

Awareness and perceptions regarding taxation and health warnings related to sugar-sweetened beverages and the factors associated with these among visitors of a general out-patient clinic in Bhopal, India

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ABSTRACT

Introduction: Although increased taxation on sugar-sweetened beverages (SSBs) and warning labels on their packaging have been successful in other countries, India has not implemented these. It is imperative to understand the user perspectives before implementation, regarding which almost no information exists. **Objectives:** To assess the awareness and perceptions of people regarding taxation and health warnings on SSB packaging, and to determine the factors associated with these. **Methodology:** This cross-sectional study was conducted in the general out-patient clinic of a public tertiary care hospital in Bhopal, India, between April and November 2018. Patients and accompanying persons ≥ 15 years of age and attending the clinic were included. Severely ill patients were excluded. Exit interviews were conducted after the clinical consultation using a pre-tested semi-structured interview schedule. Data were analyzed using IBM SPSS version 21. **Results:** Out of the 503 participants interviewed, three-fourths had never heard of taxes on SSBs and had never seen any health warning on SSB packaging. Most participants (96.6%) wanted some health warning to be present on the packaging. Majority of them (69.3%) wanted both textual and pictorial warnings. Close to half of those who wanted a pictorial warning to be present opined that it should occupy $<25\%$ of the surface area of the packaging. Multivariable analysis showed that participants aged <25 years and females were not in favor of tax increment. **Conclusion:** Government policies should also focus on user perspectives and preferences before deciding to increase tax on SSBs or introducing mandatory health warnings on SSBs.

Keywords: Beverage, sugar, sweetened, tax, warning

Introduction

Obesity has become a big concern both globally, as well as in India. About 1.9 billion individuals in the world are overweight, and about 650 million people suffer from obesity.^[1] About 2.8 million people die due to underlying obesity and being overweight.^[2] With reference to the Indian scenario, obesity

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has affected more than 135 million people.^[3] Its link with the non-communicable diseases (NCDs) as a risk factor has been well recognized.^[3] It has been realized that obesity prevention is the first step toward preventing the development of other NCDs. Obesity itself is a result of interplay of an array of risk factors. Consumption of sugar-sweetened beverages (SSBs) has been implicated in causing obesity^[4-7] and is associated with metabolic syndrome and type 2 diabetes.^[1-4,6]

SSBs are any liquids that are sweetened with various forms of added sugars like brown sugar, corn sweetener, corn syrup, dextrose, fructose, glucose, high-fructose corn syrup, honey, lactose, malt syrup, maltose, molasses, raw sugar, and sucrose.^[7] Examples of SSBs include but are not limited to regular soda (not sugar-free), fruit drinks, sports drinks, energy drinks, sweetened waters, and coffee and tea beverages with added sugar.^[7] The calories provided by SSBs have little nutrition value and may not provide the same feeling of fullness that solid food provides.^[5]

SSB sales in India have increased by 13% year-on-year since 1998, exceeding 11 liters per capita per year.^[8] Some countries have been implementing strategies to curb the usage of SSBs, most notably, increased taxation and printed health warnings on SSB packaging. Increased taxation and warnings on tobacco packaging have already succeeded in spreading awareness about its harmful effects,^[9] although the awareness of health warnings on tobacco packaging still seems to be low in India even after so many years of implementation of the warnings.^[10] Similarly, increased taxation on SSBs has been found to reduce obesity by decreasing consumption.^[11] Mexico and United Arab Emirates have increased taxes on SSBs to decrease consumption.^[12,13] A health warning is a written statement or a picture on a product that warns people that eating, drinking, or using that product may be dangerous for their health.^[14] The presence of warning labels can decrease the purchase of SSBs.^[15] San Francisco has put warning labels on SSBs and few other cities in United States of America are planning to do the same.^[16]

In India, there is a prescribed amount of Goods and Services Tax (GST) on soft drinks and other sugary drinks.^[17] Although a specific “sugar tax” or “soda tax” still does not exist in India, there has been evidence that the government has plans for increasing tax on SSBs, but this has so far not been implemented.^[18] Even if the government rolls out this, without the proper understanding of people’s awareness and their perception, who are the ultimate end-users, there is a risk of failure of such intervention.^[9]

With the ever-increasing epidemic of obesity and related NCDs, it becomes imperative to understand what people know and perceive about taxes and health warnings. There are very few data from India on these important issues. The primary objectives of the present study were thus to assess the awareness levels and perception regarding taxes, and the perception regarding the usefulness of health warnings on SSBs among individuals attending a general out-patient clinic. The secondary objectives were to document the suggestions of study participants regarding

health warnings and taxes on SSBs and to determine the sociodemographic factors associated with perception regarding taxes on SSBs and health warnings on SSB packaging.

