

# Sugar sweetened beverages consumption among adolescent aged 13-15 years

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■ **ABSTRACT** : A number of studies have been concluded that sugar sweetened beverage consumption has increased in all age groups. Among which nutritionally vulnerable group adolescent consumption data indicates a regular consumption. Consumption data clearly indicates a shift toward non nutritive beverages and ultimately result in poor health status of adolescents. This cross sectional study was aimed to figure out SSB consumption among adolescent aged 13-15 years. The samples were collected from private school of Jodhpur city (Rajasthan). Prevalence of SSB consumption, day wise quantity consumed in ml per day of all sugar sweetened beverages was recorded through semi structured questionnaire method. Data depicted that among all the age group 13 year aged boys consumed 79.03 per cent and 98.18 per cent girls had more soft drinks on daily basis as compared to others. All varieties of sugar sweetened beverages were also assessed according to day wise and quantity consumed. It was observed that largest number of 67.53 per cent, aged 14 year old boys consumed thrice a day and maximum of 63.65 per cent drank > 400-600 ml per day sugar sweetened beverage (SSB). While among 13 year aged, maximum number of 49.07 per cent girls consumed twice a day and higher number of 70.90 per cent had 200 - 400 ml per day SSB. Statistically significant difference was observed between overall boys and girls (ml) SSB consumption (T value is 4.33 and  $p < 0.05$ ).

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Soft drink consumption has increased by 300 per cent in the past 20 years and more than 50 per cent of children in school consume at least one soft drink daily. The odds ratio of becoming obese children increases 1.6 times for each additional can or glass of SSB consumed their usual daily intake of the beverage (Harrington, 2008). Shifts in dietary choices led adolescents to choose SSB. This shift had a negative

impact on health by lowering nutritional quality and decreasing micronutrient intake.

Consumption of high sugary drink intake may place adolescents at risk for not getting the nutrient they need for optimal health and may contribute to increased risk of bone fractures, obesity, tooth decay and life threatening diseases in later stages of life. A serious concern is required to make adolescence aware of such

non-nutritive and colourful beverages. Ludwig *et al.* (2001) stated that, "The escalating consumption of soft drinks is of concern, especially in children and adolescents, because adverse nutritional and health effects have been linked with soft drink consumption". Adolescence is a decisive period in human life due to the multiple changes that take place between childhood and adulthood. Being nutritionally vulnerable age group special nutritional concern should be given to them. This could be only possible through dietary interventions and keeping track of dietary habits of adolescents. The 1995 National Nutrition Survey found that around half of all teenagers consumed soft drink during the previous 24 hours. Boys aged 16–18 years drinking an average of 480 ml each day (or 836 ml per day among those who consumed soft drink) (Australian Bureau of Statistics, 1995). This was equivalent to 5.5 per cent of the average total energy consumed by 16–18 year olds or 10.8 per cent of the energy intake of the consumers. In a phone survey by Food Standards Australia and New Zealand (2004), found that 78 per cent of all 12-17 year olds consumed soft drink every week. French *et al.* (2003) showed the prevalence of soft drinks among youth ages 6 to 17 years increased 19 per cent, from a prevalence of 37 per cent in 1977/1978 to 56 per cent in 1994/1998. Mean intake of soft drinks more than doubled, from 5 fl oz to 12 fl oz per day. Increases over time were larger among boys compared with girls (+133% vs. +78%). Findings taken out by Kassem and Lee (2004), among 564 male students of aged 13-18 years, reported that 96.5 per cent drank soda, (60.2%) reported drinking 2 glasses of soda or more per day during the past years. Duffey and Popkin (2007) and Rivera *et al.* (2008), showed increase in SSB consumption by 10 per cent of total energy intake among both children aged 2-18 years and adults aged 19 year and older.

Numerous studies have been conducted globally in concern with SSB consumption and its health related issues. Still in India such intervention studies remained under reported or yet to be done. Based on market reports generated by the Economic Times (2011), it was declared that PepsiCo had expanded its sales force by 25 per cent and distributed more coolers to increase its reach by 20 per cent in India. Increase in sales indicates increase in intake. As a result all age groups will be affected. Especially, adolescents being on the edge of dietary transformation had quickly adopted this change. Keeping

this fact under concern present study was conducted to elicit more information about prevalence, frequency and amount of SSB consumed by adolescent aged 13-15 years.

