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Research Article

Beverage Consumption Pattern and its Contribution to the Total Nutrient Intake of Adolescent Boys

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ABSTRACT

A sample of 120 rural and urban adolescent boys in the age group of 16-18 years was randomly selected from four schools of Ludhiana district of Punjab,India. The data related to general information, beverage intake and dietary intakes were collected by pre-tested questionnaire to study the consumption pattern of beverages and its nutrition contribution to total nutrient intake among adolescent boys. The findings revealed that the frequency of soft drinks, energy drinks and alcoholic beverages was higher among urban adolescent boys while frequency of traditional beverages like milk, buttermilk was higher among rural adolescent boys. A low intake of cereals, pulses, roots and tubers, green leafy vegetables, other vegetables, milk and milk products, fruits and fats was observed among both rural and urban adolescent boys. But significant (p≤0.01) higher intake of sugar was observed among urban adolescent boys due to high intake of soft drinks. From beverages, the percent contribution of calcium, energy, protein and iron among rural adolescent boys was 76, 23, 34 and 6 while among urban adolescent boys was 67, 19, 28 and 7. The data on percent adequacy of nutrient intake revealed that intake of energy, protein, fat, iron, magnesium and fibre was low. A significantly (p≤0.01) higher consumption of milk and milk products was observed among rural adolescent boys that contributed to higher intake of protein and calcium in their diet.

Keywords: *Adolescent boys, Beverage frequency, Dietary intake, Nutrient contribution, Nutrient intake*

INTRODUCTION

A drink or beverage is defined as a liquid preparation which is specifically meant for human consumption. The word "bever" is a Latin word, which means 'rest from work' and 'beverage' has been coined from it. Human beings need water or beverages for sufficient hydration of the body, because most of the water is lost from our body through diaphoresis (Malik et al., 2010). The beverages provide at least 80 percent liquid in our body (Campbell, 2007).

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Beverages are classified into two major types- non-alcoholic and alcoholic. Ethanol is the major ingredients in all alcoholic drinks or beverages such as- wine, beer, brandy, whiskey and rum. Non-alcoholic drinks such as-milk, tea, coffee, soda water, fizzy lemonade, juice, butter milk and soft drinks (Popkin et al., 2006) are taken by people of all ages, cultures and class to meet the hydration requirements and to maintain taste. Besides quenching the thirst of people, these beverages also have nutritional significance such as milk is a good source of calcium, protein, magnesium, phosphorous, potassium, vitamin B_{12}, zinc. Orange juice is considered to be a rich source of vitamin C, folate, thiamine and potassium, but on the other hand some beverages like tea and coffee may be harmful to the health as they bind essential nutrients such as calcium and magnesium from the human body and make them unavailable in metabolism. Besides, these harmful effects of tea and coffee, soft drinks also possess high amounts of sugar (Ramprasad & Evans, 2007) which leads to several health problems such as diabetes mellitus, obesity, coronary heart disease, bone demineralization and dental caries etc (He et al., 2008).

In today's scenario due to globalization and urbanization, adolescents' eating and drinking behaviours had come under spotlight in India (Puri et al., 2008). Now-a-days, people's interest had been increasing in nutritious beverages like juice, buttermilk, milk as compared to lesser nutritional beverages like soft drinks. New directions in beverages had been formulated with the increasing awareness on health and wellness among the people (Sloan, 2008).

The present study focuses on adolescent boys since they have greater access to beverages. Therefore, the present study has been planned to find out the total beverage consumption and its contribution to total dietary intake among adolescent boys