Methodology

Institutional Human Ethics Committee approval was taken from AIIMS Bhopal. Approval date - 09/04/2018 reference no. IHEC-LOP/2018/STS0146. The present study was a cross-sectional study conducted between April and November 2018 in the general out-patient clinic of the Department of Community and Family Medicine (CFM) of a public tertiary care teaching hospital in Bhopal district, Madhya Pradesh, India. During the study period, on average, about 70 patients received consultation daily through this clinic. The study population comprised of patients and their accompanying persons attending the CFM out-patient clinic.

Since, at the time of planning the study, we were not able to find any available data regarding awareness of taxes on SSBs, we took the awareness level to be 50% for sample size calculation. Using formula $4pq/d^2$ and an allowable error of 5%, sample size came to 400. Considering, 20% non-response, the required minimum sample size was calculated to be 480. The sample size for perception of usefulness of health warnings among patients was calculated based on 62.7% people favoring a health warning label on SSBs and was found to be 389 (including 20% for non-response) using formula $4pq/d^2$.^[19] Since 480 is the higher sample size, we decided to recruit 480 individuals.

Patients and accompanying person ≥ 15 years of age and attending the CFM out-patient clinic were included in the study. Patients who were severely ill and felt that they might not be able to take part in the study were excluded. Convenience sampling was used to select the participants. Exit interviews were conducted after the patient had received clinical consultation.

A pre-tested semi-structured interview schedule with both closed and open ended questions was used, which included sociodemographic details, awareness and perceptions regarding taxes on SSBs, and perception regarding health warnings on SSB packaging. Questions were asked in English or Hindi (language mostly spoken by local population) according to the choice of patients. After taking informed consent, the patients were initially told the definition of SSBs, and then they were asked the questions. For the purpose of the present study, we limited this definition to beverages which were sold in the market and purchased by people, and not homemade beverages, like coffee, tea, etc., In addition, in our study, we did not specifically ask for soda tax/sugar tax/sin tax, which is a specific tax on the sale of SSBs and has still not been implemented in India. By asking about taxes, we meant regular amount of government taxes that are applicable to SSB products, i.e. GST.

The study was approved by the Institutional Human Ethics Committee of All India Institute of Medical Sciences (AIIMS),

Bhopal. Written informed consent was obtained from all participants before including them in the study.

Data were entered in Epi-info software version 7.2 and analyzed using IBM SPSS version 21. For normally distributed quantitative data, mean and standard deviation (SD) were calculated. Median and interquartile range (IQR) were calculated if the data followed non-normal distribution. Chi-square test was used to compare proportions among groups. Univariable logistic regression analysis was conducted to find out the factors predicting participants' favorable response to increase of taxes present on SSBs and to determine factors predicting participants' response to whether they would decrease consumption of SSBs if health warnings are introduced on SSB packaging. Unadjusted odds ratios were calculated. Variables which had *P* value less than 0.25 in the univariable analysis were entered in the multivariable analysis. For multivariable analysis, *P* < 0.05 was taken as statistically significant, and adjusted odds ratio were reported.

Results

A total of 503 participants were interviewed. Table 1 provides the details of sociodemographic and clinical characteristics of the participants. Among the participants, the majority (81.1%) were male, were below 35 years of age (76.5%), resided in urban settings (76.9%), belonged to a nuclear family (66.6%), had a college degree (53.1%), were unemployed (50.9%), which included students and homemakers, were unmarried (59.6%), and belonged to upper class according to modified B.G. Prasad scale 2018 (42.7%). A total of 32 participants (6.4%) had history of a chronic disease, i.e. diabetes, hypertension, or established cardiovascular disease.

