Short Communication

The long-term effectiveness and acceptability of the retailer-led removal of unhealthy drinks from display in a self-service café

Angela Ryan[1], Oliver Huse[1,2,*], Miranda R Blake[1,2] , Tara Boelsen-Robinson[1,2] , Kia Noble[3] and Anna Peeters[1,2]

[1]Deakin University, Geelong, Global Obesity Centre, School of Health and Social Development, Institute for Health Transformation, Geelong 3220, Australia: [2]School of Public Health and Preventative Medicine, Monash University, Melbourne 3004, Australia: [3]Population Health, Alfred Health, Melbourne 3004, Australia

Abstract

Objective: In 2015, beverages were removed from display at a self-service café within a major health service, resulting in fewer purchases of unhealthy beverages. This initiative was continued following initial evaluation of the results. The current study aimed to determine customer acceptability of the initiative, and whether healthier purchases had continued, at 18 months following implementation.
Design: Drinks were categorised as 'green' (best choices), 'amber' (choose carefully) and 'red' (limit), based on the state government nutrient profiling system, for intervention and analysis purposes. In 2015, unhealthy 'red' drinks were removed from display. In 2017, weekly beverage sales were counted, through stock-taking, for 6 weeks, and customer surveys were conducted over 2 days.
Setting: A café located within a major Victorian health service.
Participants: Café customers (hospital staff, patients and visitors).
Results: Eighteen months after the implementation of the initiative, the proportion of 'red' beverages sold was 7 % of total drink sales (compared with 33 % before the removal of unhealthy beverages from display in 2015 ($P < 0.001$), and 10 % immediately following the removal of unhealthy beverages from display). Customer surveys revealed high levels of acceptability for the initiative and low levels of awareness of the initiative.
Conclusions: The removal of unhealthy beverages from display can result in customers making healthier purchases, and this appears to continue over the long-term. Such interventions have the potential to contribute to the sustained shift in population purchases and consumption needed to make meaningful improvements to population health.

Background

Consumption of unhealthy sugar-sweetened beverages (SSBs) is associated with weight gain and increased risk of a number of non-communicable diseases[1–3]. In 2017–2018, 9·1 % of Australian adults and 7·1 % of Australian children consumed at least one serving of SSBs daily[4] and strong evidence suggests that consuming at least one serving of SSBs per day significantly increases risk of weight gain and increased BMI in adults and children[5]. As such, it is important to address the factors influencing unhealthy dietary choices.

The consumer nutrition environment (the surroundings, opportunities and conditions that consumers encounter in a food retail outlet, including the physical, economic, policy and socio-cultural environments) is recognised as a major factor influencing dietary choices[6]. Initiatives within the consumer nutrition environment are subsequently of interest to policy makers to reduce unhealthy beverage consumption among Australians and mitigate poor diet as a risk factor for the development of non-communicable diseases[7].

Community retail outlets are an important component of the consumer nutrition environment and are a possible

setting for initiatives aimed at reducing SSB consumption[7–11]. One possible strategy to reduce the consumption of SSBs is reducing their availability in retail settings[8,11,12]. Interventions that alter the availability of SSBs involve manipulating the available range and/or the number of discrete units of SSB available for purchase[13]. Previous initiatives in Australia have decreased the availability of unhealthy foods and beverages and resulted in a decrease in the sales of targeted products[11,12], but not necessarily a change to overall food and beverage sales[11]. Nationally and internationally, health-promoting changes to the consumer nutrition environment at food outlets located in health services have been effective at encouraging healthier choices amongst consumers[8,12,14–16]. Further, customer surveys within health services have found that most food outlet visitors were supportive of such initiatives[14,17,18]. Existing evidence does suggest that such interventions do have the potential to improve customer purchases up to 2 years after implementation[16], although there has been minimal long-term follow-up of the effect of these initiatives on customer purchases or acceptability.

The present study aimed to examine the long-term (18 month) impacts of removing unhealthy beverages from display in the on-site café of a major health service in Australia, on sales of healthy and unhealthy beverages, and on customer attitudes and acceptability.

Methods

Setting

The current study was set within a café at a major Victorian hospital, which services a high volume of hospital staff, patients and visitors. Customers select beverages from self-service fridges within the café and complete their transaction at the counter. In October 2015, unhealthy beverages were removed from display and stored behind the counter without this change being communicated to customers, although unhealthy beverages were still available upon request.

