

Original Research Article

A study to assess the effectiveness of a structured teaching programme on knowledge, attitudes and impacts regarding energy shot among adolescents at P. P. Savani Chaitanya Vidya Sankul, Surat

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ABSTRACT

Background: Energy shots can be described as beverages that contain large quantity of caffeine and other legal stimulants used to boost a person's physical and cognitive activities beyond the normal range. The main aim of this study was to estimate the effectiveness of structured teaching programme given to adolescents of P. P. Savani Chaitanya Vidya Sankul, in regards to their knowledge and attitudes towards energy shot, and its impacts to them.

Methods: In this study, a quasi-experimental research design was adopted with 60 samples used. A self-structured questionnaire was used to collect the data. The collected data were analysed and interpreted using descriptive and Inferential statistics.

Results: The present study has justified the effectiveness of the structured teaching programme, where it showed the post-test knowledge mean score 16.8167 higher than the pre-test knowledge mean score 9.5833 with mean difference score of 7.2333. Again, the post-test attitude mean score 33.4833 was higher than the pre-test attitude mean score 32.9500, with a mean difference score 0.5333.

Conclusions: The study was concluded with accepting the alternative hypothesis that emphasised the presence of significant difference between pre-test and post-test assessment. Hence, proving the structured teaching programme to be effective in increasing knowledge and positively modifying attitude among the samples.

Keywords: Adolescents, Attitude, Effectiveness, Energy shot, Impact, Knowledge, Structured teaching programme

INTRODUCTION

Life is the process of birth and death; the concept of birth and death is way of living of each creature in this world. For living the person or living creature/ being needs to them to have good food, healthy life, shelter and resources in economic status. Mainly for healthy lifestyle, the nutrition constitutes the major requirement of the person to live in this world. In ancient times the way of living is different from day-to-day life. Our ancestor had

good way of living their life. Mainly they had well balanced diet which is includes fruits, vegetables, millets, grains and cereals are their intake. They also consume healthy drinks from their products for increasing their stamina and performance in their daily living but nowadays the children like to take more amounts of unhealthy food items like beverages. Energy shots can be described as beverages (for example Red Bull, Venom, ED, and Adrenaline Rush) that contain large doses of caffeine and other legal stimulants such as taurine, carbohydrates, glucuronolactone, inositol, niacin,

panthenol, and β -complex vitamins. Energy shots have history that dates back to 1987 when Red Bull was introduced in Austria, it became more popular in the 1990s following its introduction to the United States. Since then the sale of this drink has skyrocketed. In 2006, the energy shot market grew by 80%. This was evident in the claim made by the manufacturers that the shot can boost energy levels as well as physical endurance, improve concentration and reaction speed.¹

Lauren reported that there are different kinds of healthy energy shots which are available in market, example of those types of energy shots are Celsius Live Fit, Zevia Zero Calorie Energy, Guayaki Organic Yerba Mate, Clean Cause Yerba Mate, Hiball Energy, Nuun Sport Caffeine, Focus Aid Clean Energy, Zoa Zero Sugar Energy etc. These energy drinks contain little amount of caffeine and sugar.²

Furthermore, these products (energy shots) have been used for various reasons for example in most surveys conducted among college students, where greater percentage admitted that college students use it to coping with insufficient sleep, while others use it to increase energy and fun at parties, with small percentage admitted that it is used for studying or completing a major course project. These products have also been used to reduce depression or even to gain social status. Therefore, since its use has been on the rise among children and young adults, it is of great significance to understand the potential effects it could have on this population (i.e. students).

Nevertheless, the objective of this study is to estimate the effectiveness of structured teaching that will be given to the adolescents in regards to their knowledge and attitudes towards energy shot, and its impacts to them. Multiple analyses will be used to analyse the association between taking the energy shots and the potential explanatory factors of interest. The study will also be based on pre-test, intervention and then post-test to analyse the effectiveness of the intervention.