A total of 229 (45.5%) participants had consumed at least one of the SSBs within the last week, 364 (72.3%) within the last month (including the last week), 472 (93.8%) within the last year (including the last month), 18 (3.6%) had consumed any of the SSBs more than a year ago, and 13 (2.6%) participants said that they had never consumed SSB in their life. Out of 490 participants who had ever consumed SSB, 481 responded to the preference among SSBs. Among them, 250 (51.9%) participants preferred soft drinks, 187 (38.9%) preferred sweetened fruit juice, 36 (7.5%) preferred energy drinks, and 8 (1.7%) preferred other SSBs (e.g. sweetened milk products). Median (IQR) average consumption of SSBs was found to be 15.3 (4.8) liter/participant/year, ranging from nil to 260 liter/year. Mean (SD) expenditure on SSBs in the last month was 156.9 (397.7) INR, ranging from nil to 5000 INR.

About three-fourth participants, i.e. 378 (75.1%) out of 503 were not aware (never heard regarding) of taxes on SSBs. Among the rest 125 participants who were aware, most, i.e. 59 (47.2%) responded it to be 10%–20%, 25 (20%) to be 5%–10%, 16 (12%) to be <5% tax, 10 (8%) to be 20%–30%, 8 (6.4%) to be >30%, and 7 (5.6%) responded that there was no existing tax at present. Out of the 503 participants, the majority, i.e. 381 (75.8%) said that

Table 1: Sociodemographic and clinical characteristics of the study participants (n=503)

Variable and category	n (%)
Age (in years)	
15-24	225 (44.7)
25-34	160 (31.8)
35-44	68 (13.5)
45-54	34 (6.8)
55-64	11 (2.2)
65-76	5 (1.0)
Gender	
Male	408 (81.1)
Female	95 (18.9)
Education	
No formal education	7 (1.4)
Primary school certificate	10 (2.0)
Middle school certificate	22 (4.4)
High school certificate	51 (10.1)
Intermediate	146 (29.0)
Graduate or postgraduate	237 (47.1)
Professional or honors	30 (6.0)
Occupation	
Unemployed	256 (50.9)
Unskilled labor	22 (4.4)
Semi-skilled labor	102 (20.3)
Skilled labor	38 (7.6)
Semi-professional labor	37 (7.4)
Professional labor	48 (9.5)
Marital status	
Married	201 (40.0)
Unmarried	300 (59.6)
Divorced/Widow	2 (0.4)
Socioeconomic status (revised BG Prasad scale2018)	
Upper	215 (42.7)
Upper middle	127 (25.2)
Middle	70 (13.9)
Lower middle	62 (12.3)
Lower	29 (5.8)
Family type	
Nuclear	335 (66.6)
Extended	168 (33.4)
Permanent residence	
Rural	116 (23.1)
Urban	387 (76.9)
History of chronic noncommunicable disease	
History of diabetes	14 (2.8)
History of hypertension	14 (2.8)
History of cardiovascular disease	4 (0.8)
Tobacco Consumption (Yes)	121 (24.1)
Alcohol Consumption (Yes)	63 (12.5)
Sufficient sleep (Yes)	416 (82.7)
Sufficient physical exercise (Yes)	240 (47.7)

they have never seen any health warning on SSB packaging. Most participants agreed that SSBs do not improve health [Figure 1]. Although 484 (96.2%) participants were of the opinion that the amount of sugar should be checked in the nutrition label present on the packaging before consumption, in practice, only 64 (12.7%) regularly checked for it (data not shown). Most participants, i.e. 333 (66.2%) agreed that they will decrease consumption if taxes are increased, and most, i.e. 412 (81.9%)

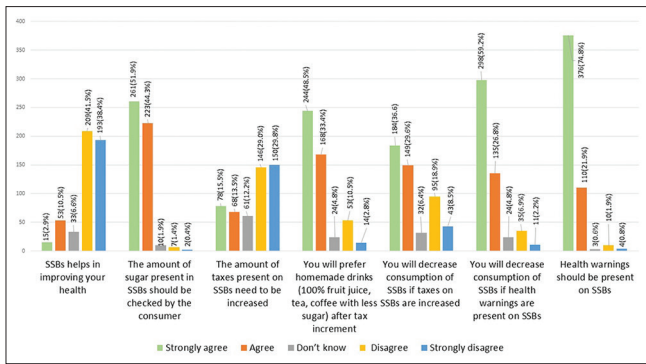


Figure 1: Perception and attitude of participants regarding health effects, taxes, and health warnings in relation to SSBs (N = 503)

agreed that they would prefer homemade beverages after tax increment, although 296 (58.9%) disagreed that taxes should be increased on SSBs.

