

AWARENESS, ATTITUDES AND RESPONSE TO THE HEALTH PROMOTION LEVY IN PIETERMARITZBURG, KWAZULU-NATAL

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ABSTRACT

The South African Minister of Finance implemented the sugar-sweetened beverage (SSB) tax, subsequently renamed the Health Promotion Levy (HPL), on 01 April 2018, as part of a multidisciplinary strategy to alleviate the obesity problem. The HPL is relatively new in South Africa and there is a lack of published studies on the awareness, attitudes and response to the HPL among South Africans. Therefore, this study aimed to fill this gap by determining the awareness, attitudes and response to the HPL among residents of Pietermaritzburg, KwaZulu-Natal. An observational, cross-sectional study was conducted at seven shopping centres in Pietermaritzburg, using a self-administered questionnaire, developed in English for this study. The questionnaire consisted mainly of binary questions and a five-point Likert scale, where participants could express how much they agreed or disagreed with particular statements. Participants were recruited (n=394) using a non-probability sampling method. A significant number of these participants (58.1%; n=229) were aware of the HPL ($p<0.05$), while 38.8% (n=153) were not aware. The participants were divided in their attitudes towards the HPL. Nearly equal amounts of participants agreed (n=141; 35.8%) and disagreed (n=146; 37.1%) with the HPL. About 30.5% (n=120) of participants self-reported that they would respond to the HPL by continuing to buy SSBs less often, while 22.6% (n=89) self-reported that they would continue to buy SSBs in the same quantity and with the same frequency that they did before the HPL was introduced. Half of the participants (50.8%; n=200) indicated that they would choose water as an alternative if SSBs were no longer affordable to them, followed by 100% fruit juice (49.2%; n=194) and milk and milk products (30.2%; n=119). The differences

in attitudes towards the HPL shows that there is a need for awareness campaigns on the HPL. Future research should investigate the impact of the HPL on health, obesity rates and the economy.

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INTRODUCTION

According to the World Health Organization (WHO), the prevalence of obesity worldwide has tripled since 1975 (WHO, 2017). In 2016, more than 1.9 billion adults were overweight, with over 650 million of these, obese (WHO, 2017). Africa also faces a growing obesity problem (Adeboye et al., 2012). In South Africa, the rates of obesity have risen over the past 30 years, leaving it the 'most obese' country in sub-Saharan Africa (Ng et al., 2014). The 2016 South African Demographic and Health Survey (SADHS) indicated that 68% of women and 31% of men were overweight or obese. In addition, one out of five women were severely obese [National Department of Health (NDoH) et al., 2019]. Worldwide, approximately 2.8 million deaths annually are associated with obesity (WHO, 2014). This is because obesity leads to various non-communicable diseases (NCDs) such as cardiovascular disease (CVD), cancer, chronic respiratory disease and type 2 diabetes (WHO, 2014). In February 2016, the South African Minister of Finance proposed the introduction of a tax on sugar-sweetened beverages (SSBs) as part of his budget speech in Parliament (National Treasury, 2016:2). This tax was eventually implemented in 01 April 2018, with the aim of decreasing excessive sugar intake by South Africans, thereby, reducing obesity and its complications (Gomo & Birg, 2018). The tax is now called the Health Promotion Levy (HPL) and is currently levied at South African Rand (ZAR) 2.21 cents for each gram of sugar above the threshold of 4 g/100 ml. The first 4 grams per 100 ml are levy free (National Treasury, 2018). By implementing this tax, the government implies that producers and consumers would 'pay' for the negative consequences of manufacturing or purchasing these products (National Treasury, 2016:15). In addition, manufacturers of SSBs would also be encouraged to reformulate their SSBs using less sugar (National Treasury, 2016:16).

