

# Effectiveness of planned teaching programme on knowledge regarding effects of sugar sweetened beverages on health among nursing students

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## Abstract

**Background:** Sugar sweetened beverages are the largest source of added sugar in the diet today. Drinking high amount of Sugar sweetened beverages such as soda-can have various adverse impacts on health, ranges from increased chances of tooth decay to a high risk of heart disease and metabolic disorders. The current study aimed to assess the effectiveness of planned teaching programme on knowledge regarding effects of sugar sweetened beverages on health among 1<sup>st</sup> year Basic B.Sc. Nursing students in a selected Nursing college, Karad.

**Methods:** An evaluative research approach was used for the study. The study was carried out in selected nursing college by one group pre-test post-test design. Non-probability purposive sampling technique was used for selecting 80 1<sup>st</sup> year Basic B.Sc. nursing students. On the 1<sup>st</sup> day Structured knowledge questionnaire was used for collecting data and planned teaching programme on effects sugar sweetened beverages on health was conducted and followed by post-test on the 7<sup>th</sup> day. The data collected, tabulated and analyzed in terms of objectives of the study using descriptive and inferential statistics.

**Results:** The mean pre-test knowledge score was 13.3 and post-test knowledge score was 19.4 and paired 't' test value was 9.5 ( $p < 0.01$ ) showing significant increase in the knowledge scores. Chi-square test results show that there was a significant association between knowledge scores of nursing students with the monthly income of the family.

**Conclusion:** Health education programs and awareness for public should be increased on effects of sugar sweetened beverages.

**Keywords:** Effectiveness planned teaching programme, nursing students, sugar sweetened beverages

## Introduction

The term "sugar-sweetened beverages" (SSBs) refers to beverages with added sugar, such as tea, coffee, soda, soft drinks, and electrolyte replacement drinks. These beverages have a high calorie content but no nutritional value, and they do not satisfy hunger like solid food, which contributes to obesity <sup>[1]</sup>. One of the main sources of supplemental sugars in the diet is sugar-sweetened beverages. Numerous research studies have shown that use of sugar-sweetened beverages consistently by adolescents causes unhealthy weight gain and a number of chronic lifestyle diseases, including type 2 diabetes mellitus, cardiovascular disease, and even some malignancies <sup>[2-4]</sup>.

The major lifestyle behaviour change needed to prevent obesity in teenagers is to limit consumption of sugar-sweetened drinks (SSBs) to no more than one serving per day <sup>[5]</sup>. Teenagers who consume too much free sugar in the form of sugar-sweetened beverages develop physiological abnormalities that have a significant negative impact on public health. To lessen the stress on the body, the World Health Organization (WHO) highly advises cutting back on sugar consumption. Making efforts to limit sugar intake will be aided by understanding the variables that affect teenagers' sugar consumption.

In today's world, junk food is widely consumed, however it has detrimental repercussions that cannot be ignored. Overweight and obesity are significant public health issues that affect children's and adolescents' health globally <sup>[7-8]</sup>. Australia has one of the highest rates of overweight and obesity in the world, but it lags behind other nations in developing comprehensive educational or regulatory responses to reduce the consumption of sugary drinks, which is the main modifiable risk factor contributing significantly excess sugar to the diet. Additionally, there is a lack of understanding of how the community perceives and is aware of the negative effects on health brought on by consumption of excess sugary drinks <sup>[9]</sup>. Sugar-sweetened beverages include soft drinks, sports drinks, fruit drinks, energy and vitamin water drinks, sweetened iced tea, and lemonade. These drinks may also contain additional caloric sweeteners such sucrose, high-fructose corn syrup [HFCS], or fruit-juice concentrates. Worldwide sugar consumption has increased by three times in the last several decades, and SSBs are the main added sugar sources in the American diet <sup>[10]</sup>.