Most of the participants, i.e. 486 (96.6%) out of 503 were of the view that some health warning should be present on the packaging of SSBs, and that they will decrease consumption of SSBs if they are present on the packaging. Majority of them, i.e. 337 out of 486 (69.3%) wanted both textual and pictorial warnings to be present. Rest 109 (22.4%) participants wanted solely textual warning to be present, 29 (6.0%) wanted only pictorial warning to be present, and 11 (2.3%) wanted only nutritional information to be present (without any warning). Hence, out of 503, 446 (88.7%) participants wanted textual warning and 366 (72.8%) wanted pictorial warning to be present. More than half, i.e. 264 (52.5%) out of 503 participants wanted the warning to be printed in Hindi (national language), 391 (77.7%) wanted it to be in English, and 113 (22.5%) wanted it to be in a local language. When asked about their opinion regarding the ideal coverage of surface area on the SSB packaging, out of the 366 participants who wanted pictorial warning, 177 (48.4%) opined that the surface area of warning should be <25%, 130 (35.5%) people opined that it should be 25%–50%, 51 (13.9%) opined that it should be 50%–75% and about 8 (2.2%) opined that it should be >75%. Figure 2a and 2b depict participants' responses regarding what should be the content of textual and pictorial warning on the packaging for SSBs.

When asked about any other suggestions regarding taxes on SSBs, only 165 (32.8%) participants responded, out of which, 120 (72.7%) suggested imposing higher taxes on SSBs. Similarly, when asked about any other suggestions regarding health warnings (either textual or pictorial) on SSB packaging, 110 (21.9%) patients responded, out of which 47 (42.7%) participants suggested spreading public awareness using various mediums such as social media, television, newspapers, etc., followed by 33 (30%) who suggested putting alarming advertisements, 21 (19.1%) suggested highlighting the diseased part of the body, and 9 (1.8%) suggested that proof of diseases which are associated with SSB consumption should be given in warning.

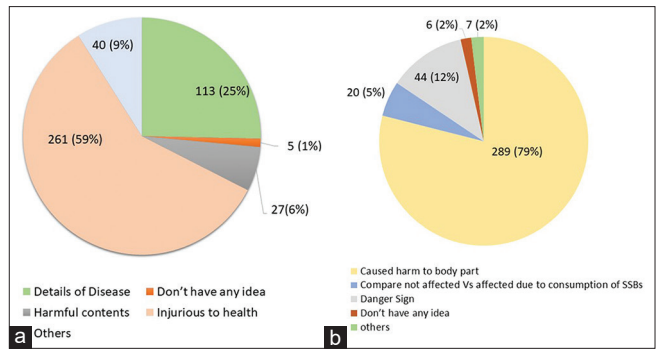


Figure 2: (a) Participants' responses regarding what should be the content of textual warning on the packaging for SSBs among those who were in favor of textual warnings (N = 446), (b) Participants' responses regarding what should be the content of pictorial warning on the packaging for SSBs who were in favor of pictorial warnings (N = 366)

In univariable analysis [Table 2], it was found that participants below 25 years of age and females were not in favor of tax increment, whereas those who suffered from a chronic disease were in favor of tax increment as compared to those free of chronic disease. Regarding participant's response to whether they would decrease consumption of SSBs if health warnings are present on SSB packaging, none of the factors considered in the present study, during univariable analysis, were found to have P value < 0.25; hence, multivariable analysis was not done for this outcome [Table 3]. Multivariable analysis for tax-related outcome confirmed that participants below 25 years and females were not in favor of tax increment [Table 4].

