respective RDIs and mean intake of iron and folic acid was significantly lower than their respective RDAs among girls.

INTRODUCTION

'Nutrition transition' is an increased consumption of unhealthy foods compounded with increased prevalence of overweight in middle-to-low-income countries. It occurs in conjunction to the Epidemiological Transition and has serious implications in terms of public health outcomes, risk factors, economic growth and international nutrition policy. Transitional Food Companies have altered the food supply by increasing the availability of processed and fast foods, making them more accessible through large transnational supermarkets, and making them more desirable through the use of advertising and promotion. Supermarkets are playing two roles in the nutrition transition: shifting demand for home-produced foods or foods purchased in open markets to increased dependence on store-bought foods supplied by TFCs; and expanding available choices of packaged and processed foods. Expenditure on food advertising is high and increasing in developing countries; a significant proportion of this advertising is for energy-dense processed

foods targeted at children and youth. The objective of this advertising is to encourage greater consumption of processed foods.[1]

Nutrition transition is malnutrition ensuing not merely from a need for food, but the need for high-quality nourishment. Foods rich in vitamins, minerals, and micronutrients such as fruits, vegetables, and whole grains have been substituted by foods heavy in added sugar, saturated fat, and sodium. This trend, which began in developed, industrialized countries, has spread to developing countries like India. These developing countries still stressed and struggling with hunger are now dealing with health problems associated with obesity, a double burden of malnutrition. Malnutrition once identified by emaciated bodies, is now also associated with obesity. Over the past 15 years, there has been increasing evidence that the structure of dietary intakes and the prevalence of obesity around the developing world have been changing at an increasingly rapid pace. Modern society seems to be converging on a diet high in saturated fats, sugar and refined foods but low in fiber often termed as 'WESTERN DIET'- and on lifestyle characterized by lower levels of activity, thus increasing many health problems.

Moreover, media is playing a havoc with youth's health. On one hand, youth is exposed to high sugar, high fat, high sodium and low fibre junk foods and on the other hand, youth is also exposed to glamour world of fashion, where everyone wants to be ultra thin. Also television media increases children's exposure to advertisements that are purposely directed towards them as a young, impressionable audience. With this perspective in consideration, it was considered important and pertinent in today's context to study about the impact of mass media exposure on eating habits and dietary patterns of college going youth (17-21Y) having focus on the following objectives:

1. To study the impact of mass media exposure on eating habits, eating disorders and dietary patterns of college going girls (18-21Y).
2. To assess nutritional status of college going girls (18-21Y).

MATERIALS AND METHOD

Selection of respondents

The present study was conducted on college going girls in the age group 17-21 years in the Gurgaon district from eastern zone of Haryana state. Multistage sampling technique was used wherein at first stage state zone, followed by district and college was selected for the study. Further city area of selected district was taken purposively to have the desired respondents. A total of 100 girls (50 from each college) were selected randomly from D.S.D. Govt. College and DPG Institute of Technology and Management. Assessment of nutritional status of girls was done using 24-hour recall method on 30 girls selected randomly from the 100 respondents.

Development of questionnaire schedule

Keeping in view the objectives of investigation, a well structured questionnaire cum interview schedule was prepared in accordance with methodological procedure and pre-tested initially on 20 girls. Based on the responses, the modifications were made to make it more functional. Interview schedule consisted of questions related to mass media interaction and food pattern/choices. The data were collected by interview cum questionnaire method by paying repeated visits to the study area (college and their home) during the months of April-May, 2012.

Statistical analysis

Data coding, entry and validation was done using appropriate software mainly SPSS. Frequency and percentages were also calculated.

RESULTS AND DISCUSSION

The results obtained from the present study are presented below:

Information regarding mass media interaction

Information regarding mass media interaction of the college going students is presented in Table 1. Majority of the respondents (51%) used mobile phones for more than 3 hours daily followed by newspaper reading for one hour and TV watching for 2-3 hour daily by 51 and 39 per cent of the respondents, respectively. The present findings are in agreement with those of Petron who noted that three of every four adolescent's ages 15 to 17y and 40 percent of youth ages 12 to 14y carried their own cell phone.[2] Another study explained that among school-age youth (ages 8 to 18y), 74 percent lived in a home where the computer had an internet connection, and 60 percent had access to an instant messaging program and they spent an average of six hours per day using media, and they often used more than one medium at a time.[3] Internet, radio/FM, science magazines and sports magazines were used/listened/read only once in a few days by most of the respondents i.e. 45, 46, 54 and 48 per cent, respectively while majority of the respondents i.e. 52 and 60 per cent never read fashion magazines and comic books, respectively.