Sugar-sweetened beverages are defined as: 'beverages that contain added caloric sweeteners such as sucrose, high fructose corn syrup or fruit juice concentrates' (National Treasury, 2016:16). These include but are not

limited to soft drinks, fruit drinks, sports/energy drinks, vitamin water drinks, sweetened ice tea and lemonade, amongst others. Unsweetened milk and 100% fruit juice are exempt from the tax as they contain intrinsic sugars and not added sugar. Artificially sweetened beverages are also exempt, as they do not contain caloric sweeteners (National Treasury, 2016:16). SSBs provide liquid calories and are a major contributor to increased energy intake and thereby, obesity. Furthermore, they do not provide a feeling of fullness or satiety and cannot suppress appetite. SSBs have low nutrient density and there is strong evidence that these products contribute to weight gain and health problems (Hu, 2013; Hu & Malik, 2010; Woodward-Lopez et al., 2010). They are consumed quickly and readily converted to body fat (WHO, 2015). Given the abundance of free/added sugars in food and beverages, adhering to the WHO recommendation to reduce the intake of free sugars, including added sugars to less than 10% of total energy intake in both adults and children (i.e. 50 g of sugar per day), can be a challenge (ADSA, 2017; WHO, 2015). For example, a 330 ml can of a typical SSB contains about 35 g of sugar, almost in reach of the maximum daily amount of 50 g as recommended by the WHO (ADSA, 2017; WHO, 2015).

There are many potential advantages to the HPL. National Treasury (2016:2) predicted that the HPL could be implemented quickly with low administration costs. In addition, the HPL could correct market failures (National Treasury 2016:9), influencing purchasing decisions of the public and SSB manufacturers to reformulate to less or zero sugar options (National Treasury, 2016:16). A study by Stacey et al. (2019), which included data twelve months after the implementation of the HPL, found evidence of product reformulation as well as significant price increases among the brands that reduced their sugar content. Ideally, the revenue generated should be used to subsidise the cost of healthy foods, such as fruit or vegetables (ADSA, 2017) or to fund other anti-obesity interventions (Duckett et al., 2016). The poorer population would be most affected by the HPL and may be less likely to purchase SSBs (Jeffery, 2016).

Since South Africa is mainly a low-income country, the country may likely benefit the most from the HPL (Jeffery, 2016). Furthermore, the HPL may generate substantial revenues for the government (Langley et al., 2017). A simulation study by Gomo and Birg (2018), found that a 10% HPL could generate about ZAR 14.5 billion in government tax revenue annually. An extended cost-effectiveness analysis of the South African HPL found that it also has the potential to reduce deaths due to type 2 diabetes mellitus (T2DM) and reduce out-of-pocket (OOP) and government expenditure and poverty due to increased healthcare expenditure (Saxena et al., 2019).

Low calorie sweeteners (LCS) including acesulfame-potassium, aspartame, saccharin and sucralose provide a sweet taste and are suitable alternatives to caloric sugars (Sylvetsky et al., 2016). However, whether LCS are beneficial or detrimental to human health is controversial and has been highly debated over the past few decades (Fowler et al., 2008; Pepino et al., 2011; Swithers, 2013). Future, well-designed studies are required to understand the health consequences of LCS consumption (Sylvetsky et al., 2016). A disadvantage of the HPL is that consumers may turn to other sources of high energy or high sugar food or drink items, in order to compensate for their reduced sugar and energy intake (Langley et al., 2017). In addition, if manufacturers do reformulate a lower sugar SSB, consumers may end up buying larger quantities of this product. Therefore, there would be no effect on sugar consumption (Langley et al., 2017). There are also concerns regarding the poor, who spend a larger portion of their income on food and drink, in that the HPL may force a heavier burden on them (Jeffery, 2016). After implementation of the HPL, there may be administrative concerns and tax evasion due to classification anomalies. The main concern about the HPL is the fact that many jobs may be lost and many businesses may have to close down (National Treasury, 2016:13). In addition, it is important to acknowledge that obesity is a complex issue that should be addressed with a range of systematic, sustained government interventions, rather than just one solution [Association for

Dietetics in South Africa (ADSA), 2017; Dobbs et al., 2014; Manyema et al., 2015]. A multicomponent approach is vital for the creation of an enabling environment for the public to make healthy choices (ADSA, 2017; Manyema et al., 2015).

There is currently ongoing debate in South Africa about the HPL and its implications for the South African economy and health. There is also a lack of published consumer-related studies on the HPL post implementation. As a result, this study aimed to assess the awareness, attitudes and response to the HPL among residents in Pietermaritzburg, KwaZulu-Natal. Specific study objectives were to determine: (i) If participants were aware of the HPL; (ii) Their attitudes towards the HPL; and (iii) The self-reported response of participants to the HPL, in terms of purchasing behaviour (Bajjnath, 2019).