To encourage healthy behaviours, such as refraining from SSB use, since habits formed in adolescence are a crucial population to target because they tend to last a lifetime (WHO 2003). Teenage years are a crucial time when kids try to make their own dietary decisions. It is critical to pinpoint the variables that affect a certain behaviour in a particular population in order to create effective interventions <sup>[11]</sup>.

Interventions should be made to encourage a decrease in use of sugar-sweetened beverages because they could have a considerable negative influence on public health <sup>[12]</sup>. Health education of the general public, especially adolescents, can help reduce the intake of sugar-sweetened beverages by educating people about the negative effects of sugar and sugar-sweetened beverages on health <sup>[13, 14]</sup>. University students should continue to receive nutritional education about the negative effects of sugar-sweetened beverages (SSB) on their health, according to a 2017 study by Warner RS and Ha MA <sup>[15]</sup>.

According to the findings of a study based on data from India's National Family Health Survey, round 4 (NFHS 4), adolescents consumed the most SSBs. Additionally, a 2019 study by Mandal SK *et al.* to evaluate the prevalence, patterns, and clinic-social and behavioural factors predicting high intake of SSBs among medical students reveals that SSB consumption was high among these students, with current (within the last month) and lifetime prevalence rates of 90.5% and 92.7%, respectively. Legislative changes that must be made as well as behavioural adjustments in order to ensure the best possible health for foreseeable healthcare practitioners.

Due to the aforementioned facts, reasons and lack of studies on the consumption of SSB by young adults enrolled in college, as well as the fact that there aren't any studies on the knowledge of nursing students regarding SSB, the researcher felt the need to conduct a cross-

sectional study to evaluate the knowledge of first-year Basic B.Sc. Nursing students in order to comprehend the situation, plan a teaching strategy, and evaluate the strategy.

## Objectives

1. To assess the nursing students existing knowledge on effects of sugar sweetened beverages on health among 1<sup>st</sup> year Basic B.Sc. nursing students.
2. To find the effectiveness of planned teaching programme on knowledge regarding effects of sugar sweetened beverages on health.
3. To find out the association of knowledge scores on effects of sugar sweetened beverages on health with selected demographic variables of students.

## Assumption

- 1<sup>st</sup> year Basic B.Sc. nursing students may have some knowledge regarding effects of sugar sweetened beverages on health. Students may have interest to know the knowledge regarding effectiveness of sugar sweetened beverages on health.

## Hypothesis

**H0:** There will be no significant difference between the pre-test and post-test knowledge score on effects of sugar sweetened beverages on health.

**H1:** There will be significant difference between the pre-test and post-test knowledge score on effects of sugar sweetened beverages on health.

**H2:** There will be significant association of the pre-test knowledge score on effects of sugar sweetened beverages on health with selected socio-demographic variables of students

## Methods

An evaluative research approach was used for the study by keeping in view of the nature of the problem selected and objectives to be achieved. The research design of the study was one group pre-test, post-test design. Planned teaching programme for students was the independent variable of the study and dependent variable was the knowledge scores on effects of sugar sweetened beverages on health as measured by structured questionnaires. The study was carried out among 1<sup>st</sup> year Basic B.Sc. nursing students at selected nursing college at Karad, Maharashtra, India. 80 nursing students were selected as sample of the study by using non-probability purposive sampling technique. Knowledge questionnaire were prepared after extensive review of literature and consultation of experts in the field of nursing & nutrition to assess the level of knowledge of nursing students regarding effects of sweetened beverages on health.

## The tool consist of two parts

**Part 1:** Age, gender, religion, residence, monthly family income, occupation of parents.

**Part 2:** Structured knowledge questionnaire regarding effects of sugar sweetened beverages on health consisting of 30 items.

**Method of data collection:** Formal permission was obtained to conduct the study from the concerned authority. On the 1<sup>st</sup> day of pre-test, the nursing students were explained purpose of the study and informed written consent was obtained from each student, followed by planned teaching programme on effects sugar sweetened beverages on health was conducted with the help of lesson plan and A.V. aids (charts and posters). Post-test was conducted on 8<sup>th</sup> day by administering the same knowledge questionnaire. The nursing students participated

actively with interest and co-operated during data collection.