Table 1: Information regarding mass media interaction

Source	Contact Period				
	Never	Once in a few days	Daily		
			1 hour	2-3 hour	>3 hours
Television	3(3)	7(7)	35(35)	39(39)	16(16)
Internet	32(32)	36(36)	19(19)	10(10)	3(3)
Radio/FM	33(33)	39(39)	22(22)	4(4)	2(2)
Mobile phone	13(13)	16(16)	11(11)	9(9)	51(51)
Newspaper	17(17)	32(32)	51(51)	0(0)	0(0)
Fashion magazines	48(48)	42(42)	8(8)	2(2)	0(0)
Science magazines	51(51)	42(42)	7(7)	0(0)	0(0)
Sports magazines	52(52)	43(43)	5(5)	0(0)	0(0)
Comic books	52(52)	39(39)	7(7)	2(2)	0(0)

Values in parentheses indicate percentage

Data in the present study revealed that majority of the respondents i.e. 49, 51 and 56 per cent were watching movies, music videos and news rarely, respectively. Daily soaps were watched by most (46%) of the respondents very often. Sports/athletics (49%), science programs (47%) and cartoons (44%) were never watched by most of the respondents. Tiggeman and Pickering also reported that the type of exposure, not the amount, is correlated with negative body image. Specifically, rates of exposure to soap operas, movies, and music videos were associated with higher rates of body dissatisfaction and drive for thinness.[4]

Table 2: Programs preferred to be watched on television or internet by college girls

Programs	Contact Period		
	Never	Once in a few days	Very often
Movies	10(10)	49(49)	41(41)
Music videos	9(9)	51(51)	40(40)
Daily soaps	19(19)	35(35)	46(46)
Sports/Athletics	49(49)	40(40)	11(11)
Science programs	47(47)	36(36)	17(17)
TV news	12(12)	56(56)	32(32)
Cartoons	42(42)	40(40)	18(18)

Values in parentheses indicate percentage

Information on respondents' lifestyle and eating habits

Table 3 presents the respondents' lifestyle and eating habits. More number of girls (43%) wanted no change in their body figure; 32 per cent wanted to lose weight while only 25 per cent wanted to gain weight. These findings are corroborated by another study where the food habit, weight control behaviours and body image of young adolescents of 11-14 years old in Australia was assessed. They found that female on an average used 4.0 weight-loss methods as compared to 2.0 for male, but there was no difference between the mean numbers of extreme weight-loss methods.[5] Majority (47%) of the respondents thought that TV models have a perfect body physique/figure but only 16 per cent felt motivated to lose weight by watching TV models. There were 30 and 21 per cent respondents who wanted to attain a figure like a fashion model and some of their friend, respectively. No doubt that media influenced people to copy role models but in the present study, not much influence was noticed on college going students by assessing their lifestyle and food habits.[6] Skipping of meals after watching/reading a fashion program/article/magazine was seen in 38 per cent of the respondents and only 23 per cent considered self induced vomiting to lose weight. Story and Stang also explained that meal skipping is common among adolescents, especially during middle and late adolescence. Breakfast is the most commonly skipped meal and is attributed to lack of time, desire to sleep longer in the morning, lack of appetite, and dieting to lose weight.[7] Respondents who went on diet to lose weight and who started exercise because of an article in a magazine article or TV program were 29 and 36 per cent, respectively and only 23 per cent joined a gym/fitness centre because of any TV program or an article. Twenty eight per cent of the respondents tried new food products after watching advertisements and 61 per cent agreed that junk food product/beverage advertisements caused in their increase intake among youth. Majority (57%) of the respondents thought that presence of a particular fashion/film model/figure in advertisements affects consumption of the advertised food/drink. Another study proposed that common marketing techniques used in