MATERIALS AND METHODS

A total sample of one hundred twenty adolescent boys in the age group of 16-18 years was randomly selected from 4 schools with equal number (60 each) from rural and urban areas of Ludhiana district. A pretested questionnaire was used to collect information regarding the beverage consumption, food intake. The data were collected during April to August 2016. Information about the subjects pertaining to age, type of family, size of family, family income and monthly pocket money was collected. A list of commonly consumed beverages by the adolescent boys was prepared by interviewing adolescents (non-subjects), parents, teachers, dietitians and vendors. Further the food frequency questionnaire (FFQ) was used to assess the beverage consumption pattern for the last three months. The information regarding the consumption frequency of various beverages was also recorded. The mean frequency was calculated for each beverage consumed by each subject. The dietary intake of subjects was assessed by 24 hour recall method for 3 consecutive days (including one Sunday). The food consumption was converted into their raw equivalent and the average daily intake of nutrients was collected using Dietcal, computer software (Kaur, 2014). The food and nutrients were compared with Suggested Dietary Intakes for Balanced Diet and Recommended Dietary Allowances (ICMR, 2010). The contribution of beverages to the total daily nutrient intake of subjects was also calculated. The data were statistically analyzed on various aspects to determine different parameters. Student's t- test was applied to test the significance of mean difference for beverage consumption pattern of rural and urban adolescent boys

RESULTS AND DISCUSSION

General information and socio economic status of selected adolescent boys

The general information of selected subjects is presented in Table I. The age wise distribution of subjects revealed that majority of the rural (70%) and the urban (78%) subjects were in the age group of 17-18 years. As far as family system of the subjects was concerned, the data revealed that majority of both urban and rural

(62 and 83 %) subjects belonged to nuclear families. The declining trend of joint families could be attributed to urbanization, modernization and globalization (Madankar, 2014). It was further recorded that more of rural (62 vs 43%) subjects had family size comprising of 5-8 members. While high percentage of urban (30 vs 45%) subjects had family size comprising up to 4 members. Chadda and Deb (2013) observed that the nutritional status of a person largely depends upon the size of a family. The larger the size of family, poorer will be the nutritional status of their members.

With respect to family income the data reported that majority of urban (50%) subjects belonged to families earning up to Rs 10,000 to 20,000 while high percentage of rural (49%) subjects belonged to families earning up to Rs 10,001 to 30,000 per month. However a relatively higher percentage of the rural than urban (20 vs 10 %) subjects belonged to families earning between Rs 40,000 to 50,000 per month. The mean monthly family income of urban subjects was higher (31014.67 vs 27850 Rs).

The data in Table I depicts that majority of rural (92vs77 %) subjects were getting pocket money in the range of Rupees 101 to 1000. The higher percentage of urban (13%) as compared to rural (3%) subjects were getting Rupees 1001 to 1500.

Table I
General profile of selected adolescent boys

	Rural (n=60)	**Urban (n=60)**	**Total (n=120)**
Age (Years)			
16-17	18(30)	13(22)	31(26)
17-18	42(70)	47(78)	89(74)
Family Type			
Nuclear	37(62)	50(83)	87(73)
Joint	23(38)	10(17)	33(27)
Family Size			
Upto 4	18(30)	27(45)	45(38)
5-8	37(62)	26(43)	63(52)
>8	5(8)	7(12)	12(10)
Monthly Family Income (Rs)			
Up to 10000	9(15)	13(22)	22(18)
10001-20000	19(32)	17(28)	36(30)
20001-30000	10(17)	9(15)	19(16)
30001-40000	5(8)	4(7)	9(8)
40001-50000	12(20)	6(10)	18(15)
>50000	5(8)	11(18)	16(13)
Mean± SD	**Rs 27850±15007.14**	**Rs 31014.67±35383.89**	
t value	**0.63^{NS}**		
Monthly Pocket money (Rs.)			
≤100	1(1.67)	3(5)	4(3.33)
101- 500	37(61.67)	29(48.33)	66(55)
501 – 1000	18(30)	17(28.33)	35(29.17)
1001-1500	2(3.33)	8(13.33)	10(8.33)
>1500	2(3.33)	3(5)	5(4.17)
Mean± SD	**Rs 665±436.89**	**Rs 698.33±509.57**	
t value	**0.38 ^{NS}**		

Figures in parenthesis indicate percentage

It was also observed that majority (38%) of boys used to spend their pocket money on fast food, followed by 18 percent on beverages and 17 percent on entertainment sources. A very few of rural (2%) and urban (5%) subjects were getting pocket money less than Rs 100, because of their low family income and larger family size. A significant ($\chi 2$ = 57.35) association between pocket money and family income was found, showing that as the monthly family income of the subjects increase, the pocket money they used to

receive also increased.