**Data analysis:** The data obtained was analyzed by descriptive and inferential statistics in terms of the objective of the study. The plan of data analysis was prepared under the excellent direction of experts in the field nursing and statistics.

The data analysis plan was as follows:

1. Entry of data in a master sheet.
2. Tabulation of data in terms of descriptive statics like frequency, percentage, mean & SD to describe the data.
3. Classification of knowledge scores using mean and median and SD as follows:

$(SD+X)$ =Good.

$(SD+X)-(SD-X)$ =Average.

$(SD-X)$ =Poor.

**Scoring:** Score 1 was awarded to each correct response and score 0 was awarded to every incorrect response.

To draw the conclusions inferential statistics were used:

For testing of effectiveness of planned teaching programme Paired “t” test was used and Chi-square test to find association of knowledge scores with selected sociodemographic variable.

## Results

### Part A: Distribution of 1<sup>st</sup> Year B.Sc. Nursing students according to sociodemographic variables

**Table 1:** Distribution of frequency and percentage of 1<sup>st</sup> Year B.Sc. Nursing students according to sociodemographic variables

n=80

Characteristics	Categories	Basic B.Sc. nursing students		
		Frequency	Percentage	
1. Age	18	42	52.5	
	19	29	36.2	
	20	9	11.3	
2. Gender	Male	16	20	
	female	64	80	
3. Religion	Hindu	39	48.7	
	Muslim	2	2.6	
	Christian	39	48.7	
4. Residence	Urban	50	62.5	
	Rural	30	37.5	
5. Monthly family income	< 15,000	28	35	
	15,001-30,000	33	41.3	
	30,001-45,000	8	10	
	Above 45,000	11	13.7	
6. Occupation of parents	Mother	Working	8	10
		Home maker	72	90
	Father	Agriculture	27	33.75
		Self-employed	31	38.75
		job other	11	13.75
		job other	11	13.75

The data presented in Table 1 shows that maximum numbers of 42(52.5%) of students were 18years old, as per gender majority of students were female 64 (80%), maximum 39 (48.75%) students were Hindu and Christian respectively, 50 (62.5%) belongs to urban area,

33 (41.25%) had income of Rs. 15001-.30000 per month, as per occupation of mother 72(90%) were non-working (home maker) and 31(38.75%) fathers were self-employed.

### Part B: Distribution of 1<sup>st</sup> year Basic B.Sc. nursing students according to level of Knowledge Scores regarding effects of sugar sweetened beverages on health.

**Table 2:** Distribution of frequency and percentage of total knowledge scores of 1<sup>st</sup> year Basic B.Sc. nursing students regarding effects of sugar sweetened beverages on health  
n=80

Level of knowledge of 1 <sup>st</sup> year Basic B.Sc. nursing students	Pre-test		Post-test	
	F	%	F	%
Good (mean+ SD)	16	20	73	91.2
Average (mean + SD to mean-SD)	45	56.3	7	8.8
Poor (mean-SD)	19	23.7	0	0

Table 2 shows that in pre-test maximum 45 (56.3%) of students had average, 19(23.7%) had poor and 16 (20%) had good knowledge on effects of sugar sweetened beverages on health. Where as in post-test majority 73(91.2%) students had good knowledge, 7(8.8%) had average knowledge regarding effects of sugar sweetened beverages on health.

### Part C: Effectiveness of planned teaching programme on knowledge of nursing students regarding effects of sugar sweetened beverages on health:

**Table 3:** Mean and standard deviation of total knowledge score of nursing students regarding effects of sugar sweetened beverages on health:

	Pre-test	Post-test	't' test value	P value
Mean	13.3	19.4	9.5	p<0.05
SD	3.6	4.4		

Table 3 shows the effectiveness of planned teaching programme that there was significant difference between pre-test & post-test knowledge scores. The mean post -test knowledge score 19.2(SD=4.4) of 1<sup>st</sup> year B.Sc. N students was significantly higher than their pre- test knowledge score 13.3 (SD=3.6).The computed 't' test statistic value was 9.5 Since, the p value for the test was less than 0.05, the null hypothesis was rejected at the 95% confidence level and it showed that the planned teaching programme on knowledge on effects of sugar sweetened beverages was effective method for enhancing the knowledge 1<sup>st</sup> year B.Sc. N students.