Donna Cross had conducted a study about the energy drinks prevalence among Australian adolescents to investigate the prevalence of the energy shot intake among large sample of adolescents. The study was conducted among 7 to 12 years of age group at selected 25 different schools in Austria. The study was studied by using simple random sampling technique and data was collected by using self-reporting method. The study result estimated that, 51.2% of participants have the practice of consumption of energy shots. Further the study determined that 23.4% drank them monthly, 19.2% weekly and 2% every day.³

Puupponen et al had conducted a cross-sectional study regarding prevalence rate and triggering factors of energy shot consumption among 7405 adolescents. The data was collected among 13 to 15 years of adolescent from 2014

to 2018 by using self-administrator questionnaire. The study results indicated that 18.2% in 2014 increased in trend to 24.4% in 2018 among school going girl children when compared to boy are having inclined intake of energy drink was been reported.⁴

Geir Scott Brunborg, Jonas Raninen and Jasmina Burdzovic Andreas had conducted a longitudinal study on energy shots and alcohol use among adolescents to examine if more frequent consumption of energy shots in early adolescence was associated with higher concurrent alcohol consumption, and with stronger increase in alcohol use throughout adolescence. The results indicates that more frequent consumption of energy shots at baseline was associated with greater concurrent alcohol use ($p < 0.001$), and greater increase in alcohol use over time ($p < 0.05$). The effect of energy shots on concurrent alcohol use was stronger for girls, but the effect on increase over time was stronger for boys.⁵

Alabbad et al had conducted a cross sectional study on determinants of energy shots consumption among 1255 students, to identify the determinants of the consumption of energy shots in a cohort of university students. The data was analysed using IBM-SPSS (version 21) to determine frequencies and compare various categories of the energy shot users. The result of the study concluded that male gender, unmarried status, and studying in nonmedical colleges of the university as the main determinants of the consumption of energy shot by university students.⁶

Hasan and Sultana had conducted a cross-sectional study on energy shot consumption patterns among university students to identify the determinants of their preference for such shots, where 400 students served as the samples. The results of the study showed that only 22.1% of all consumers had knowledge of the ingredients of an energy shot, and 4.3% did not know their negative impact.⁷

Need for the study

Among adolescents, the trend in energy shot consumption is found in all age groups because they are specifically marketed to 11- to 35-year-olds. Studies revealed that people beyond the adolescence group (11-18 years old) have reported consuming at least one energy shot. Another study concluded that many students consumed more than one energy shot as evidenced by their popularity among adolescents. One of the reasons why young people consume energy shots is because of the marketing, trends or strategies. Specifically, the marketing of energy shots makes the people to think that they increase cognitive and physical performance. The stimulant effects of energy shots are reflected by the responses of adolescents given towards consuming those beverages for better sports performance, increased energy, to perk themselves up when tired, to perk themselves up when they have too much to consume, and to compensate for insufficient sleep.

Though adolescents are aware of the beneficial effects of energy shots, they are less aware of the detrimental effects. Previous researchers have found that adolescents' affiliation with peers that engage in unhealthy behaviours is one of the strongest risk factors in the initiation of unhealthy behaviours. But however, no research has examined the role of peer influence as it relates to adolescent energy shot consumption.

Centre for Disease Control and Prevention (CDC), reported that annual global energy shot consumption was estimated to hit 84 billion by 2021, with 66% of consumers being male and 34% female.⁸

Emergency Department of United State Substance Abuse and Mental Health Services Administration, reported that energy shot consumption rose by 14% between 2011 and 2014.⁸

European Union reported that 22.1% of American high school students admitting to consuming energy shots in 2018, and 18% growth rate for sugar-free variants in 2018.⁸

According to Indian Market Outlook Research, Red Bull held a 75% market share in 2016 across the country.⁸

Henceforth, the researchers are willing to do this study related to knowledge, attitude and impacts regarding energy shots. This study which was the structured teaching programme made the samples to understand and reduce the intake of energy shots, which will help the younger generation in achieving a healthy future. When younger generation is having good health, then India will have strong Indian citizens to support in the growth and wellbeing of the country. So, this made the researchers develop the need for further awareness and sensitization among the concerned age group to put a full stop to possible health and social related issues triggered by energy shots.

Objectives

To assess the level of knowledge and attitude regarding energy shot among adolescents. To determine the level of impacts of energy shot among adolescents. To evaluate the effectiveness of structured teaching programme on energy shots. To correlate the pre and post tests on knowledge and attitude regarding energy shots. To associate the level of knowledge, attitudes and impacts regarding energy shot with selected demographic variables among adolescents.

METHODS

The study was conducted using pre-experimental research approach, and the research design to be used was "one group pre-test and post-test". The research setting was P. P. Savani Chaitanya Vidya Sankul, Surat. Target population was adolescent students of the school. 60

samples were selected by convenient sampling methods. Data collection tools to be used was self-structured knowledge questionnaire. The section also included the procedure for data collection and plan for data analysis.