Beverage choices and consumption pattern

The subjects from both the groups were taking several types of beverages like milk, soft drinks, juices, energy drinks and alcoholic beverages. The frequency of various beverages consumed by the subjects were recorded, analyzed and discussed below:

General beverage consumption pattern

The consumption pattern of beverages with mean frequency scores of different beverages is presented in Table II. There was Significantly ($P \leq 0.01$) higher consumption of soft drinks was observed among urban adolescent boys. The most commonly consumed soft drinks as per their preference were Limca, Pepsi, Coca-cola, Coke zero, Diet coke and 7 up with mean frequency score of 3.93, 3.76, 2.98, 2.26, 2.1, 2 among urban and 2.15, 2.75, 1.96, 2.11, 1.86, 0.88 among rural adolescent boys. Similarly Santhosh (2014) reported that 71 percent adolescents used to consume Limca, 68 percent Coca-cola, 57 percent Sprite and 43 percent Fanta. The findings revealed that Limca and cola drinks were frequently consumed by adolescent boys. The data related to consumption frequency of energy drinks revealed that both rural and urban adolescent boys used to consume energy drinks less frequently. The mean frequency score of energy drink consumption were compared among rural versus urban adolescent boys and found that Glucose-D (2.58 vs 1.96), Protein shakes (1.53 vs 1.5) and Boost (1.18 vs 0.67) were highly consumed by rural than urban boys. While other energy drinks like Urzaa, Sofit, Tzinga, Rockstar were highly consumed by urban than rural subjects. However, the consumption of juices was higher among rural than urban adolescent boys. Fruit juices provide 25 percent of the Vitamin C in adult's diet (Record, 2001).

Table II

Mean frequency score of consumption of beverages by rural and urban adolescent boys

Beverage	Rural (n=60) Mean ±SE	Urban (n=60) Mean±SE	t value
SOFT DRINKS			
Pepsi	2.75±0.21	3.76 ±0.19	3.49**
Maaza	1.35±0.15	1.77±0.16	1.36^{NS}
Slice	1.26±0.23	1.63±0.16	1.33^{NS}
Mountain dew	1.68±0.15	1.85±0.19	0.69^{NS}
Coca cola	1.96±0.17	2.98±0.2	3.78**
Coke zero	2.11±0.19	2.26±0.2	0.52^{NS}
Diet coke	1.86±0.19	2.1±0.2	0.84^{NS}
Limca	2.15±0.2	3.93±0.57	2.91**
7 up	0.88±0.12	2±0.16	5.57**
Sprite	0.91±0.1	1.87±0.13	5.78**
Frooti	0.36±0.07	1.73±0.18	6.98**
Fanta	0.75±0.1	1.22±0.10	3.24**
Thums up	0.78±0.1	2.18±0.14	7.83**
Appy fizz	0.55±0.08	1.33±0.14	4.85**
Energy drinks			
Red bull	1.32±0.17	0.65±0.11	3.21**
Power horse	0.02±0.01	-	1^{NS}
Rock star	-	0.33±0.03	1^{NS}
Monster	-	0.1±0.08	1.18^{NS}
Urzaa	0.3±0.08	0.35±0.09	0.39^{NS}
Sofit	0.26±0.07	0.28±0.09	0.13^{NS}
Tzinga	-	0.01±0.13	1^{NS}
B'lue	-	0.05±0.03	1.35^{NS}
Xtra power	-	-	NS
Herbo+	-	0.05 ±0.02	1.76^{NS}
Boost	1.18±0.20	0.67 ±0.20	1.80^{NS}
Glucose-D	2.58±0.34	1.96 ±0.28	1.37^{NS}
Protein shake	1.53± 0.24	1.5 ±0.26	0.09^{NS}
Juices			
Orange	4.18±0.14	3.71±0.14	2.34*