television commercials include repetition, celebrity endorsements, eye-catching spokes-characters, familiar fictional characters, sweepstakes and premiums. Depending on their age, youth view between 12 and 21 commercials for food or beverages every day.[8] Half of the respondents were taking snacks while watching TV and majority (51%) of them tried a new food product after knowing it from a friend followed by TV commercials (30%). The prevalence of snacking and proportion of calories and nutrients from foods consumed as snacks has risen during the period from 1977 to 1996.[9]. The findings are also in line with those of Kaur *et al*. who noticed that sixty seven (56%) adolescents consumed such snacks sometimes while watching television and 42 per cent subjects consumed fruit juice.[10] Food store/food joints/superstores/marts were visited monthly by most (33%) of the respondents and only 25 per cent of the respondents ate without hunger.

Foods preferred by girls in college canteen

Samosa/bread pakora were most preferred foods by 39 per cent of the respondents in college canteen who were consuming it very often followed by tea/coffee (37%). Cold drinks (48%), noodles (45%), potato chips/fries (42%) and *parantha* (33%) were preferred sometimes while *dosa* and pizza were not available in college canteen. Similarly a study showed that adolescents drank more full-calorie soda per day than milk. Males aged 1219 years drank an average of 22 ounces of full-calorie soda per day, more than twice their intake of fluid milk (10 ounces), and females drank an average of 14 ounces of full-calorie soda and only 6 ounces of fluid milk.[11]

Table 3: Foods preferred by girls in college canteen

Foods	Frequency (n=200)				
	Very often	Sometimes	Rarely	Never	Not available
Dosa	6(6)	20(20)	8(8)	23(23)	43(43)
Noodles	8(8)	45(45)	13(13)	18(18)	16(16)
Parantha	18(18)	33(33)	16(16)	22(22)	11(11)
Burger	8(8)	30(30)	14(14)	28(28)	20(20)
Patty	11(11)	17(17)	21(21)	27(27)	24(24)
Pizza	9(9)	18(18)	8(8)	26(26)	39(39)
Samosa/bread pakora	39(39)	29(29)	23(23)	9(9)	0(0)
Sandwich	19(19)	31(31)	15(15)	26(26)	9(9)
Pastry	9(9)	28(28)	22(22)	16(16)	25(25)
Potato chips/fries	25(25)	42(42)	18(18)	13(13)	2(2)
Milkshake	16(16)	18(18)	11(11)	30(30)	25(25)
Cold drink	26(26)	48(48)	17(17)	9(9)	0(0)
Fresh juice	18(18)	31(31)	19(19)	12(12)	20(20)
RTS juice	13(13)	16(16)	17(17)	40(40)	14(14)
Tea/Coffee	37(37)	19(19)	16(16)	25(25)	3(3)

Values in parentheses indicate percentage

Information regarding meals taken outside by college going girls

Data in the Table 5 and 6 highlights the information regarding meals taken outside home by college going girls. It was found that majority of the respondents (42%) took one meal outside home. There were 37 per cent of the respondents who rarely took a meal outside home, 15 per cent took two meals outside home and only 6 per cent respondents took three meals outside home daily. A study undertaken by French *et al*. found that frequency of fast food restaurant use (FFFRU) was positively associated with student employment, television viewing, home availability of unhealthy foods, and perceived barriers to healthy eating, and was inversely associated with students' own and perceived maternal and peer concerns about healthy eating. FFFRU was not associated with overweight status.[12]

It was found that equal percentage i.e. 55 per cent of the respondents rarely had fruits/vegetables/juices and soft drinks/fast foods for meal taken outside home. Fruits/ vegetables/juices were consumed by 16 per cent of the respondents mostly outside home. Majority of the respondents (41%) rarely had soft drinks/fast foods in a meal outside home. According to Neumark-Sztainer *et al*. whilst evidence about the effect of availability and accessibility on the consumption of fast foods is scare, but there is limited evidence that one or both of these factors may influence the intake of high fat snacks, soft drinks and fruit and vegetable consumption among adolescents.[13]

Table 4: Information regarding meal pattern of college going girls

No. of meals taken outside	**Respondents**
One	42(42)
Two	15(15)
Three	6(6)
Rarely	37(37)
Skipping of meals	
Yes	24(24)
No	49(49)
Sometimes	27(27)