Beverages were categorised based on the Victorian Government 'Healthy Choices: food and drink classification guide', classified as 'red' (limit), 'amber' (choose carefully) and 'green' (best choices)[19]. The 2015 version of the guidelines was used for consistency with the previous study[8]. 'Red' beverages include sugar-sweetened soft drinks, fruit juices with added sugar, sports drinks and energy drinks. 'Amber' beverages include zero-energy and low-energy (<300 kJ per serving) soft drinks, and small (≤250 ml) ≥99 % fruit juices. Small (≤300 ml) reduced-fat flavoured milks, water and sparkling water are classified as 'green'. It was these 'red' beverages (referred to here as 'unhealthy beverages') that were removed from display in 2015[8]. Customers were not made aware of the beverage classifications; classifications were used to structure the intervention and analysis. In the previous study in 2015,

sales data were gathered for 5 weeks prior to (24 August–27 September 2015) and 6 weeks after (12 October–29 November 2015) the removal of unhealthy beverages from display. The proportion of total beverages sold that were unhealthy ('red') decreased significantly in response to the intervention, whilst no significant change to total beverage item sales was observed. This initiative has remained in place since its initial implementation.

Sales data

Data collection

Data collection was performed at 18 months post initial implementation of the initiative. As per the previous study[8], researchers collected weekly beverage item sales data by counting the number of beverage items stocked in fridges and storage areas within the café at the beginning of each week for a 6-week period (10 April–21 May 2017). Café management then recorded incoming beverage stock as it arrived throughout the week, additional stock being brought from a central supply area that serviced several health service cafés. Weekly item sales of 'red', 'amber' and 'green' beverages could then be calculated, for example:

$$\begin{aligned} &\text{Week One beverage item sales} \\ &= \text{stock at beginning of week one} \\ &\quad + \text{incoming stock (week one)} \\ &\quad - \text{stock at beginning of week 2} \end{aligned}$$

Data analysis

Linear regression analyses were performed to compare the proportion of drinks sold that were classified as 'red', 'amber' and 'green' for 5 weeks pre-strategy implementation (data from the previous study) with the proportion of drink items sold that were classified as 'red', 'amber' and 'green' 18 months after implementation (data from the present study)[8]. Linear regression analyses were adjusted for average weekly temperature. This analysis was performed using Stata 14 statistical software, with statistical significance set at $P < 0.05$.

Customer surveys

Data collection

Customer surveys were conducted with exiting café customers over a 2-day period (April 2017). Two researchers were positioned at the two exit points of the café and asked every third exiting person if they would participate in a 1–2-min survey. Customers were asked a series of open- and closed-ended questions around their awareness and acceptance of the existing beverage policy (online Appendix 1). Data on participants' demographic characteristics were collected (age, gender and postcode).

Postcode was used to determine participant's socioeconomic status. This was denoted by the Australian

Bureau of Statistics' 2011 Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socioeconomic Disadvantage (IRSD) Postal Summary tool[20]. SEIFA IRSD scores areas of residence based on relative socio-economic disadvantage, accounting for twenty variables including education, income and employment, with a higher score indicating a lower relative disadvantage. Participants were categorised into 'upper 50 %' or 'lower 50 %' based on corresponding SEIFA deciles[20].

Data analysis

Closed-ended question responses are presented descriptively. Responses to open-ended questions were analysed through thematic analysis, whereby similar responses were open-coded and grouped into 'thematic descriptors', and common thematic descriptors were grouped into 'supportive' and 'unsupportive' themes[21]. All themes were coded by the first author and then refined through discussions with the second author.

Ethics

Survey participants provided implied consent to complete anonymous surveys. Ethical approval was provided by Deakin University's Human Ethics Advisory Group Health (Project number: HEAG-H 24_2017).

Results

Median total weekly beverage sales at the café during the follow-up period were 596 beverage products sold per week (range 530–698). Prior to the removal of unhealthy 'red' beverages from display in 2015, 33 % of total beverages sold were 'red', 40 % of all beverages sold were 'amber' and 27 % of all beverages sold were 'green'. Immediately following the removal of unhealthy beverages from display in

2015, 10 % of total beverages sold were 'red' ($P < 0.001$), 58 % of all beverages sold were 'amber' ($P = 0.011$) and 32 % of all beverages sold were 'green' ($P = 0.438$)[8].