Pineapple	1.76±0.13	2.2±0.16	2.07*
Grapes	1.06±0.16	0.36±0.09	3.57**
Pomegranate	1.9±0.14	2.85±0.22	3.62**
Mixed fruit juice	5.16±0.16	4.28±0.19	3.46**
Apple juice	0.83±.09	0.25±0.05	5.38**
Carrot juice	1.41±0.06	1.01±0.08	3.88**
RTS	2.13±0.07	2.73±0.27	2.11*
Squashes	1.76 ± 0.05	1.56±0.12	1.45 NS
Syrups	2.53±0.18	2.11±0.24	1.35 NS
Alcoholic			
Beer	0.2±0.10	0.4±0.14	1.13 NS
Wine	0.1±0.05	0.26±0.10	1.47 NS
Vodka	0.03±0.03	0.16±0.06	1.86 NS
Taquilla	0.03±0.23	0.15±0.05	1.88 NS
Whiskey	0.05±0.04	0.15±0.05	1.46 NS
Liquor	0.15±0.08	0.32±0.14	0.98 NS
Traditional beverage			
Banana shake	2.7±0.22	3.4±0.18	2.38*
Mango shake	1.81±0.17	2.48±0.15	2.89**
Papaya shake	0.2±0.07	0.33±0.11	1.02 NS
Strawberry shake	0.65±0.16	0.2±0.08	2.45*
Kiwi shake	0.11±0.05	-	1.99 NS
Milk badam	1.56±0.15	1.86±0.11	1.59 NS
Lemon water	3.98±0.17	4.25±0.20	0.99 NS
Buttermilk	5.56±0.20	4.86±0.29	1.96*
Tea	3.48±0.30	5.63±0.31	4.92**
Green tea	0.91±0.25	1.08±0.25	0.46 NS
Coffee	2.43±0.19	3.61±0.22	3.98**
Kanji	0.2±0.12	0.06±0.04	1.05 NS
Kesar milk	0.4±0.15	0.2±0.08	1.10 NS
Hot chocolate	0.06±0.04	0.38±0.11	2.67**

0=Never 1=Raraely 2=Monthly 3=Fortnightly
4=Weekly 5= Twice a week 6= Thrice a week 7= Daily
NS-Non significant *Significant at 5% level of significance
** Significant at 1% level of significance

Diaz-Juarez (2009) suggested that citrus fruit juices are mainly consumed for their health benefits on cancers, immunity, arterial pressure, and for prevention of bladder infection respectively. Most commonly consumed juices as per the preference were mixed fruit, orange, syrups, ready to serve (RTS) and pomegranate juices with mean frequencies as 5.16, 4.18, 2.53, 2.13 and 1.9 for rural and 4.28, 3.71, 2.11, 2.73 and 2.85 for urban subjects respectively. Further, it was observed that out of total 120 adolescent boys, only 12 percent subjects used to consume alcoholic beverages. Alcohol is a source of empty calories and can be turned into fat and adding weight to the body. It increases the level of blood triglycerides. But alcohol in small amounts (35ml whiskey, 70ml wine) increase HDL and good for cardio vascular system (2014). The data related to the frequency score of alcoholic beverages among alcoholic consumers (12%) indicated that beer (0.2 vs 0.4), liquor (0.15 vs 0.32), wine (0.1 vs 0.26) vodka (0.03vs 0.16) and whiskey (0.05 vs 0.15) were highly consumed by urban subjects. Bhullar (2013) observed that most commonly used alcoholic beverage was whiskey (41%) followed by beer (20%) and the least commonly used were brandy (1%) and rum (1%). Traditional drinks were frequently consumed by both rural and urban adolescent boys. From the traditional drinks it was observed that Buttermilk, Lemon water and tea were frequently consumed with mean frequency as 5.56, 3.98, 3.48 among rural and 4.86, 4.25, 5.63 among urban subjects. The consumption frequency score of other commonly consumed traditional drinks like banana shake (2.7vs 3.4), mango shake (1.81 vs 2.48), coffee (2.43 vs 3.61) and milk badam (1.56 vs 1.86) were compared among rural and urban boys and found that these were significantly more consumed among urban subjects.