Values in parentheses indicate percentage

Food frequency of the college going girls

Data revealed that foods which were taken once daily by most of the girls were milk (68%), curd (41%), milk and other shakes (34%), tea (40%), fresh juice (36%), breakfast cereals (43%), fruits (49%), fruit salad/*chat* (48%), vegetables (80%), other vegetables (78%), potato - as vegetable

Table 5: Information regarding meals taken outside home by college going students

Meals taken outside mostly includes		
a) Fruits/vegetables/juices		
Rarely	**Mostly**	**Always**
55(55)	29(29)	16(16)
b) Soft drinks/fast food		
Rarely	**Mostly**	**Always**
41(41)	39(39)	20(20)

Values in parentheses indicate percentage

(70%), green leafy vegetables (39%), rice (30%), pulses (53%) and chocolates (27%). More than half (58%) of the girls had *chapatti* 2-3 times daily. A cross-sectional online food survey administered through schools on 3841 secondary students highlighted that two-thirds of participants failed to consume foods from the five recommended food groups daily; over a third reported eating fruit 'rarely or never'; and 22 per cent reported eating fast foods every day.[14]

Percentage of respondents who consumed fast foods once weekly were (27%) chips/fries, (24%) pasta/noodles, (23%) macaroni, (11%) pizza, (23%) burger, (26%) *samosa,* (28%) *bread pakora,* (18%) patties, (23%) ice cream, and (16%) pastries. Fermented foods like dosa (26%) and idli (21%) were taken once a month by respondents. Coffee-hot and cold (29%), RTS juice (43%), toppings such as jam (43%), cheese (55%), cheese spreads (68%), meat and fish products (83%), butter (48%), peanut butter (74%), mayonnaise (79%) and fruit cream (52%), pasta/noodles (24%), macaroni (36%), porridge (56%), pizza (32%), burger (33%), *uttapam* (53%), sandwiches/toast (32%), patties (39%), fish and fish products (95%), meat and poultry (91%), eggs (81%) and alcoholic beverages (98%) were the foods that were never consumed by majority of the respondents.

Food intake by college going students

The information regarding daily mean food intake of college going students (17-21 years) has been depicted in Tables 6-7. The intake of different food groups has been given as under:

Cereals

Mean daily cereals' intakes of the girls (17-18Y) were 436g which were 132.1 per cent of RDI (Table 6) and significantly ($p<0.05$) higher than the RDI. Mean daily cereals' intake of the girls (18-21Y) was 336.2g which was 124.5 per cent of RDI and significantly higher ($p<0.05$) than the RDI (Table 7). Results were in line with those reported in a study on adolescents in the

rural areas of States of Andhra Pradesh, Gujrat, Kerela, Maharashtra, Uttar Pradesh, Tamil Nadu of India.[15]

Pulses

Pulses are the major source of protein in Indian diets. The data presented in Table 6 indicates that daily mean intake of pulses among college going girls (17-18 Y) was 61.2g which was 81.6 per cent of RDI. The daily mean intake of pulses of girls of 18-21 years of age was 66.2g which was 110.3 per cent of RDI (Table 7). Gupta *et al.* also reported that the consumption of pulses among girls (16-18Y) was non-significantly lower than the RDI.[16]

Roots and tubers

The data in Table 6 revealed that the daily mean intake of root and tubers of college going girls (17-18Y) was significantly ($p<0.05$) lower than the RDI; it was 62.9 per cent of the RDI. The daily mean intake of root and tubers of college going girls of 18-21 years was 99.8g which was almost half of the RDI and it was significantly ($p<0.05$) lower than RDI (Table 7). In contrast, it was noticed that the consumption of roots and tubers among boys and girls of 19-25 years were higher than their respective RDIs.[16]

Other vegetables

Table 6 shows the mean intake of other vegetables of college going girls (17-18Y). It was 55.6g/day (27.8% of RDI) which was significantly ($p<0.05$) lower than the RDI. Table 7 showed the mean intake of other vegetables of college going girls in the age group of 18-21 years and it was only 34.9 per cent of the RDI which was significant ($p<0.05$). The results are in line with those found by Venkaiah *et al*.[15].