METHODS

Research design and setting

A cross-sectional study was conducted in shopping centres in Pietermaritzburg. Although all seventeen major shopping centres in Pietermaritzburg were invited to participate in the study, only seven agreed to be included in the study. These shopping centres were Truro Plaza (Northdale), Lager Centre (Central Pietermaritzburg), Derby Place (Northdale), Victoria Centre (Central Pietermaritzburg), Scottsville Mall (Scottsville), Southgate Mall (Bisley) and Cascades Centre (Chase Valley). The areas in which the participating shopping centres were located varied from middle to high socio-economic status (Bajjnath, 2019).

Study population and sample selection

The study population consisted of adults, 18 years or older living in Pietermaritzburg, who spoke and understood English as the questionnaire was developed in English. The participants had to be literate, as they were required to answer a self-administered questionnaire. This was a convenience sample and was not representative of all

Pietermaritzburg residents. Assuming an alpha level of 0.5 and a margin of error of 0.5, the minimum sample size required was calculated to be 384 (Bajjnath, 2019).

Data collection tool development

A self-administered questionnaire was developed especially for this study. It consisted of three sections with mainly binary questions and a five-point Likert scale, which allowed participants to express how much they agreed or disagreed with particular statements. Section A was used to determine socio-demographic characteristics and awareness of the HPL. Section B aimed to determine participant attitudes towards the HPL, specifically whether or not they were in favour of the HPL and Section C aimed to determine the participant response to the HPL in terms of purchasing behaviour. The penultimate question in Section A had instructed participants who were unaware of the HPL to notify the researcher. During data collection, participants failed to follow this instruction. Therefore, this was changed to 'please read the note provided.' Apart from this minor change, no other changes were made to the questionnaire. Face validity of the questionnaire was determined during the pilot study conducted prior to the main study. The pilot study was conducted in Fairways on Main Mall in Howick and included 16 participants. The finding of the pilot study was that the self-administered questionnaire was well understood. In addition, the process of administering the questionnaires worked smoothly. The study supervisor, who is an expert in the field of nutrition, determined content validity of the questionnaire. In addition, the study supervisor checked that the questionnaire met the objectives of the study, that there was a logical flow to the questions and that there were no leading, ambiguous or confusing questions (Bajjnath, 2019).

Data collection

Data collection took place between September and October 2018. Once the researcher and research assistant arrived at each shopping centre, they met the management team of the

centre, who allocated them a data collection area. At the data collection area, the researcher laid out a large table with chairs for participants to sit on, while they answered the self-administered questionnaire. After setting up, the researcher recruited participants using a non-probability sampling approach. The researcher and research assistant explained the reason for the study and invited them to participate. Those who agreed to participate were first given a participant information sheet on the study and a consent form. Only after the consent form was signed and returned, was the participant given the self-administered questionnaire and information sheet on the HPL. The HPL information sheet provided a brief explanation of the HPL to those who were not aware of the HPL. Participants took between 15-20 minutes to answer the questionnaire and they did not receive any incentives for participating. The researcher and research assistant were available during data collection to answer queries and assist those who needed help, especially those with lower literacy levels. After participants completed the self-administered questionnaire, the researcher checked if any questions were omitted. Some of the participants were willing to go back and answer the omitted questions, while others were not (Bajjnath, 2019).

Statistical analysis

The IBM Statistical Package for Social Science (SPSS) version 23.0 was used to analyse the data. Each of the objectives involved descriptive statistics. Binomial tests were applied to determine whether a significant proportion of participants selected one of two possible responses. This could be extended when data with more than two response options was split into two distinct groups. A one-sample t-test was used to test whether a mean score was significantly different from a scalar value. A chi-square goodness-of-fit test was used on categorical variables to test whether any of the response options were selected significantly more or less often than the others. Under the null hypothesis, it was assumed that all responses were equally selected. A Wilcoxon Signed Ranks test was used to determine

whether the average value was significantly different from a value of three (the central score). This was applied to Likert scale questions. It was also used in the comparison of the distributions of two variables. A p-value of less than 0.05 was considered to be statistically significant. After the researcher captured the data onto a Microsoft Excel spreadsheet, it was cross-checked by a research assistant for errors. In addition, the statistician checked the spreadsheet for errors before data analysis (Baijnath, 2019).