Daily food intake

The mean daily intake of food groups by rural and urban adolescent boys showed that the intake of cereals (365.72 vs 399.83g), pulses (47.30 vs 40.03), green leafy vegetables (39.41 vs 31.39g), roots and tubers (98.80 vs 131.39), other vegetables (80.38 vs 73.5) fruits (86.87 vs 82.05 g) and fats (28.98 vs 33.83) was low as compared to Suggested dietary intake (SDI) values among both rural and urban subjects.

Table III

Mean daily food intake and its percent adequacy among selected adolescent boys

Food groups (g/day)	Actual intake		t value	Percent adequacy		Suggested Dietary Intake#
	Rural (n=60)	Urban (n=60)		Rural (n=60)	Urban (n=60)	
Cereals	365.72±89.71	399.83±70.09	2.32*	81.27	88.88	450
Pulses and legumes	47.30±18.30	40.03±17.27	2.24*	52.55	44.48	90
Green leafy vegetables	39.41±28.16	31.39±16.23	0.88 NS	39.41	31.39	100
Roots and tubers	98.80±37.76	131.39±47.48	4.18**	49.4	65.69	200
Other vegetables	80.38±42.82	73.5±46.72	0.85 NS	40.19	36.75	200
Fruits	86.87±32.74	82.05±25.87	0.89 NS	86.87	82.05	100
Milk and milk products	374.49±216.09	285.44±105.51	2.88**	74.89	57.08	500
Sugar	27.70±13.58	34.98±11.4	7.97**	92.33	116.6	30
Fats and oil	28.98±8.80	33.83±8.28	3.10**	57.96	67.67	50

ICMR (2011) Values are Mean±SD

*Significant at 5% level of significance ** Significant at 1% level of significance

NS-Non significant

A significantly (P≤0.01) higher intake of roots and tubers, sugar and fats and oils was observed among urban adolescent boys. Significant (P≤0.01) higher mean intake of milk and milk (374 vs 285 ml) products was observed among rural adolescent boys. Further the percent adequacy of food intake among rural and urban adolescent boys depicted that intake of cereals (82 vs 89%), green leafy vegetables (39 vs 31%), milk and milk products (75 vs 57%) and fruits (87 vs 82%) was found to be inadequate. The adequacy of roots and tubers was also inadequate but it was observed higher in urban (66%) than rural (49%) adolescent boys. Among roots and tubers potato, radish and carrot were most commonly consumed by them. Onion was taken as salad and in all vegetables. Only potato was consumed in greater quantity than any other vegetables, since it was available in variety of processed forms like chips, samosa, patties, pakoras, finger fries, tikkies, burgers etc. The adequacy of intake of other vegetables for rural and urban was 40 and 37 percent because most of the boys from both areas disliked many vegetables like brinjal, capsicum, bottle gourd, pumpkin, turnip etc. It was further observed that adequacy of sugar was higher among urban (92 vs 117) than rural. On the whole, it can be stated that consumption of beverages among adolescent boys contributed to high intake of sugar and inadequate intake of all the food groups. Perez 1996) also observed that adolescent boys had a very low intake of milk (75%), fruits (62%) and excessive intake of fats (112%) as compared to dietary allowances given by ICMR.