Green leafy vegetables

Table 6 reveals that mean daily intake of green leafy vegetables of the girls of 17-18 years was 53.6 per cent of RDI and the difference was significant. Similarly, Table 8 highlighted that intake of green leafy vegetables of the college going girls (18-21Y). Girls' intake was only 17.3g/day (17.3% of RDI) which was significantly ($p<0.05$) lower than the RDI. This may be because of the seasonal unavailability of green leafy vegetables as the data collection for the research was done in the month of April. Rao *et al.* also found the similar results.[17]

Milk and milk products

Data in Table 6 illustrates the mean daily intake of milk and milk products of college going girls (17-18Y) which was 529.1g/day (105.8% of RDI). Mean daily intake of milk and milk products of college going girls (18-21Y) was 446.4g/day (148.8% of RDI) which was significantly higher ($p>0.05$) than the RDI (Table 7). On the other hand, lower intake of milk and milk products in adolescents was reported in a study.[14]

Fats and oils

Data compiled in Table 6 contains the results related to the daily mean visible fat and oils intake of college going girls (17-18Y) which was 37.8 g (108.2 % of RDI). Girls were taking significantly ($p<0.05$) higher amount of fats and oils daily. Table 7 showed the mean daily intake of visible fats and oils among college going girls (18-21Y) to be 22.1g/day (110.5% of RDI). Present findings corroborate to that of other finding reported by earlier workers.[16]

Sugar and jaggery

Mean intake of sugar and jaggery has been presented in Table 6 for college going girls in the age group of 17-18 year. The consumption of sugar and jaggery among girls was 17.8g/day which was significantly ($p<0.05$) lower than the RDI. These findings are in agreement with a study where a lower intakes of sugar and jaggery among girls (16-18 years) was noted.[15] Table 7 highlighted the mean intake of sugar and jaggery of girls (18-21Y) in daily diet. It was 18.7g (93.5% of the RDI) which was significantly ($p<0.05$) higher than RDI. Again, these findings are in agreement with those of Gupta *et al*. where higher intakes of sugar/sweets among girls and boys (17-21Y) were noticed.[16]

Fruits

The mean daily intake of fruits (Table 6) in girls (17-18Y) was 150.4g which was significantly ($p<0.05$) higher than the RDI (150.4% of the RDI). Data in Table 7 represents the mean daily intake of fruits of college gong girls of 18-21 year; it was 98.6g which was 98.6 per cent of the RDI. In contrast to it, a study reported a lower consumption of fruits among a total of 2402 first year undergraduate students from one university in each of the countries of Germany, Denmark, Poland and Bulgaria.[18]

Table 6: Daily mean food intake by college going girls (17-18Y)

Foodstuff (g)	Recommended Dietary Intake (RDI)	Actual Intake	
		Girls (n=11)	't' value
Cereals	330.0	436±4.50 (132.1)	23.57*
Pulses	75.0	61.2±9.20 (81.6)	1.49
Roots and tubers	200.0	125.9±1.7 (62.9)	43.28*
Other Vegetables	200.0	55.6±2.78 (27.8)	51.93*
Green leafy vegetables	100.0	53.6±12.80 (53.6)	3.62*
Milk and milk products	500.0	529.1±11.32 (105.8)	2.56*
Fats & oils	35.0	37.8±0.58 (108.2)	9.79*
Sugar & jiggery	25.0	17.8±0.10 (71.2)	72.20*
Fruits	100.0	150.4±7.66 (150.4)	6.57*

Values are mean ±SD * Significant at 5% level Values in parentheses indicate percentage (%RDI)
't' values showing comparison of daily mean nutrient intake and RDA

Table 7: Daily mean food intake by college going girls (18-21Y)

Foodstuff (g)	Recommended Dietary Intake (RDI)	Actual Intake	
		Girls (n=19)	't' Value
Cereals	270.0	336.2±12.34 (124.5)	5.36*
Pulses	60.0	66.2±3.75 (110.3)	1.66
Roots and tubers	200.0	99.8±5.22 (49.9)	19.17*
Other Vegetables	200.0	69.6±1.53 (34.9)	85.24*
Green leafy vegetables	100.0	17.3±0.28 (17.3)	295.39*
Milk and milk products	300.0	446.4±0.27 (148.8)	542.14*
Fats & oils	20.0	22.1±0.09 (110.5)	9.4*
Sugar & jaggery	20.0	18.7±0.01 (93.5)	132.0*
Fruits	100.0	98.6±5.94 (98.6)	0.23*

Values are mean ±SD
* Significant at 5% level
Values in parentheses indicate percentage (%RDI)
't' values showing comparison of daily mean nutrient intake and RDA

Nutrient intake of college going students

Data on daily mean nutrient intake of college going students has been presented in tables 8-9.