(HSSREC) (Reference number: HSS/0899/018M). All participants were given a consent form to read and sign before answering the self-administered questionnaire. The consent form outlined the aims, purposes and procedures of the study. It also explained that no harm would be inflicted on participants and that they would remain anonymous. In addition, it stated that they were free to withdraw at any stage, without penalties (Baijnath, 2019).

Ethical considerations

This study was given full ethics approval by the University of KwaZulu-Natal, Humanities and Social Science Research Ethics Committee

RESULTS

Sample characteristics

Sample characteristics are presented in Table 1. Although there was a total of 394 participants in

TABLE 1: PARTICIPANT CHARACTERISTICS (N=394)

Characteristic	Category	n (%)
Age (years)	18-30	180 (45.7)
	31-50	144 (36.5)
	51-70	63 (16.0)
	> 70	5 (1.3)
	No response	2 (0.5)
Race	White	39 (9.9)
	Black African	163 (41.4)
	Indian	168 (42.6)
	Coloured	18 (4.6)
	Other	4 (1.0)
	No response	2 (0.5)
Education level	No formal education	3 (0.8)
	Grade 11 or less	75 (19.0)
	Matriculation certificate	170 (43.1)
	College	53 (13.5)
	Technikon	39 (9.9)
	University	51 (12.9)
	No response	3 (0.8)
Total monthly household income	R0-R10 000	145 (36.8)
	R10 001-R20 000	63 (16.0)
	R20 001-R30 000	40 (10.2)
	R30 001-R40 000	34 (8.6)
	More than R40 000	22 (5.6)
	I do not know	88 (22.3)
	No response	2 (0.5)
Money spent on food per month	Less than R500	12 (3.0)
	R501-R1 000	41 (10.4)
	R1 001-R1 500	63 (16.0)
	R1 501-R2 000	43 (10.9)
	R2 001-R2 500	28 (7.1)
	More than R2 500	56 (14.2)
	No response	151 (38.3)

TABLE 2: PARTICIPANT AWARENESS OF THE HPL (N=394)

Aware of the HPL	n (%)	P value*
Yes	229 (58.1)	<0.05
No	153 (38.8)	>0.05
No response	12 (3.0)	>0.05

*Binomial test

TABLE 3: PARTICIPANT LEVEL OF AGREEMENT THAT THEY WERE IN FAVOUR OF THE HPL (N=394)

	n (%)	P value*
Strongly disagree	94 (23.9)	<0.05
Disagree	52 (13.2)	>0.05
Neutral	78 (19.8)	>0.05
Agree	95 (24.1)	<0.05
Strongly agree	46 (11.7)	>0.05
No response	29 (7.4)	>0.05

* Chi-square goodness-of-fit test

this study, some participants did not answer all questions and the missing data is reported. The largest group of participants were between the ages of 18-30 years old (45.7%; n=180), followed by 31-50 years old (36.5%; n=144). Just over 40% (n=163) of the participants were black African, while 42.6% (n=168) were Indian and 9.9% (n=39) were white. The largest portion of the participants held a matriculation certificate only (43.1%; n=170), while 12.9% (n=51) held a university qualification and just under 1% (n=3) had no formal education. About 37% (n=145) of participants had a total monthly household income of between R0 and R10 000, while 5.6% (n=22) had a total monthly household income of more than R40 000. Approximately 16% (n=63) of participants spent between R1 001 and R1 500 on food per month, while 14.2% (n=56) spent more than R2 500 per month. Notably, 38.3% (n=151) of participants did not respond to the question on the amount of money spent on food per month (Table 1).

Awareness of the HPL

A significant number (58.1%; n=229) were aware of the HPL ($p < 0.05$), while 38.8% (n=153) were not aware and 12 (3.0%) did not answer (Table 2).