## ■ RESEARCH METHODS

A cross sectional study was conducted in the year 2010. For the selection of subjects private public schools were approached, after their consent study was carried out. The sample size consisted of 600 subjects with equal number of 300 boys and 300 girls, studying in 8, 9 and 10 standards, aged 13, 14 and 15 years. Tool was developed for data collection which consisted of a semi structured questionnaire. It was pre tested on 30 non sample subjects for the clarity and to elicit the complete required information. The present study included following parameters *viz.*, Prevalence, frequency (day wise) and quantity (ml) of SSB consumed.

### Prevalence and SSB consumption (days) frequency:

Comprehensive questions were prepared to carry out prevalence and day wise consumption of sugar sweetened beverages.

### SSBs consumption (quantity):

SSB consumption every instance in context with glass, cans and bottles was noted. The taken quantity was converted into ml and calculated to find out total SSB consumption. Further suitable statistical analysis was applied to analyze the relevant data.

## ■ RESEARCH FINDINGS AND DISCUSSION

The data on prevalence of soft drink consumption depicted that among 13 year aged adolescents, 79.03 per cent of the boys and 98.18 per cent girls consumed soft drinks daily hence, 20.97 per cent boys and 1.86 per cent girls did not have soft drinks on daily basis. In 14 year aged, more than forty per cent (44.15%) of the boys and surprisingly all of the girls (100%) were daily soft drink consumers thus more than half of the (55.85%) boys (none among the girls) did not consume soft drinks daily. In the age group of 15 years, 60 per cent of the boys and again 100 per cent girls consumed soft drinks daily. Only 40.63 per cent boys reported as not consuming soft drinks daily. It was observed that daily soft drink consumption is more in younger age group boys while in case of girls it increased with increasing age. The present study is partially comparable with the

findings given by French *et al.* (2003), stated that dramatic increases were observed in both the proportion of youth ages 6-17 years who consumed soft drinks and in the amounts consumed. Numerous reasons for the increase in soft drink consumption have been indentified, including increased use of youth targeted advertising and marketing by soft drink companies, larger single serving package sizes, lower prices, increased trends toward increasing availability at school and restaurants. Data from US Department of agriculture (USDA) and continuing surveys of food intakes by individuals (CSFII) indicated that the proportion of adolescent boys and girls consuming soft drinks on any given day increased by 74 per cent and 65 per cent, respectively (Harnack *et al.*, 1999). While studying on US children it was suggested that large increased in soft drinks consumption is mainly driven by 2 to 18 year olds

(Nielsen and Popkin, 2004).

Day wise consumption of sugar sweetened beverages across the age group is given in Fig. 1. In 13 year aged, once a day, consumption was observed among 6.45 per cent boys and 4.63 per cent girls while 27.42 per cent boys and maximum 49.07 per cent girls consumed twice a day. In contrast maximum 48.39 per cent of the boys consumed SSB thrice a day in comparison with 44.44 per cent girl consumers. Nearly similar number of the boys (3.17%) and girls (3.63%) had four times a day. More than four times and daily consumption were observed only among 4.84 per cent and 11.29 per cent boys, respectively. None of the girls fell under this category of SSB consumption.

Among 14 year aged none of the boys while 15.62 per cent of the girls consumed once a day. Twice day consumption was among 6.49 per cent of the boys while

ML consumption	13 year		14 year		15 year	
	Boys (n=63)	Girls (n=110)	Boys (n=77)	Girls (n=64)	Boys (n=160)	Girls (n=126)
200-400	16(25.39)	78(70.90)	2(2.59)	23(35.94)	15(9.37)	14(11.12)
>400-600	33(52.38)	18(16.37)	49(63.65)	17(26.56)	56(35.00)	29(23.02)
>600-800	12(19.05)	14(12.73)	18(23.38)	16(25.00)	55(34.38)	54(42.85)
>800-1000	1(1.59)	0(0)	5(6.49)	8(12.50)	31(19.38)	26(20.63)
>1000	1(1.59)	0(0)	3(3.89)	0(0)	3(1.17)	3(2.38)

\*figures in parenthesis are percentage.