Inclusion criteria

Students who were willing to participate in the study, within adolescent age group, available at the time of data collection, understand and speak English language, both male and female genders, study in the selected school.

Exclusion criteria

Students who were mentally retarded, not willing to participate in the study, did not belong to adolescence, not admitted into P. P. Savani Chaitanya Vidya Sankul.

Study period

The study period from problem statement to final review by expert was conducted from January 2024 to October 2024.

RESULTS

The distribution of age groups of the samples showed that out of 60 samples, 38 (63.33%) belong to 15 and 16 years, 22 (36.67%) belong to 17 and 18 years, and 0 (0.00%) belong to 19 and above years.

According to gender, it showed that males were 36 (60.00%) and females were 24 (40.00%).

The religious distribution indicated that 59 (98.33%) belong to Hindu religion, 1 (1.67%) belongs to Islam, and 0 (0.00%) from Christianity.

According to the occupation of the father, 5 (8.33%) belong to civil service fathers, 51 (85.00%) belong to self-employed fathers, and 4 (6.67%) belong to daily wage-earning fathers.

In regards to the occupation of mothers, 1 (1.67%) sample belongs to government employed mothers, 8 (13.33%) belong to private employed mothers, and 51 (85.00%) belonging to home makers.

The dietary pattern distribution of the samples showed that 45 (75.00%) were vegetarians, 15 (25.00%) practiced mixed dietary pattern, while 0 (0.00%) of the samples were found to be non-vegetarians.

In regards to information regarding energy shots, the result showed that 17 (28.33%) got information from mass media, 34 (56.67%) from family and friends, 9 (15.00%) from other sources.

According to the family monthly income, 7 (11.67%) of the samples belong to family earning <10,000/-, 4

(6.67%) belong to family earning between 10,000/- to 20,000/-, and 49 (81.67%) belonging to family earning >20,000/-.

Table 1: Frequency and percentage wise distribution of age, gender, religion, etc. (n=60).

Demographic variables		Frequency	Percentage
Age	15 and 16	38	63.33
	17 and 18	22	36.67
	19 and above	0	0.00
	Total	60	100.00
Gender	Male	36	60.00
	Female	24	40.00
	Transgender	0	0.00
	Total	60	100.00
Religion	Hindu	59	98.33
	Islam	1	1.67
	Christianity	0	0.00
	Total	60	100.00
Occupation of father	Civil servant	5	8.33
	Self employed	51	85.00
	Daily wages	4	6.67
	Total	60	100.00
Occupation of mother	Government employed	1	1.67
	Private employed	8	13.33
	Home maker	51	85.00
	Total	60	100.00
Dietary pattern	Vegetarian	45	75.00
	Non-vegetarian	0	0.00
	Mixed	15	25.00
	Total	60	100.00
Source of innformation	Mass media	17	28.33
	Family and friends	34	56.67
	Others	9	15.00
	Total	60	100.00
Monthly income of family	<10,000/-	7	11.67
	10,001-20,000/-	4	6.67
	>20,000/-	49	81.67
	Total	60	100.00
Residential address	Urban	50	83.33
	Rural	10	16.67
	Slum	0	0.00
	Total	60	100.00
Previous knowledge	Yes	35	58.33
	No	25	41.67
	Total	60	100.00
If yes, source of knowledge	TV show and social media	17	28.33
	Video games	1	1.67
	Friends	17	28.33
	Nil	25	41.67
	Total	60	100.00

As regards to the residential area, 50 (83.33%) reside in urban, 10 (16.67.00%) reside in rural, and 0 (0.00%) resides in slum areas. As per the previous knowledge regarding energy shot, 35 (58.33%) samples had previous knowledge, whereas 25 (41.67%) didn't had any previous

knowledge. Out of the 35 (58.33%) samples with previous knowledge of the energy shot, the distribution showed that 17 (28.33%) obtained knowledge from tv shows and social media, 1 (1.67%) from video games, and 17 (28.33%) from friends.

Thus, Table 1 reveals majority of the samples (63.33%) fall in the age group of 15 and 16 years. In gender distribution, (60.00%) were males. Most of the samples (83.33%) reside in urban areas. The research furthermore showed that majority of the samples were born by self-employed parents with (85%) each. Also, (98.33%) were found to be practicing Hindu religion, and majority (58.33%) have previous knowledge regarding energy shot.