Nutrient intake

The intake of nutrients by the rural and urban adolescent boys showed (Table IV) that rural adolescent boys had significantly higher intake of calcium (893.30 vs 788.52), protein (59.03 vs 54.89) and non significantly higher intake of magnesium (172.33 vs 103.2), iron (23.06 vs 21.94) and fibre (14.54 vs 11.87) was observed than urban adolescent boys. Comparing the percent adequacy of nutrient intake the data revealed that fat intake (92 vs 96%) was found to be nearly adequate in rural and urban adolescent boys due to high consumption of fast food items. Hejazi, (2009) reported that adolescents used to consume higher levels of total fats, saturated fat, cholesterol and low levels of fruits and vegetables. The intake of calcium (112 vs 98%) was significantly ($P \leq 0.01$) higher than RDA among rural subjects. It was also observed that intake of protein (96 vs 89%) was significantly ($P \leq 0.05$) higher among rural than urban subjects due to intake of milk and milk products eg. buttermilk, cheese, flavoured milk, custard, kheer etc.

Table IV
Mean daily nutrient intake and its percent adequacy among selected adolescent boys

Nutrients	Nutrient intake		t value	Percent adequacy		RDA#
	Rural (n=60)	Urban (n=60)		Rural (n=60)	Urban (n=60)	
Energy , kcal	2330.614±397.44	2669.37±403.49	5.35*	77.15	88.37	3020
Protein, g	59.03±19.25	54.89±14.26	2.55*	95.98	89.25	61.5
Total fat, g	46.04±18.19	48.12±15.18	0.56^{NS}	92.08	96.24	50
Calcium, mg	893.30±311.34	788.52±375.69	1.99**	111.66	98.5	800
Iron,mg	23.06±3.91	21.94±3.22	1.72 ^{NS}	82.36	78.36	28
Magnesium,mg	172.33±103.2	156.87±112.32	0.79 ^{NS}	88.37	80.45	195
Fibre,g	14.54±9.01	11.87±8.71	1.66 ^{NS}			

ICMR (2010) Values are Mean±SD
NS-Non significant *Significant at 5% level
** Significant at 1% level

Further, the intake of energy (77 vs 88%), magnesium (88 vs 80 %) and iron (82 vs 78%) was inadequate among both rural and urban adolescent boys. Shanty[23] concluded that adolescents who ate fast food had more total energy (187 kcal), more total fat (9g), more added sugars (26 g) compared with those who did not consume it.

Nutrition contribution of beverages

The data (Table V) indicated that the nutrition contribution from beverage to the total diet of subjects. The data revealed that total mean nutrition contribution from beverages to the total nutrient intake of energy (555.76 vs 516.34 kcal), protein (20.11 vs 15.55g) and calcium (682.43 vs 530.54mg) was higher among rural adolescent boys. Calcium and protein was provided in high quantity from milk and milk products i.e. buttermilk, milk, milk badam, kesar milk etc. Small amount of calcium was also provided by juices and shakes like orange, mixed fruit, pineapple, RTS, banana shake, mango shake etc. Whereas contribution of iron was observed among rural and urban adolescent boys was 6 and 7 percent. The iron was provided from energy drinks, syrups, squashes, shakes and juices.

Table V

Nutrition contribution of beverages to the total intake of selected adolescent boys

Nutrient	Rural (n=60)			Urban (n=60)		
	Total nutrient intake	Beverage contribution	Percent contribution	Total nutrient intake	Beverage contribution	Percent contribution
Energy (kcal)	2330.61±397.44	555.76±197.17	23.84	2669.37±403.49	516.34±150.44	19.34
Protein (g)	59.03±19.25	20.11±6.03	34.06	54.89±14.26	15.55±3.56	28.33
Calcium (mg)	893.30±311.34	682.43±268.15	76.39	788.52±375.69	530.54±144.79	67.28
Iron (mg)	23.06±3.91	1.35±0.74	5.86	21.94±3.22	1.49±1.51	6.79