### Part D: Association of student's knowledge scores on effects of sugar sweetened beverage with Selected Socio-demographic Variables

Chi-square test results show that there was a significant association between knowledge scores of nursing students with the monthly income of the family ( $\chi^2=25.5$ ,  $p<0.05$ ) and not significant association with other variables.

### Discussion

To our knowledge after searching for review literature that there has been no study conducted about assessment of 1<sup>st</sup> year nursing student's knowledge regarding effects of sugar sweetened beverages on health and researcher felt that before students study about effects of SSB in nursing curriculum to assess their knowledge and plan the education programme to

modify the behaviour with increase in the knowledge to prevent the diseases and complications associated with intake of sugar sweetened beverages.

The study was conducted to assess the effectiveness of a planned teaching programme on effects of sugar sweetened beverage. It was aimed to enhance the knowledge of 1<sup>st</sup> year BSc Nursing students regarding effects of sugar sweetened beverage. The mean post-test score 19.2 (SD=4.4) was higher than the mean pre-test score 13.3 (SD=3.6) these difference in scores shows that the planned teaching programme was effective. The significant difference between the 2 scores were tested by using paired 't' test and the level of significance was set at the computed 't' value ( $p < 0.05$ ) indicated that there was a significant difference in the knowledge of 1<sup>st</sup> Year BSc N students on the effects of sugar sweetened beverages on health.

Intake of sugar-sweetened beverage (SSB) is most important behavior that increases the individuals' risk for diabetes, obesity and other chronic diseases like stroke, depression, cancer, and mortality<sup>[17]</sup>. The vast number of research studies and majority of literature recommend that reduction in intake of SSB would improve children's health<sup>[18]</sup>. Vichayanrat T *et al.* (2020) conducted a study among 327 sixth-year dental students from 10 universities in Thailand and the results supporting the present study that most dental students had moderate knowledge (67.3%) about sugar consumption and consumed sugar more than WHO recommendation. Recommended that nutrition education, health policy and environment to reduce the intake of sugar among dental students<sup>[19]</sup>.

Mishra R *et al.* (2021) study results are similar to current study and they conducted study among engineering students regarding health hazards of junk food consumption and results shows that majority (67.5%) of students had good knowledge in Pre-test and the scores has increased (85%) in post-test. Study concluded that there was an improvement in knowledge score after an Educational Intervention on awareness regarding health hazards of junk food consumption<sup>[7]</sup>.

Current study results are supported by the results of study conducted by Santana IP *et al.* (2022) to assess the Brazilian university students' knowledge and perceptions about concepts, recommendations, and health effects of added sugars that majority students reported that they are limiting sugar intake and also had some knowledge but no knowledge regarding official consumption recommendations by WHO and other agencies. Study recommended that policy makers should broad approach for disseminating the information on the risks of excessive sugar intake and interventions to reduce the sugar consumption<sup>[20]</sup>.

Samuels L. *et al.* (2021) conducted a study to determine the knowledge, attitudes and practices of exit-level health sciences students at a selected University in Durban, South Africa strongly recommend that training and education should be provided to all Health Sciences students and future healthcare workers on the ill effects of excessive sugar consumption so that they will able to provide dietary counselling and advice to the patients during practice<sup>[21]</sup>.

## Conclusion

Study concludes that planned teaching programme can make significant rise in knowledge levels of nursing students. Educating the students would help them to prevent the future complications of sugar sweetened beverages by reduction in consumption and also spread knowledge to others in community.

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