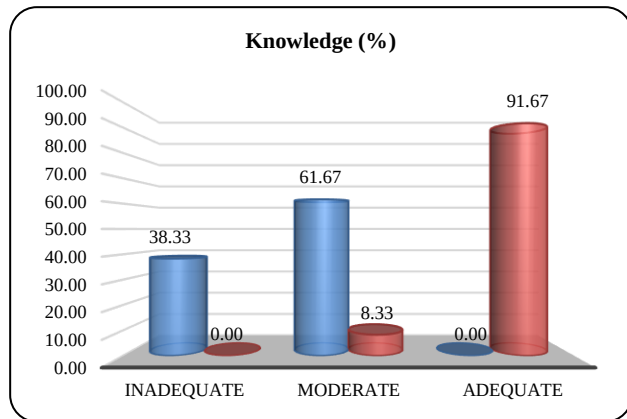


Figure 1: Column chart showing level of knowledge in pre-test and post-test.

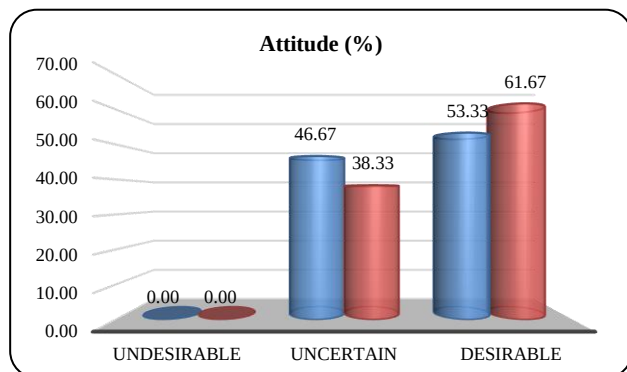


Figure 2: Chart demonstrating the difference in attitude of adolescents in regards to energy shot.

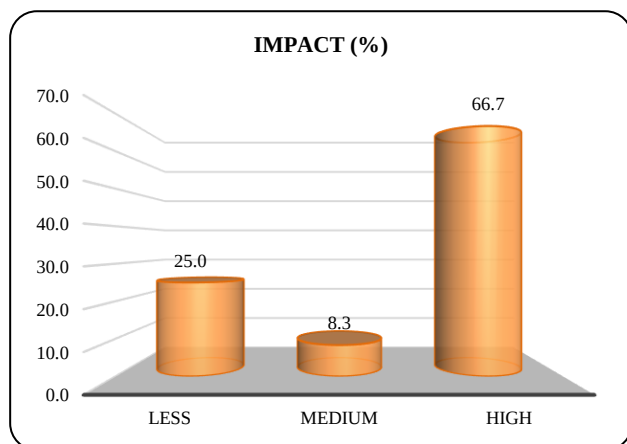


Figure 3: Level of energy shot impact on adolescents.

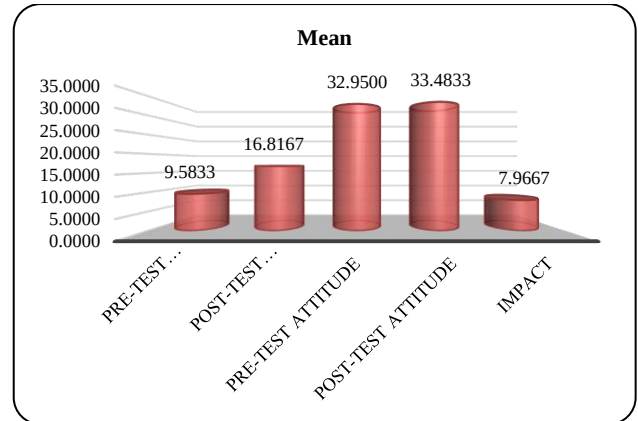


Figure 4: Column chart showing comparison of pre-test and post-test scores of knowledge, attitude and impact.

DISCUSSION

The objective of the present study was to assess the effectiveness of a structured teaching programme on knowledge, attitude and impact regarding energy shot among adolescents of P. P. Savani Chaitanya Vidya Sankul, Surat. The study was conducted by using quasi-experimental, one group pre-test post-test design, where 60 samples were selected through simple random sampling. The data collected was analysed by descriptive and inferential statistics. Henceforth, the findings of the study are discussed based on the objectives, needs for the study, relevant literatures and applied conceptual framework for the study.