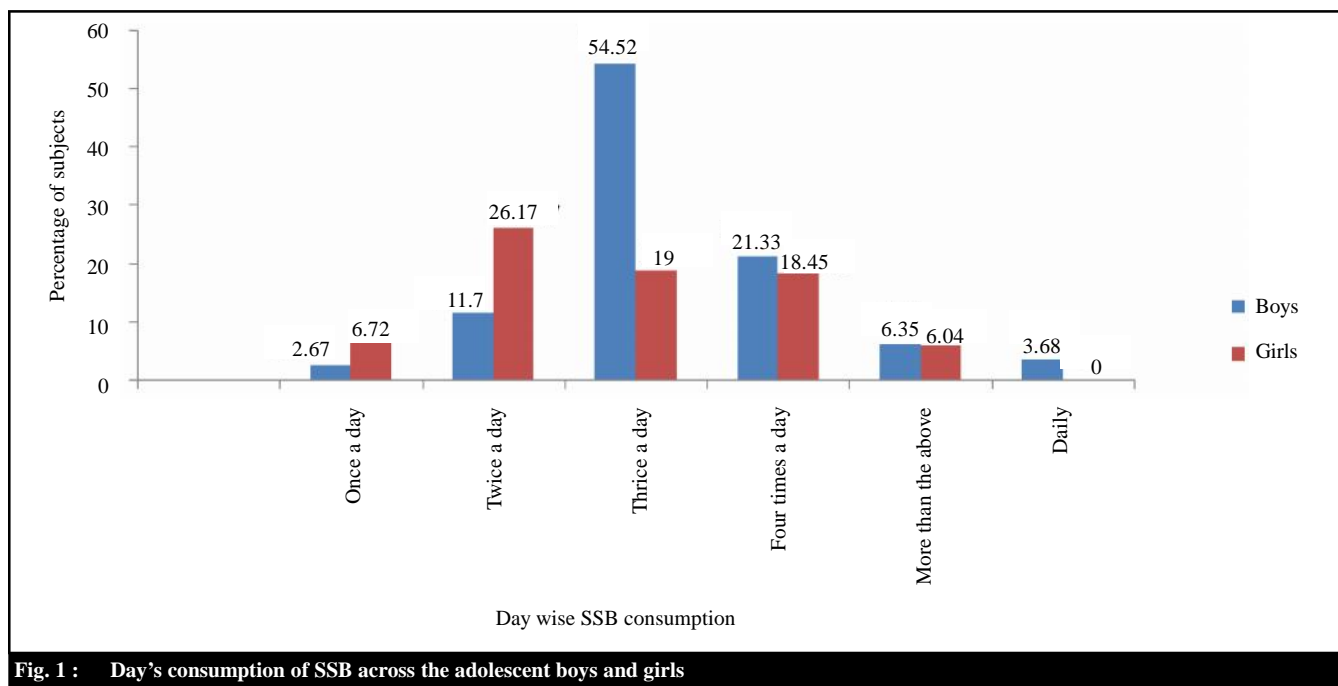


Fig. 1 : Day's consumption of SSB across the adolescent boys and girls

25 per cent girls were observed under this category. Maximum boys and girls consumed twice a day (67.53% and 43.75%, respectively). Nearly similar number of the boys (14.29%) and girls (15.63%) drank 4 times a day. Some boys were observed as consuming SSB more than four times and daily *i.e.* 9.09 per cent and 2.60 per cent, respectively.