Attitudes towards the HPL

Participant attitudes, specifically if they were in

favour of the HPL or not, are shown in Table 3. For this result, a binomial test, chi-square goodness-of-fit test and one-sample test were applied. Results showed that 37.1% (n=146) of the participants disagreed to some extent that they were in favour of the HPL, 35.8% (n=141) agreed to some extent, 19.8% (n=78) were neutral and 7.4% (n=29) did not respond. A chi-square goodness-of-fit test showed that significant numbers either strongly disagreed (23.9%; n=94) or agreed (24.1%; n=95) ($p < 0.05$) that they were in favour of the HPL. If the 78 participants who were neutral towards the HPL were removed from the analysis, there would be nearly equal amounts of participants who agreed (35.8%; n=141) and disagreed (37.1%; n=146) that they were in favour of the HPL. Therefore, there was a definite split as to whether participants were in favour of the HPL or not.

Self-reported response towards the HPL, in terms of purchasing behavior

Table 4 shows participant's self-reported response towards the HPL in terms of purchasing behaviour. A chi-square goodness-of-fit test found that a significant number of participants (n=120; 30.5%) self-reported that they would 'still buy SSBs but less often', while 22.6% (n=89) self-reported that they would 'continue to buy SSBs in the same quantity and with the same frequency that they did, before the HPL was introduced' ($p < 0.05$) (Table 4).

TABLE 4: SELF-REPORTED PARTICIPANT RESPONSE TOWARDS THE HPL, IN TERMS OF PURCHASING BEHAVIOUR (N=394)

Response	n (%)	P value*
This does not apply to me, as I do not buy SSBs at all.	52 (13.2)	>0.05
Continue to buy SSBs in the same quantity and with the same frequency that I did before the HPL was introduced.	89 (22.6)	<0.05
Still buy SSBs but less often.	120 (30.5)	<0.05
Still buy SSBs but in smaller quantities (cans/bottles)	59 (15.0)	>0.05
Stop buying SSBs and rather buy some other beverage.	32 (8.1)	>0.05
No response	42 (10.7)	>0.05

* Chi-square goodness-of-fit test

TABLE 5: ALTERNATIVES, WHICH WOULD BE CONSIDERED BY PARTICIPANTS IF SUGAR-SWEETENED BEVERAGES WERE UNAFFORDABLE TO THEM

Alternatives	n (%)*
Sweets, cakes and treats	76 (19.3)
Milk and milk products	119 (30.2)
100% fruit juice	194 (49.2)
Sugar-free drink options	85 (21.6)
Water	200 (50.8)
Other	38 (9.6)

* Participants could choose more than one option

Participants offered alternatives that they would consider buying if SSBs became unaffordable to them (Table 5). Just over 50% (n=200) self-reported that they would choose water as an alternative to SSBs, followed by 100% fruit juice (49.2%; n=194). Approximately one third (n=119) self-reported that they would choose milk and milk products as an alternative, while 21.6% (n=85) would opt for sugar-free drink options. Just under 20% (n=76) self-reported that they would consider sweets, cakes and treats as an alternative to SSBs.

DISCUSSION

There is ongoing debate in South Africa about the HPL and its implications on the economy and health. There is also a lack of published data on how South Africans have reacted to the HPL post implementation. In response to this, our study had aimed to assess the awareness, attitudes and response to the HPL among Pietermaritzburg residents. The fact that just over 38% of participants were not aware of the HPL could be because the HPL was relatively new to the participants as this study was conducted between September and October

2018, just a few months after the implementation of the HPL (Bajjnath, 2019). A qualitative study conducted in Soweto, three months before implementation of the South African HPL, found that most of the participants were not aware of its impending implementation. After alerting the participants to the HPL, many participants felt that it would not be effective and perceived the HPL as being government's way of generating additional revenue (Bosire et al., 2020). In the current study, participants were divided in their attitudes towards the HPL. Again, this could be due to this study being conducted only a few months after implementation of the HPL. In comparison, international studies showed that 22% of Americans, less than 50% of Mexicans and 57.7% of French citizens were in agreement with the SSB tax, implemented in those specific countries (Donaldson et al., 2014; Julia et al., 2015; Myers et al., 2017).