Discussion

In the present study, three-fourth of the participants were not aware of the taxes on SSBs, and among those who were aware, less than half had responded that the current tax was somewhere between 10% and 20%, which was also partially correct. Even after taking the whole range of participants responses, i.e. 5%–30% tax bracket (responses combined for tax categories), it was 73.6%. The lack of awareness about the taxes on SSBs has also been documented in other studies.^[20] In India, the GST (Goods and Service Tax) for SSBs ranges from 5%–28%, where generally, most milk-based SSBs are taxed at 5%, fruit juice-based SSBs at 12%, some others at 18%, and aerated water-based SSBs are taxed at 28%.^[17] In 2015, the government of India was working on a proposal which had a recommendation of 40% "sin/demerit" GST for SSBs, but this was opposed by top industries which market SSBs. Since then, till date, the government has so far not passed the proposal.^[18]

In the present study, more than two-thirds of the participants were of view that the increase in taxation will decrease their consumption of SSBs, and most said that they will then resort to home-made beverages. Studies by Alvarado *et al.*, Falbe *et al.*, and Bollard *et al.* found that actual increase in taxes had decreased sales of SSBs.^[21,22,15] Similarly, studies involving simulation through models and review of literature also reported that the increase in taxes predicted decreased sales and in turn, decreased

Table 2: Univariable logistic regression analysis to determine factors predicting participants' favorable response to increases in taxes present on SSBs (n=503)

Variable and category	In favor, n (%)	Not in favor, n (%)	Total	Unadjusted odds ratio	P	CI (95%)
Age						
15-24	53 (23.6)	172 (76.4)	225	0.39	0.004*	0.21-0.74
25-34	49 (30.6)	111 (69.4)	160	0.56	0.08	0.29-1.08
35-44	22 (32.4)	46 (67.6)	68	0.61	0.20	0.29-1.29
≥45 (ref)	22 (44.0)	28 (56.0)	50	-	-	-
Gender						
Male (ref)	133 (32.6)	275 (67.4)	408	-	-	-
Female	13 (13.7)	82 (86.3)	95	0.33	<0.001*	0.18-0.61
Residence						
Rural (ref)	40 (34.5)	76 (65.5)	116	-	-	-
Urban	106 (27.4)	281 (72.6)	387	0.76	0.14	0.46-1.12
Education						
Not completed high school (ref)	9 (23.1)	30 (76.9)	39	-	-	-
High school\intermediate	52 (26.4)	145 (73.6)	197	1.20	0.67	0.53-2.69
Higher education	85 (31.8)	182 (68.2)	267	1.56	0.27	0.71-3.42
Occupation						
Unemployed (ref)	67 (26.2)	189 (73.8)	256	-	-	-
Non-professional labor	53 (32.7)	109 (67.3)	162	1.37	0.15	0.89-2.11
Semiprofessional/Professional	26 (30.6)	59 (69.4)	85	1.24	0.43	0.73-2.13
Marital status						
Married	64 (31.8)	137 (68.2)	201	1.25	0.26	0.85-1.85
Unmarried (ref)	82 (27.2)	220 (72.8)	302	-	-	-
Socioeconomic status						
Upper (ref)	68 (31.6)	147 (68.4)	215	-	-	-
Upper middle	37 (29.1)	90 (70.9)	127	0.89	0.63	0.55-1.43
Middle	21 (0.30)	49 (0.70)	70	0.93	0.80	0.52-1.67
Lower middle	14 (22.6)	48 (77.4)	62	0.63	0.17	0.33-1.22
Lower	6 (20.7)	23 (79.3)	29	0.56	0.23	0.22-1.45
Family type						
Nuclear (ref)	89 (26.6)	246 (73.4)	335	-	-	-
Extended	57 (33.9)	111 (66.1)	168	1.42	0.09	0.95-2.12
History of chronic disease						
Present	13 (50)	13 (50)	26	2.59	0.02*	1.17-5.72
Absent (ref)	133 (27.9)	344 (72.1)	477	-	-	-
Tobacco use						
Yes	36 (29.8)	85 (70.2)	121	1.05	0.84	0.67-1.64
No (ref)	110 (28.8)	272 (71.2)	382	-	-	-
Alcohol use						
Yes	21 (33.3)	42 (66.4)	63	1.26	0.42	0.72-2.21
No (ref)	125 (28.4)	315 (71.6)	440	-	-	-
Sufficient sleep taken						
Yes	123 (29.6)	293 (70.4)	416	1.17	0.56	0.69-1.97
No (ref)	23 (26.4)	64 (73.6)	87	-	-	-
Sufficient physical exercise						
Yes	70 (29.2)	170 (70.8)	240	1.01	0.95	0.69-1.49
No (ref)	76 (28.9)	187 (71.1)	263	-	-	-