In 15 year aged few boys (2.5%) and girls (3.97%) had SSB once a day. Twice a day consumption was observed in 8.13 per cent of the boys and 7.14 per cent girls. Where, 50.63 per cent of the boys and 43.48 per cent girls consumed thrice a day. Followed by 31.88 per cent boys and 34.13 per cent girls drank four times a day. Only 5.63 per cent of the boys and 14.29 per cent girls had more than four times consumption. While, daily SSB consumers were boys (1.25%) and none from girls. Current findings can be compared with Gleason and Sutor (2001), study reported that 20 per cent of school children consume at least one soft drink serving daily and the highest amount is ingested by adolescent males. However, study by Lien *et al.* (2006) reported that  $\geq 4$  times per day consumption was observed in 10.2 per cent boys, which is just double of the currently studied 15 year aged boys. In the present study, it was observed that consumption had increased with age. Few studies had also stated that the older the child and the younger the adult, the higher the soft drink consumption is (Nielsen and Popkin, 2004; Vereecken *et al.*, 2005; Striegel *et al.*, 2006 and Elfhag *et al.*, 2007). Dubois *et al.*, 2007, had reported the same in a cross sectional analysis of children and youth, that soft drink consumption increased with 15 to 16 years aged, 44 per cent of the adolescents were soft drink consumers.

In the age group of 13 years, 25.39 per cent of boys and maximum 70.79 per cent girls drank 200-400 ml. While more than fifty per cent of the boys (52.38%) as compared to 16.37 per cent, girls consumed > 400-600 ml of SSB. Whereas, >600-800 ml consumption of SSB was among 19.05 per cent boys and 12.73 per cent girls. Only 1.59 per cent of the boys were observed as > 800-1000 ml and >1000 ml consumers while none of the girls fell under this category (Table 1).

Among 14 year aged, only 2.59 per cent boys as compared to maximum 35.94 per cent of girls drank 200-400 ml of SSB. In contrast higher number of boys 63.65 per cent but lesser number of girls 26.56 per cent drank > 400-600 ml. Approximately similar number of the boys (23.38%) and girls (25%) consumed >600-800 ml. In

addition, only (6.49%) boys and girls (12.50%) drank >800-1000 ml. While few 3.89 per cent boys consumed >1000 ml as none of the girls were observed as consuming the same quantity of SSB.

In the age group of 15 years, 9.37 per cent boys and 11.12 per cent girls consumed 200-400 ml. Where, maximum 35 per cent boys consumed as compared to 23.02 per cent girls > 400-600 ml SSB. In contrast to 34.38 per cent of the boys, girls (42.85) drank > 600-800 ml SSB. Approximately similar number of the boys (19.3%) and girls (20.63%) had > 800-1000 ml consumption. Likewise, the 1.17 per cent boys and 2.38 per cent girls consumed (> 1000 ml/day). Statistically t test results indicated overall girls were consuming more SSB as compared to boys (T value is 4.33;  $p < 0.05$ ).

In 2005, the American Heart Association, and the US Department of Agriculture, published dietary guidelines for children and adolescents and reiterated their recommendation that "sweetened beverages and naturally sweet beverages, such as fruit juice, should be limited to 4 to 6 oz per day for children 1 to 6 years old, and to 8 to 12 oz per day for children 7 to 18 years old" (Gidding *et al.*, 2005). The current study has shown that in each age group among boys and girls the consumption is more than the recommendation level *i.e.* more than 1000ml of SSB. Certain observations had also stated that there is large increase in SSB consumption throughout the adolescence (Rampersaud *et al.*, 2003 and Vagstrand *et al.*, 2009). Evaluation of the soft drink consumption among adolescents aged 13 to 18 years found that 32.2 per cent consumes (0.1 to 12.9 oz/d), 28.1 per cent (13.0 to 25.9oz/d) and 22.2 per cent ( $\geq 22.2$  oz/d) which is comparable with overall boys and girls consumption data in the study (Harnack *et al.*, 1999). While studying Dutch adolescents (aged 13-18years), Gezondheidsraad (2002), have been shown similar trends between 1987 and 1998, with sugar-sweetened carbonated and non-carbonated soft drink consumption increased by 50.25 per cent (317- 476ml) and 32.5 per cent (212-281ml) day(-1) for boys and girls, respectively.

### Conclusion:

Diverse lifestyle conditions have been related to the rise in changing dietary habits in which recently, the rise in irrational and injudicious use of SSB came into lime light. Basically, lack of awareness, environmental influences, parental dietary habits, pocket money, TV watching, etc. are some of the prime factors that may

play important role as an enhancer of increased consumption of SSB. These all definitely putting adolescents at the rim of obesity or other health related problems. Therefore government and health workers should work together to combat this problem and provide healthier food options for betterment of new crop of our society.

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