Eighteen months after the removal of unhealthy beverages from display, 7 % of total beverages sold were 'red' ($P = 0.002$), 55 % of all beverages sold were 'amber' ($P = 0.026$) and 38 % of all beverages sold were 'green' ($P = 0.025$) (Fig. 1).

Table 1 shows demographic and customer use characteristics of customer survey participants, as well as awareness and acceptability results from customer surveys. Twenty percentage of participants lived in areas in the top 50 % areas for geographic disadvantage. Fifteen percentage of participants were aware that the café had a policy regarding the availability of sugary drinks. Eighty-three percentage of participants either agreed or strongly agreed with altering the availability of sugary drinks as a health-promotion strategy, with 85 % indicating they would support the introduction of similar initiatives at the same café. Customer survey results did not differ by participants' demographic or café use characteristics.

Sixty-nine percentage of participants chose to provide additional comments. Four key thematic descriptors were identified.

Two supportive themes emerged. The first supportive theme was 'Recognition of the importance of a healthy diet'. Respondents referenced the link between consumption of unhealthy beverages and adverse community health outcomes and supported the initiative as a strategy for reducing the consumption of these unhealthy beverages in the community. Comments included: 'sugar gives you diabetes'; 'because of the obesity situation' and 'we need to reduce sugar consumption'.

The second supportive theme was 'Agreement with suitability of initiative for this setting'. Here, participants
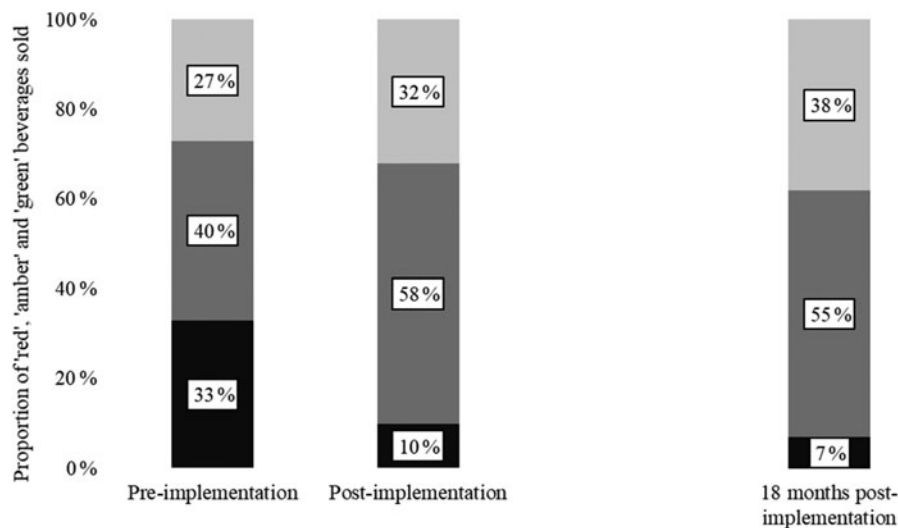

Fig. 1 Proportions of 'red' (limit), 'amber' (choose carefully) and 'green' (best choices) sold per week pre-implementation, immediately post-implementation and 18 months post-implementation, respectively. ■, Red; ■, amber; ■, green

Table 1 Customer survey responses (*n* 142)

Customer survey question topics	Responses to survey questions	
	n	%
Male	62	44
Regular customers (visited the café one or more times per week over the past month)	58	41
Age group (years)		
18–24	15	11
25–34	35	25
35–44	18	13
45–54	25	18
55–64	23	16
65 or more	26	18
Socio-economic indexes for area		
Upper 50 %	114	80
Lower 50 %	28	20
Awareness of initiative		
Yes	21	15
No	121	85
Level of agreement with removing sugary drinks from display		
Strongly agree	68	48
Agree	49	35
Neither agree or disagree	7	5
Disagree	14	10
Strongly disagree	4	3
Support for similar initiatives		
Yes	121	85
No	21	15

perceived that this kind of initiative was in-line with the health-promoting setting of the café (a health service) and hence expressed their support for the initiative. Participant comments included: 'in hospitals, it is hypocritical not to' and 'especially in hospitals'.

