Implementation of the 'Healthier Drinks at Healthcare Facilities' strategy at a major tertiary children's hospital in Brisbane, Australia

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Abstract

Objective: The World Health Organization recommends people reduce their free sugar consumption to <10% of daily energy intake. This study aimed to determine the viability of the 'Healthier Drinks at Healthcare Facilities' strategy to reduce the amount of free sugar available in beverages and influence consumer purchasing patterns.

Methods: Beverage environment modifications at a children's hospital limited the availability of less healthy options. Using a convergent parallel mixed-methods design, sales data from retail food outlets (n=7) and vending machines (n=14) were collected from January 2017 to May 2018. Employees (n=105) and visitors (n=102) completed surveys, and retail food outlet managers (n=3) completed semi-structured interviews. Data were analysed via descriptive statistics, independent t-tests and content analysis.

Results: The strategy decreased the availability of less healthy beverages and resulted in a significant increase in the proportion of 'green' (healthier) beverages sold (3%, p=0.002), and a decrease in the proportion of 'red' (less healthy) beverages sold (5%, p=0.011). Overall, sales did not change (p=0.243). The majority of participants supported the strategy.

Conclusions: Overall, a shift in consumer purchasing patterns resulted. Further modification of the beverage environment is encouraged to increase impact.

Implications for public health: This strategy was feasible and acceptable in a healthcare setting.

Key words: beverage sales, retail food outlets, vending machines, sugar-sweetened beverages, health promotion programs

In 2015, a World Health Organization (WHO) Guideline was published that recommended both adults and children reduce their daily intake of free sugars to less than 10% of their total daily energy intake.[1] Evidence reported that this will reduce the risk of overweight, obesity and tooth decay across populations, and ultimately contribute to decreasing the burden of non-communicable diseases.[1] In Australia, chronic disease is a significant concern, with detrimental impacts on health, the economy and society.[2] The most recent national data from 2011–2012 suggest that free sugar consumption is declining, with adults consuming 10.9% and children consuming 13% of total energy intake.[3] On any given day, however, the proportion of the population exceeding the WHO recommendation was 46%.[3] Implementing public health nutrition strategies that focus on a reduction of free sugars may contribute to a decrease in chronic disease burden in the long term.[4,5]

The commercial food and beverage environment has been the focus of previous public health interventions in Queensland, Australia,[6] given the knowledge that both a lack of supportive food environments and the consumption of sugar-sweetened beverages (containing large amounts of free sugars) are strongly linked to the development of overweight or obesity.[4] It has been shown that food environments influence a person's food choices and consumption, over and above factors such as knowledge and/or motivation.[7] Community retailers in particular play a unique role in population health promotion, as they are often more engaged with customers,[8] and interventions targeting community retail food environments have been shown to influence diet and promote health.[5]

The Queensland Government's 'A Better Choice (ABC) Healthy Food and Drink Supply Strategy for Queensland Health Facilities' became mandatory for all Queensland healthcare facilities in 2008.[6] The strategy focuses on the promotion of healthy eating and physical activity in healthcare environments and adapts elements from a similar strategy implemented within the Queensland public education system.[9] Despite the public health system recognising they have "clear responsibility for leadership in promoting healthier lifestyles throughout

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the state",[6] change and commitment within facilities can be inconsistent and time-consuming. An evaluation of the strategy implementation in 2009 demonstrated that only 25% of facilities reported full strategy implementation.[10,11] The strategy fell into abeyance in 2012 with a change in the political environment.

In late 2016, the *ABC* program was reinvigorated within the public healthcare system in Queensland, and a new strategy was announced that focused on the beverage supply only. The 'Healthier Drinks at Healthcare Facilities' strategy intended to create a supportive environment for both employees and visitors, aiming to make healthier food choices easier choices and to influence behaviours that protect and promote health.[12] Health services were encouraged to apply the strategy to their relevant facility by improving the range, availability and promotion of healthy bottled and canned beverage options while limiting the availability of less desirable options.[12] Children's Health Queensland Hospital and Health Service (CHQ) is a specialist, public, state-wide paediatric health service in Queensland, Australia, and the Lady Cilento Children's Hospital (LCCH) is its major facility. The aim of this study was to determine if the strategy was viable and could reduce the amount of free sugar available to the public, as well as influence consumer purchasing patterns. The three main objectives were: i) to determine the financial impact on beverage sales from retail food outlets and vending machines; ii) to determine and understand visitor and employee perceptions and experiences of the changes; and iii) to gain an understanding of the views of retail (food outlet) managers regarding strategy implementation.