Findings according to objectives of the study

The first objective of the study was to assess the level of knowledge and attitude regarding energy shot among adolescents.

Regarding the knowledge, the result revealed that out of 60 samples, 23 (38.33%) have inadequate knowledge regarding energy shot, 37 (61.67%) have moderate knowledge, whereas none of them have adequate knowledge about it. This signifies that the highest level of knowledge the samples had was moderate followed by inadequate, which shows the greater need for imparting knowledge to them on energy shot due to its necessity most especially in the contemporary world where most adolescents are prone to antisocial activities that may be caused by substance addiction such as unhealthy energy shot.

Regarding attitude of the samples towards energy shot, the present study results revealed that 32 (53.33%) out of 60 exhibit desirable attitude towards energy shot, and 28 (46.67%) exhibit uncertain attitude towards it. Though the result didn't reveal any of the samples to have undesirable attitude, yet there is need for intervention in their knowledge to fully understand its concept so as to

gradually modify their attitude to desirable by a greater percentage.

The finding of the present study is consistent with a study conducted by Rishi et al in which the findings revealed that most respondents (81%) were aware of the high sugar contents of energy shots. Nearly half were well-informed about the caffeine content, while there was less awareness of carbon dioxide (34%), citric acid (26%), and ethyl alcohol (18%).

The respondents who consume energy shots mostly knew that energy shots can have harmful effects on health, but only 16% realised that most such shots do not have any beneficial effects on health. Few respondents linked energy shots to obesity (11%), diabetes (6%), stomach ulcers (4%), depression (4%), or feelings of lethargy (6%).⁹

The second objective of the study was to determine the level of impacts of energy shot among adolescents.

Regarding the level of impacts of energy shot among adolescents, the study revealed that 15 (25%) experienced less impacts of energy shot in them, 5 (8.3%) experienced medium impacts, whereas 40 (66.7%) experienced high impacts of the energy shot. Based on the result about the impact, it was also an evident to intervene by imparting knowledge, through which both attitude and impact can be positively altered. When the subjects acquire adequate knowledge about the energy shot, they will eventually modify their attitude, and ultimately the impact will become more less within them again.

This finding was coincided with the research conducted by Fauci among people between age 18 to 35 to determine the impact of the energy shot in regards to behaviour and economic factors. He concluded that five percentage of men and 1% of women had car accidents during the previous year due to energy shot use, and 15% said they did not remember what happened in an alcoholic evening once or twice a month.¹⁰

The third objective of the study was to evaluate the effectiveness of structured teaching programme on energy shots. The effectiveness of the structured teaching programme was justified by the results of the present study where it showed the post-test knowledge mean score 16.8167 higher than the pre-test knowledge mean score 9.5833 with mean difference score of 7.2333. This justified that there was effectiveness in the structured teaching programme.

The fourth objective was to correlate the pre and post tests on knowledge and attitude regarding energy shots. When correlating the pre-test and post-tests of the samples on knowledge and attitude regarding energy shot, the investigators analysed the correlation by using paired samples correlation test where the results revealed that the correlation r value was found to be statistically

significant between the pre-tests and post-tests. Post-test and pre-test knowledge ($r=0.621$ at $p=0.0001$), post-test and pre-test attitude ($r=0.246$ at $p=0.059$). Hence, this explained the fourth objective by proving the correlation to be statistically significant.

The fifth objective of the study was to associate the level of knowledge, attitudes and impacts regarding energy shot with selected demographic variables among adolescents. Regarding association between level of knowledge, attitude and impact with selected demographic variables can be discussed according to pre-test and post-test. The findings of this study revealed that there was a statistically significant association between levels of pre-test knowledge and demographic variables such as age ($\chi^2=1.798$ at $p=0.180$), gender ($\chi^2=0.952$ at $p=0.329$), religion ($\chi^2=0.632$ at $p=0.427$), father's occupation ($\chi^2=0.261$ at $p=0.878$), occupation of mother ($\chi^2=0.641$ at $p=0.726$), dietary pattern ($\chi^2=0.212$ at $p=0.646$), source of information ($\chi^2=2.766$ at $p=0.251$), monthly income of family ($\chi^2=1.553$ at $p=0.460$), residential address ($\chi^2=0.353$ at $p=0.553$) and previous knowledge regarding energy shot ($\chi^2=0.050$ at $p=0.822$). As for the post-test knowledge, age ($\chi^2=0.652$ at $p=0.419$), religion ($\chi^2=0.92$ at $p=0.761$), father's occupation ($\chi^2=1.925$ at $p=0.382$), occupation of mother ($\chi^2=0.963$ at $p=0.618$), dietary pattern ($\chi^2=1.818$ at $p=0.178$), source of information ($\chi^2=2.160$ at $p=0.340$), monthly income of family ($\chi^2=1.224$ at $p=0.542$), residential address ($\chi^2=1.091$ at $p=0.296$) and previous knowledge regarding energy shot ($\chi^2=0.006$ at $p=0.937$).