Energy

Daily mean intake of energy among college going girls of 17-18 years was 2215.5 Kcal/day which was 90.7 per cent of RDA (Table 8). The results (Table 8) highlighted the non-significant differences with RDA. Data on Table 9 indicted that girls (18-21Y) were taking 1706 Kcal/day (89.7 % of RDA) and the differences were non-significant when compared to the RDA. The results of the present study are in agreement with those of Sanwalka *et al*. who reported lower energy intakes among adolescent girls and boys.[19]

Protein

Results regarding mean daily intake of protein (Table 8) revealed that mean intake of protein by the college going girls (17-18Y) was 54.7g/day (98.5% of RDA) and the difference was non-significant. Protein intake was 42.7 per cent of RDA among girls (18-21Y) which was significantly ($p<0.05$) lower than the RDA ($t=4.75$) (Table 9). It was observed that intake of protein was lower than the RDA in both girls and boys.[15]

Fat

Mean fat intake of college going girls of 17-18 years (Table 8) was found to be 37.8g/day (108.2% of RDA) which was significantly ($p<0.05$) higher than the RDA. Further, the per cent intakes of fat were 110.5 per cent in girls of 18-21 years and these were significantly ($p<0.05$) higher than the RDA (Table 9). The findings of another study reported higher consumption of fat in adolescent males and females.[12] In contrast, fat intake was significantly lower in adolescent girls according to a study done by Parimalavalli and Sangeetha.[20]

Calcium

Mean daily calcium consumption of 17-18 years of college going girls (790.2mg) was lower than the RDA but it was not significantly lower (Table 8). Calcium intake of the girls (18-21Y) has been depicted in Table 9. Girls were consuming significantly ($p<0.05$) higher amount of calcium (775.3mg) than the RDA as the consumption of milk and milk products was higher than the RDI. The results were in line with those reported by French *et al*.).[12]

Iron

The data on nutrient intake illustrated (Table 8) that daily intake of iron by college going girls (17-18Y) was 13.8mg against the daily recommended dietary allowances of 26mg which were significantly ($p<0.05$) lower than the RDA. Data compiled in Table 9 indicated that girls (11.3 mg) were taking less amount of iron daily and intake was significantly ($p<0.05$) lower as compared to the RDA. This may be due to the poor intake of green leafy vegetables by girls. In a similar study it was observed that iron intake was significantly lower in girls and boys where girls consumed much less iron than boys of the same age.[16]

Retinol

The data (Table 8) on daily mean daily nutrient intake further depicted that the average intake of retinol of college going girls (17-18Y) was 967.8µg and the intake was almost similar to the RDA. Data given in table 9 indicated that girls (18-21Y) were taking 967.3µg retinol per day which was non-significantly higher than the RDA (600 µg). Higher intakes of retinol in adolescents were reported in another study.[12]

Folic Acid

Perusal of data presented in Table 8 illustrated that the mean daily intake of folic acid of girls was 60.2 per cent (120.4µg) of the RDA and was significantly ($p<0.05$) lower than the RDA. Among girls of 18-21 years, their mean daily intake of folic acid was significantly ($p<0.05$) lower than the RDA i.e. 99.7µg (49.8%). The findings of the present study coincide with those reported by Gupta *et al*. i.e. lower intakes of folic acid by adolescents.[16]

Thiamine

The intake of thiamine of girls (17-18Y) was significantly ($p<0.05$) higher than the RDA (110% of the RDA) (Table 8). Daily thiamine intakes of girls (110% of RDA) of 18-21 year was almost similar to the RDA. The results are in agreement with those reported in a study conducted on adolescents.[15]