Minton (2016), had earlier argued that the effect of SSB-type taxes on consumer behaviour was likely to be unpredictable and there is evidence to support that here. Results from the current study indicated that about one third of the participants self-reported that they would still buy SSBs, but less often, following the

introduction of the HPL. However, just over 20% self-reported that they would continue to buy SSBs in the same quantity and with the same frequency as they did before the HPL was introduced. Just over half of the participants self-reported that they would make healthier choices regarding SSBs.

Factors, which influence consumer responses to a tax on SSBs, include sensitivity to price, socio-economic status of the population, and consumption rates of the population and substitution options (Coca-Cola South Africa, 2016; Quirnbach et al., 2018; Theron et al., 2016). A tax on SSBs has mostly led to a significant decrease in SSB purchases, when considering past international studies (Bedi, 2018). For example, Mexico saw a 10% decrease in SSB purchases (Blecher, 2015; Guthrie & Esterl, 2016). Recent evidence from Mexico confirms that a tax on SSBs can lead to reduced consumption of SSBs. Two years after the introduction of a tax on sugary drinks in 2014 there, it was found that Mexican households with the lowest socio-economic level reduced their purchases of sugary drinks by 11.7%. The study also found a 2.1% increase in purchases of untaxed beverages, especially purchased bottled water (Colchero et al., 2017). There is a lack of published South African studies on whether the HPL has led to a decrease in SSB purchases and consumption and further research is required to investigate this.

It has been suggested that consumers would turn to other high energy/high sugar sources following the introduction of the SSB tax, resulting in no change to obesity rates (Langley et al., 2017). The demand for milk and fruit juice increased when SSBs were taxed in Mexico and the UK (Cabrera Escobar et al., 2013). In the current study, nearly half of the participants self-reported that they would buy water or 100% fruit juice, as alternative beverages if SSBs were no longer affordable to them. It is encouraging that participants self-reported that they would buy water, as water is considered the best beverage option as it is healthy and cheap (Hu & Malik, 2010). Fruit juice can also contribute towards weight gain and diabetes, similar to SSBs (Stacey et al., 2017). However, fruit juice is still

a better option than SSBs as it improves micronutrient intake (Hu, 2013; Hu & Malik, 2010). Milk consumption often decreases as SSB intake increases, thereby affecting calcium intake (Berkey et al., 2004; Westwater et al., 2016). However, this study found that almost a third of the participants would opt for milk and milk products. Just over 20% indicated that they would choose sugar-free options. Although sugar-free options contain little or no energy and/or sugar (Hu & Malik, 2010), there is much controversy surrounding the health effects of LCS (Sylvetsky et al., 2016). Although this study has provided important initial data on awareness, attitudes, and response to the HPL implemented in April 2018, this study did have limitations. Firstly, only seven shopping centres in Pietermaritzburg agreed to be a part of the study, although 17 shopping centres were invited to participate in the study. Secondly, convenience sampling was used instead of random sampling, in order to increase participation. As a result, the participants were not representative of the general population. Thirdly, a self-administered questionnaire was developed in English only. This meant that only those who were literate and could read and understand English, could participate in the study (Baijnath, 2019).

CONCLUSIONS

Just over half of the participants were aware of the HPL and they were divided on whether or not they were in favour of the HPL. Most participants self-reported that they would still buy SSBs but less often if SSBs became unaffordable to them. Some also indicated that they would continue to buy SSBs in the same quantity and with the same frequency that they did before the tax was introduced. A small proportion of participants indicated that they would stop buying SSBs and buy some other beverage instead. Interestingly, just over half of the participants indicated that they would choose water as an alternative, followed by 100% fruit juice and milk and milk products, if SSBs were no longer affordable to them. Differences in attitudes towards the HPL shows that there is a need for increased awareness of the HPL.

Awareness campaigns should make South Africans aware of the need for the HPL, how it is calculated, which drinks are taxed and what the tax revenue is used for. There is a lack of published studies on whether South Africans are aware of the HPL and how they have responded to it. This study is novel in that it attempts to fill this knowledge gap by providing initial data on the awareness, attitudes and responses to the HPL among participants in Pietermaritzburg. Conducting further similar studies, a longer period post-implementation of the HPL, would be useful in monitoring changes in awareness, attitudes and responses to the HPL over time. Future research should also aim to investigate the impact of the HPL on health, obesity rates and the economy.

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