Two unsupportive themes also emerged. The first unsupportive theme was 'The role of the individual'. Here, participants emphasised the importance of personal choice and expressed a desire for this to not be limited by an external organisation, feeling that the individual should be responsible for their own dietary choices. Examples of participant comments included: 'Behaviour change is about the individual, not the café imposing that change' and 'It's a fine line between a nanny state and a healthy state'.

The second unsupportive theme was 'Perceived ineffectiveness of initiative'. In this case, there was a perception that the initiative would not be effective at encouraging healthier choices, as consumers would purchase unhealthy beverages from other retail settings; 'If people want sugary drinks, they will get them'.

Discussion

The current study found that 18 months after the introduction of an initiative removing 'red' beverages from display at a café within a major Victorian public hospital, customers have continued to purchase significantly fewer unhealthy beverages than prior to the removal of unhealthy beverages from display[8]. Further, <10 % of all beverages purchased were unhealthy. This is likely to be comparatively low across all food and beverage environments, given current trends in unhealthy beverage consumption in Australia[4]. Customer surveys demonstrated low levels of awareness but high levels of acceptability and support for the initiative.

These results are consistent with previous studies. Another initiative that changed the availability of unhealthy foods and beverages in vending machines located in a health service found that reducing the range of unhealthy foods and beverages resulted in a 56 % reduction in the sales of these unhealthy foods and beverages[12]. A similar decrease in the sales of unhealthy beverages was seen following changes to the relative availability of healthy and unhealthy beverages in hospital cafeteria in Boston, USA[15], and these changes continued 2 years after implementation[16]. As was the case in the current study, customer surveys within health services have found high levels of customer support for such initiatives[14,17,18]. This is significant as customer acceptability is important from the retailer's perspective and so is likely to impact the maintenance of the initiative. Differing from the results here, previous studies conducted in health services have found higher levels of customer awareness of such initiatives[14,17,18]. However, as these initiatives aimed to increase the availability of healthy options, customer awareness was significant to the success of the intervention and so a customer communications element may have been included.

A major strength of the current study is that it was a real-world evaluation within a retail setting and provides the first long-term analysis of an initiative reducing the availability of unhealthy beverages, addressing a current gap in our understanding of the impact of such initiatives. The current study demonstrated that this initiative has instigated measurable changes in customer beverage choices, resulting in a real-world impact on the healthiness of consumer purchases. Further, the mixed methods approach, utilising sales data and customer surveys, provides greater depth to the analysis and allows more in-depth assessment of the long-term sustainability and acceptability of the initiative.

Some limitations were identified. Possible human error due to the manual data collection of beverage items may introduce random errors in sales data. Further to this, stock-take data were used as a proxy for sales data and the former may not be a perfect measure of the latter. However, as results are presented in aggregate, it is unlikely that this would affect overall conclusions. Further, there was an 18-month gap in data collection, and hence we are unable to make conclusions on the long-term impact of the initiative on total beverage sales, given that other unaccounted for factors may have influenced sales over this period. Further, no suitable control café or other food outlet existed, preventing us from identifying extraneous factors influencing beverage sales. It was also not possible to

adjust for compensatory behaviour by consumers, or SSB purchases made at other food outlets due to reduced availability. As the current study was conducted in a health-promoting environment, customers may be more accepting of health-promotion interventions. Hence, the results presented here may not be generalisable to other food service environments. This is compounded by the relatively low customer survey response rate (49 %), as surveyed customers may not be representative of the total customer base, and the fact that we unfortunately do not have any data on the quantity or characteristics of café customers or food sales. Despite these limitations, the retailer has chosen to continue with the initiative over a period of 2 years which is an indication of the perceived success of the initiative.

This present study demonstrated that removal of unhealthy beverages from display in a hospital retail setting can influence customers to make healthier beverage choices in the long-term. The initiative has also demonstrated a high level of customer acceptability. Such interventions have the potential to contribute to the sustained shift in population purchases and consumption needed to make meaningful improvements to population health.

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Supplementary material

For supplementary material accompanying this paper visit https://doi.org/10.1017/S1368980019004610

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