* Statistically significant ($P < 0.05$)

consumption of SSBs.^[23-26] However, in one qualitative study, the opinion of the people from non-economic sectors was that tax would not be effective to decrease the consumption.^[27]

In our study, female participants and those less than 25 years of age were not in favor of tax increment. This could be due to the fact that most of these participants were unemployed (either college students or homemakers) and the increase in the price due to added taxes might have been perceived as more difficulty in the purchase of the SSBs, using the money they receive for personal

expenses from the earning members of their families. These findings are supported by other studies such as by Ortega-Avila *et al.* and Krukowski.^[20,28] The previous studies have shown that increased taxation could decrease the SSB consumption; however, home environment, government policies, and personal motivation and responsibility were also identified as important factors.^[28,29]

With respect to the health warnings on the SSBs, most participants in the present study wanted a health warning to be present on the beverage packaging, which is supported by the studies of

Table 3: Univariable logistic regression analysis to determine factors predicting participants response to whether they would decrease consumption of SSBs if health warnings are present on SSB packaging (n=503)

Variable and category	In favor, n (%)	Not in favor, n (%)	Total	Unadjusted odds ratio	P	CI (95%)
Age						
15-24	193 (85.8)	32 (14.2)	225	1.51	0.31	0.69-3.31
25-34	140 (87.5)	20 (12.5)	160	1.75	0.19	0.76-4.04
35-44	60 (88.2)	8 (11.8)	68	1.88	0.22	0.68-5.16
≥45 (ref)	40 (80)	10 (20)	50	-	-	-
Gender						
Male (ref)	349 (85.5)	59 (14.5)	408	-	-	-
Female	84 (88.4)	11 (11.6)	95	1.29	0.47	0.65-2.56
Residence						
Rural (ref)	103 (88.8)	13 (11.2)	116	-	-	-
Urban	330 (85.3)	57 (14.7)	387	0.73	0.34	0.39-1.39
Education						
Not completed high school(ref)	34 (87.2)	5 (12.8)	39	-	-	-
High school\intermediate	168 (85.3)	29 (14.7)	197	0.85	0.76	0.31-2.36
Higher education	231 (86.5)	36 (13.5)	267	0.94	0.91	0.35-2.57
Occupation						
Unemployed (ref)	220 (85.9)	36 (14.1)	256	-	-	-
Non-professional labor	144 (88.9)	18 (11.1)	162	1.31	0.38	0.72-2.39
Semiprofessional labor\Professional labor	69 (81.2)	16 (18.8)	85	0.71	0.29	0.37-1.35
Marital status						
Married	175 (87.1)	26 (12.9)	201	1.15	0.60	0.68-1.93
Unmarried (ref)	258 (85.4)	44 (14.5)	302	-	-	-
Socioeconomic status						
Upper (ref)	180 (83.7)	35 (16.3)	215	-	-	-
Upper middle	113 (88.9)	14 (11.1)	127	1.57	0.18	0.81-3.05
Middle	60 (85.7)	10 (14.3)	70	1.17	0.69	0.55-2.50
Lower middle	54 (87.1)	8 (12.9)	62	1.31	0.52	0.57-2.99
Lower	26 (89.7)	3 (10.3)	29	1.69	0.41	0.48-5.87
Family type						
Nuclear (ref)	285 (85.1)	50 (14.9)	335	-	-	-
Extended	148 (88.1)	20 (11.9)	168	1.30	0.36	0.75-2.26
History of chronic disease						
Present	23 (88.5)	3 (11.5)	26	1.25	0.72	0.37-4.29
Absent (ref)	410 (85.9)	67 (14.1)	477	-	-	-
Tobacco use						
Yes	105 (86.8)	16 (13.2)	121	1.08	0.80	0.59-1.97
No (ref)	328 (85.9)	54 (14.1)	382	-	-	-
Alcohol use						
Yes	54 (85.7)	9 (14.3)	63	0.97	0.93	0.45-2.06
No (ref)	379 (86.1)	61 (13.9)	440	-	-	-
Sufficient sleep taken						
Yes	356 (85.6)	60 (14.4)	416	0.77	0.47	0.38-1.57
No (ref)	77 (88.5)	10 (11.5)	87	-	-	-
Sufficient physical exercise						
Yes	210 (87.5)	30 (12.5)	240	1.26	0.38	0.75-2.09
No (ref)	223 (84.8)	40 (15.2)	263	-	-	-