Values are Mean±SD

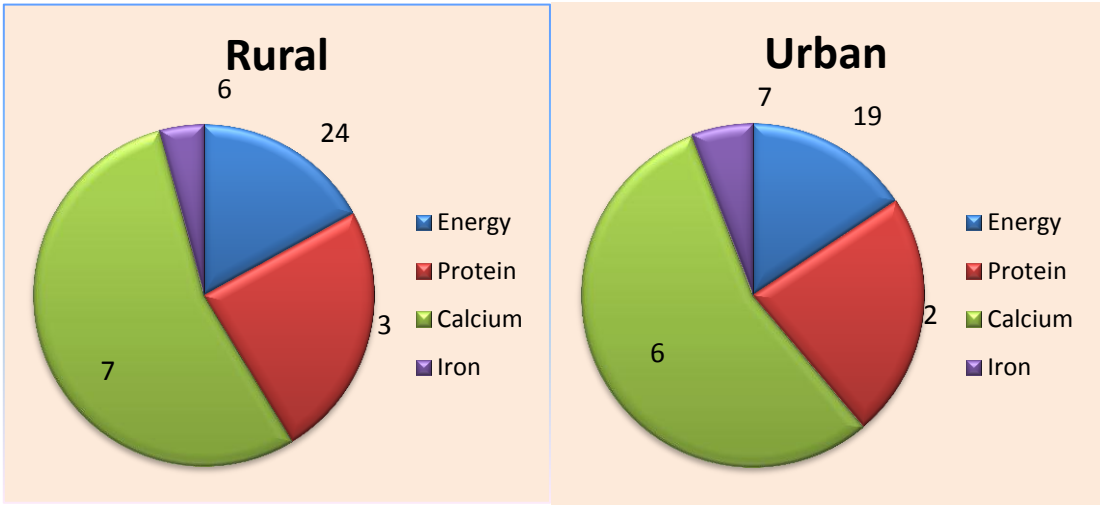

Fig. 1: Percent nutrition contribution of beverages to the total nutrient intake among selected (rural and urban) adolescent boys

The percent contribution for energy, protein, calcium and iron from beverages to the total intake of rural adolescent boys was 23.84, 34.06,76.39, 5.86 and for urban adolescent boys was 19.34, 28.33, 67.28 and 6.79. Vartanin[24] reported that sugar sweetened beverages are the only source of empty calories. These calories results in excess intake of sugar and calories in diet and causes overweight and obesity. Zahran (2016) also observed that 27 percent of calories were produced from beverages to the total diet of adolescents.

CONCLUSION

The data on consumption pattern of beverages revealed that, due to easy availability and accessibility of beverages like soft drinks, energy drinks and alcoholic beverages in urban areas, have contributed to higher consumption frequency among urban adolescent boys. Whereas, high intake of milk and milk products e.g. milk, buttermilk, flavoured milk, shakes were observed among rural adolescent boys that contributed to high intake of calcium and protein among their diet. Lower intake of whole cereals, pulses, roots and tubers, green leafy and other vegetables resulted into inadequacy of energy, iron, magnesium and fibre. Further, It was observed that most of the beverages have little or no nutritional value and contains calories only like soft drinks, energy drinks and alcohol that act as a risk factor for many health diseases. But some of the beverages such as milk and juices have nutritional contribution to daily diet like milk is a good source of calcium, protein and magnesium. So there is a need a need to create awareness regarding selection and consumption of beverages at school level.

REFERENCES

Bhullar, D. S., Singh, S. P., Thind, A. S., Aggarwal, K. K., & Goyal, A. (2013). Alcohol drinking patterns : A sample study . *J. Ind. Acad. Forensic. Med.*, *35*, 37-39.

Campbell, S. M. (2007). Hydration needs throughout the lifespan. *J. Am. College. Nutr., 26*, 585-87.

Chadda, R. K., & Deb, K. S. (2013). Indian family systems, collectivistic society and psychotherapy. *Ind. J. Pschtry.*, *55*, 299-309.

Diaz, J. A., Tenorio, L. F., Zarco, O. G., Valle, M. L., Torres, J. C., & Pastelin, H. (2009). Effect of citrus paradisi extract and juice on arterial pressure both in vitro and in vivo. *Pub. Med.* 23, *948*, 54.

Ghafoorunissa & Krishnaswamy (2014). (Ed) Diet and Heart Disease. *NIN. Hyderabad., 21*, 62.