Regarding association between attitude and demographic variables, the findings of the present study revealed that there is a statistically significant association between level of pre-test attitude and demographic variables such as the samples' age ($\chi^2=2.154$ at $p=0.142$), gender ($\chi^2=4.922$ at $p=0.27$), religion ($\chi^2=0.890$ at $p=0.346$), occupation of father ($\chi^2=5.546$ at $p=0.062$), occupation of mother ($\chi^2=2.204$ at $p=0.332$), dietary pattern ($\chi^2=1.429$ at $p=0.232$), source of information ($\chi^2=0.494$ at $p=0.781$), monthly income of family ($\chi^2=1.044$ at $p=0.593$), residential address ($\chi^2=5.357$ at $p=0.21$) and previous knowledge regarding energy shot ($\chi^2=0.31$ at $p=0.861$). For the post-test attitude and demographic variables, the findings revealed that there is statistically significant association such as samples' age ($\chi^2=3.579$ at $p=0.059$), gender ($\chi^2=0.012$ at $p=0.914$), religion ($\chi^2=0.632$ at $p=0.427$), occupation of father ($\chi^2=3.496$ at $p=0.174$), occupation of mother ($\chi^2=1.107$ at $p=0.575$), dietary pattern ($\chi^2=0.588$ at $p=0.443$), source of information ($\chi^2=1.329$ at $p=0.515$), monthly income of family ($\chi^2=0.344$ at $p=0.842$), residential address ($\chi^2=0.353$ at $p=0.553$) and previous knowledge regarding energy shot ($\chi^2=0.099$ at $p=0.753$).

Regarding association between impact and demographic variables, the present study findings revealed that there is significant association between the level of impact and demographic variables such as age ($\chi^2=2.691$ at $p=0.260$),

gender ($\chi^2=5.000$ at $p=0.082$), religion ($\chi^2=0.508$ at $p=0.776$), occupation of father ($\chi^2=3.142$ at $p=0.534$), occupation of mother ($\chi^2=7.531$ at $p=0.110$), dietary pattern ($\chi^2=1.689$ at $p=0.430$), source of information ($\chi^2=2.699$ at $p=0.609$), monthly income of family ($\chi^2=3.990$ at $p=0.407$), residential address ($\chi^2=0.240$ at $p=0.887$) and previous knowledge regarding energy shot ($\chi^2=3.326$ at $p=0.190$).

This finding correlated with a quantitative study conducted by Soos et al on the effects of caffeine and caffeinated beverages on children, where the results showed a high proportion of the group often consumed energy shots, which in many cases leading to harmful side effects of caffeine overdose. Only 19.7% of respondents did not use energy shots at all had never tasted an energy shot in their life. The association between the ones consuming and those not consuming was quite clear in regards to their societal integration.¹¹

Therefore, it was significant that the structured teaching programme regarding energy shot was found to be effective according to the objectives and hypothesis in increasing knowledge, modifying attitude and preventing possible negative impacts regarding energy shot among the adolescent students of P. P. Savani Chaitanya Vidya Sankul, Surat.

Furthermore, the study is delimited to 60 sample size only, 7 days of data collection, and P. P. Savani Chaitanya Vidya Sankul, Surat.

CONCLUSION

The study result showed that prior to intervention, majority of the samples had inadequate knowledge regarding energy shot, uncertain attitude towards it, as well as admitting to experiencing its high impacts in them. After the completion of the intervention, the samples had adequate knowledge regarding energy shot and desirable attitude. As such, the researchers concluded that there is still need for more educational intervention regarding the topic which is essential in the present days' activities. The researchers further stressed that special programmes related to substance consumption and addiction should be inculcated in the syllables of all levels of educational institutions to broaden the perceptions of the adolescents regarding the energy shot and its implications to human health.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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