Riboflavin

Table 8 revealed that mean intake of riboflavin of girls was 1.3mg/day (108.3% of RDA) which was non-significantly higher than the RDA. Data in table 9 illustrated that the mean daily riboflavin intake of girls (18-21Y) was 1.1mg (91.6% of RDA); had significantly ($p<0.05$) lower intakes than the RDA. The results of a similar study also found lower intake of riboflavin in girls of 16-18 years and above 18 years.[21]

Vitamin C

Table 8 highlighted the daily mean intake of vitamin C of college going girls (17-18Y). The girls were taking 34.1mg/day (85.2% of RDA) of vitamin C which was non-significantly lower

than the RDA. Girls of 18-21 years of age consumed 35.4mg vitamin C daily (88.5% of RDA) which was non-significantly lower than the RDA (Table 9). The results are in line with a study where lower intake of vitamin C were reported in adolescent girls.[20]

Table 8: Daily mean nutrient intake by college going girls with RDI (17- 18Y)

Nutrient	Recommended Dietary Intake (RDI)	Actual Intake	
		Girls (n=12)	't' Value
Energy(kcal)	2440.0	2215.0±56.36 (90.7)	1.06
Protein(g)	55.5	54.7±2.89 (98.5)	0.26
Visible fat(g)	35.0	37.8±0.58 (108.2)	9.79*
Calcium(mg)	800.0	790.2±72.26 (98.7)	0.13
Iron(mg)	26.0	13.8±1.15 (53.1)	10.6*
Retinol(µg)	600.0	967.8±380.84 (161.3)	0.96
Folic Acid(µg)	200.0	120.4±11.10 (60.2)	7.16*
Thiamine(mg)	1.0	1.1±0.09 (110.0)	2.0*
Riboflavin(mg)	1.2	1.3±0.14 (108.3)	1.07
Vitamin C(mg)	40	34.1±5.63 (85.2)	1.04

Values are mean ±SD
* Significant at 5% level
Values in parentheses indicate percentage (%RDI)
't' values showing comparison of daily mean nutrient intake and RDA of girls

Conclusion

The effect of mass media was not much on food pattern, food choices and lifestyle of girls as majority of them were satisfied with their body figure and only about one fourth of the respondents skipped a meal. Most of them rarely took a meal outside home daily. Also the meals taken outside by respondents rarely comprised of soft drinks/fast foods etc. *Samosa/bread pakora* were the only foods preferred mostly by girls in college canteen. But the consumption of protein, iron and folic acid in theri daily diets was lower which may be due to the lower intakes of pulses and green leafy vegetables. So, it can be concluded the even after residing in a metropolitan city, where there is a high exposure to mass media, availability of number of food joints and International food

Table 9: Daily mean nutrient intake by college going girls with RDI (18-21Y)

Nutrient	Recommended Dietary Intake (RDI)	Actual Intake	
		Girls (n=18)	't' value
Energy(kcal)	1900	1706.0±78.16 (89.7)	1.01
Protein(g)	66	42.7±2.58 (64.6)	4.75*
Visible fat(g)	20.0	22.1±0.09 (110.5)	9.4*
Calcium(mg)	600	775.3±62.89 (129)	2.78*
Iron(mg)	21	11.3±1.08 (53)	8.91*
Retinol(µg)	600	967.3±297.74 (161.2)	1.23
Folic Acid(µg)	200	99.7±10.24 (49.8)	9.79*
Thiamine(mg)	1.0	1.1±0.11 (110)	0.45
Riboflavin(mg)	1.2	1.1±0.10 (91.6)	2.70*
Vitamin C(mg)	40	35.4±4.18 (88.5)	1.08

Values are mean ±SD * Significant at 5% level Values in parentheses indicate percentage (%RDI)
't' values showing comparison of daily mean nutrient intake and RDA of girls

chains in surroundings, have not influenced much the food habits and choices of the girls, may be because of their deep rooted food habits, influence of family members and effect of socio-economic status of the family etc which need to be studied further.

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Reviewer Comments:

Comments on paper entitled " Impact of Mass Media on Food Choices, Food Habits and Nutritional Status of Girls in a Metropolitan city of Haryana"

The is suitable for publication with minor modifications given below.

1. First line highlighted in Blue --- to be corrected for sentence
2. Television --- television --- no need of capital.
3. References numbering as in the earlier 2 articles.