He, F. J., Marrero, N. M., & Macgregor, G. A. (2008), Salt intake is related to soft drink consumption in children and adolescents: a link to Obesity. *Hypertension., 51*, 629-34.

Hejazi, N., & Mazloom, Z. (2009). Socioeconomic status, youth's eating pattern and meals consumed away from home. *Pak. J. Biological. Sci*., *12*, 730-33.

ICMR. (2010). Nutrient requirement and safety dietary intake for Indians. *NFI Bull*, *31*, 1-6.

ICMR. Dietary guidelines for Indians: A manual. *NIN. ICMR. Hyderabad.*, India.

ICMR. (2010). Nutrient requirement and safety dietary intake for Indians. *NFI. Bull*. *31*, 1-6.

Popkin, B. M., Armstrong, L. E., Bray, G. M., Caballero, B., Frei, B., & Willett, W. C. (2006). New proposed guidance system for beverage consumption in the United States. *Am. J. Clin. Nutr*., *83*, 529-42.

Puri, S., Bhatia, V., Swami, H. M., Rai, S., & Mangat, C. (2008),Impact of a diet and nutrition related education package on the awareness and practices of school children of Chandigarh. *Int. J. Epidemiol., 6*, 1-5.

Ramprasad, J. R., & Evans, J. S. (2007). How Soft Drinks Contribute to the Pediatric Obesity. *Epidemic. Northeast. Florida. Med*., *58*, 25-29.

Kaur, G. (2014). DietCal- A tool for dietary assessment and planning, Department of Dietetics, AIIMS, New Delhi.

Kumar, D. Mittal, P. C., & Singh, S. (2006). Socio-cultural and nutritional aspects of fast food consumption among teenagers and youth. *Ind. J. Comm. Med., 32*, 178-80.

Madankar, N. (2014). The problems, strategy and women empowerment in india. *Int. J. Dev. Res., 4*, 2119-21.

Malik, V., Popkin, B., Bray, G., Desprs, J. P., & Hu, F. (2010) Sugar-sweetened beverages, obesity, type 2 diabetes mellitus, and cardiovascular disease risk. *Circulation., 121*, 1356-64.

Perez, U., & Zomora, S. (1996). Estimates of food intake and dietary habits in random sample of adolescents in South East Spain. *J. Human. Nutr. Dietet., 9*, 463-71.

Record, S. J. (2001). Intakes for fruit and fruit juices in the 1995 national nutrition survey. Common wealth Scientific and Industrial Research Organization Health Sciences and Nutrition.

Rozenberg, S., Body, J. J., Bruyere, O., Bergmann. P., Brandi, M. L., Cooper, C., Devogelaer, J. P., Gielen, E., Goemaere, S., Kaufman, J. M., Rizzoli, R., & Reginster, J. Y. (2016). Effects of dairy products consumption on health: Benefits and beliefs- a commentary from the Belgian bone club and the European society for clinical and economic aspects of osteoporosis, osteoarthritis and musculoskeletal diseases. *Calcif. Tissue. Int., 98*, 1-17.

Santhosh, T. M. (2014). A study on consumer preferences towards soft drink

products. Project report. Bharathiar university, Coimbatore, India.

Sloan, A. E. (2008) New directions in drink. *Food Tech*., *5*, 19.

Shanty, A. B., Gontmaker, S. L., Ebbeling, C. B., Pereisa, M. A., & Ludwig, D. S. (2004). Effects of fast food consumption on energy intake and diet quality among children in a National Household Survey. *J. Pediatr*., *113*, 112-18.

Vartanian, L. R., Schwartz, M. B., & Brownell, K. D. (2007). Effects of soft drink consumption on nutrition and health: A systematic review and meta-analysis. *Am. J. Public. Health., 97*, 667-75.

Zaharan, N. L., Loh, D. A., & Mohamad, Z. (2016). Sugar sweetened beverage intake and its associations with cardiometabolic risks among adolescents. *Pediatr Obesity.*