Somasundaram *et al.* and Gulati and Misra.^[30,31] In addition, most of the participants in our study wanted both a textual and a pictorial warning. This is also supported by the studies of Bollard *et al.*, Miller *et al.*, Roberto *et al.*, and Donnelly *et al.*^[15,32-34] The pictorial warning was found to have more impact than sole textual warning and discouraged people to buy SSBs, which stresses the importance of pictorial warnings on the packaging.^[9,33,35,36]

Obese patients who have comorbidities such as diabetes and hypertension have been found to frequently miss scheduled appointments to NCD clinics operating in primary care.^[37]

Modelling studies regarding taxes on SSBs have been shown to predict the decrease incidence of obesity among the population.^[38] The younger age groups including adolescents, especially overweight adolescents have been found to have higher SSB intakes.^[39] Primary care physicians, especially those providing care in NCD clinics can thus make obese patients aware of the taxes, particularly younger groups, highlighting dual loss of health and finances. They should also advise the patients to look at the calorie values and labels on SSBs, and should advocate for health warnings to be mandated by the government. Further studies including qualitative methods are needed to understand tax

Table 4: Multivariable logistic regression analysis to determine factors independently predicting participants' favorable response to increase of taxes present on SSBs

Variable and category	Adjusted odds ratio	P	CI (95%)
Chronic disease			
Yes	1.92	0.18	0.74-4.97
No	-		
Age			
15-24	0.46	0.045*	0.22-0.98
25-34	0.57	0.16	0.26-1.25
35-44	0.65	0.32	0.27-1.52
≥45	-	-	-
Gender			
Male	-	-	-
Female	0.34	0.001*	0.18-0.64
Residence			
Rural	-	-	-
Urban	0.74	0.19	0.46-1.17
Family			
Nuclear	-	-	-
Extended	1.40	0.12	0.92-2.16

* Statistically significant ($P < 0.05$)

preferences among various groups. The government should take into consideration the factors predicting tax preferences before implementing any increase in taxes specific to SSBs.

The strength of the study is that, as per our knowledge, it is one of the first studies from India to report user perspectives related to taxation and health warnings on SSBs, which could serve as a starting point for larger studies with stronger designs. There are certain limitations to the study. Four-fifth of the study participants were males. Although when we did the analysis of patients and accompanying people turning out in the OPD, routinely, two-third of them were males. In addition, convenience sampling was done for recruiting the participants. This would have led to some more females being missed. Since the tertiary care hospital is situated in an urban area, representativeness of the sample may be an issue. However, we included accompanying persons as well, most of whom would have been healthy, which nullifies the disadvantages of a hospital-based study to some extent.

Conclusion

Awareness regarding current taxation on SSBs was low. Although most participants understood that SSBs are harmful for health, most opined that tax should not be increased. Younger and female participants, in particular, were not in favor on increased taxes on SSBs. However, most participants said that they would decrease consumption if tax is increased and resort to home-made beverages. Almost 97% participants opined that a health warning should be present on SSB packaging, out of which close to 70% wanted both textual and pictorial warning to appear together. Close to half of those who wanted a pictorial warning to be present, opined that it should occupy <25% of the surface area of the packaging.

The key messages which evolved from the study were low awareness of taxes on SSBs, younger people and females did not prefer to see increased taxation on SSBs. Most people were in favor of health warnings on SSBs, many of them wanting some pictorial warning to appear in the packaging's as well.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the participants have given their consent for their clinical information to be reported in the journal. The participants understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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