Methods

Context

This pragmatic, implementation science study was conducted from January 2017 to May 2018, using a convergent parallel mixed-methods design.[13] Ethics approval was obtained from the Human Research Ethics Committee at both CHQ and The University of Queensland. The project was designed as a collaboration between clinicians and researchers. A steering committee was formed in February 2017 with representatives from allied health, medical and nursing departments, on-site food providers (retail food outlets), researchers, hospital food service, clinical network representatives and consumer groups. The strategy applied to all bottled and canned beverages for sale at the hospital. The strategy did not apply to coffee or similar hot beverages, whether this was in retail food outlets or vending machines. All managers of the retail food outlets and vendors were supported by an implementation guide specific to their store or stock. This guide was developed after the baseline audit and detailed the required changes and how they could be achieved, including product suggestions and visual representations of a compliant layout.

Beverages were grouped into three categories depending on their nutritional profile, in particular, their free sugar content (Table 1). These categories reflected a 'traffic light system'. 'Green' beverages are encouraged 'always' and have no free sugars, 'amber' beverages are specified as a 'sometimes' choice and either have no free sugars but are artificially sweetened beverages, or contain free sugars but have other beneficial nutrients (for example, full-fat milk), and 'red' beverages, which contain free sugars and are of minimal nutritional value, are specified as a 'limited' choice.[12,14] Strategy compliance criteria for the proportion of beverages sold within each category is detailed in Table 1 and was based on the number of 'facings' available or displayed in retail food outlets and vending machines.

Table 1: Categorisation of bottled and canned beverages according to the traffic light criteria as part of the *Healthier Drinks at Healthcare Facilities* strategy specific to CHQ.[a]

Drink category	Red	Amber	Green
Strategy compliance criteria	≤ 20%	≤ 30%	≥ 50%
Types of drinks	• Sugar-sweetened beverages • Flavoured milks and milk-based smoothies (>300ml/bottle) • Juices <96% fruit juice • Juices >300ml/bottle • Caffeinated beverages not meeting CHQ compliance criteria (≥50mg/bottle)	• 375ml artificially-sweetened beverages • Juices with ≥96% fruit juice, unsweetened (≤300ml) • Unflavoured milk, full-fat • Flavoured milk drinks and milk-based smoothies (≤300mL) • Unsweetened/diet iced tea • Kombucha	• Unsweetened water • Unflavoured plain and soy milk, low- or reduced-fat • Naturally sweetened water

Note:
a: CHQ, Children's Health Queensland Hospital and Health Service.

Beverage sales data

Sales data from all retail food outlets and vending machines within the hospital were collected both retrospectively and prospectively. Sales data were collected as the number of units sold, and not as revenue data, as this was unable to be obtained due to privacy reasons. All retail food outlets and vending machine vendors at this site were outsourced service providers, which added a level of complexity to implementation and data collection. Twelve months of data (April 2016 to March 2017) were collected to determine existing baseline seasonal, biannual or monthly trends and differences in sales. Comparative beverage sales data were collected for the six months prior to implementation (December 2016 to May 2017) and the six months post-implementation (June 2017 to November 2017). Outcomes related to retail food outlet and vending sales were expressed as percentages and number of items sold. Statistical analyses were performed using Statistical Package for the Social Sciences version 25 (IBM SPSS Statistics 25.0).[15] In regard to existing trends, an independent *t*-test (with an alpha of 0.05 two-tailed used for statistical significance) was used to determine biannual differences, and one-way analysis of variance (ANOVA) and post hoc Tukey HSD (honestly significant difference) tests were used to determine seasonal differences. To determine the difference in mean monthly sales between the six months of pre-implementation data and six months of post-implementation data, independent t-tests were used (with an alpha of 0.05 two-tailed used for statistical significance).

Audit data

Auditing processes were conducted by project staff (not researchers) using a specific tool developed by the steering committee. The tool required staff to detail the type and total number of beverages facing consumers in the retail outlet or vending machine, classify the item according to the traffic light criteria and calculate the proportion of 'green', 'amber' and 'red' beverages to determine compliance. Audits occurred at baseline, one month post-implementation

and again in March 2018 (10 months post-implementation).

Survey data

Surveys were developed to understand the perceptions and experiences of the changes among visitors and employees using the Checkbox® Survey platform. Informed consent was provided by all who completed the survey at one month post-implementation of the strategy. The online survey link for employees was distributed by the media and communications team in the usual weekly email update. Survey questions are available in Supplementary File 1. Survey data for visitors (aged 18 years or over) to the hospital were collected in-person by researchers using electronic tablets at various times of the day, on multiple days, across a period of approximately three weeks (Supplementary File 2). Researchers were placed at various points within the hospital (outside the entrance of the major retail store, in the food court area, and the general main foyer area), and approached every potential participant (adults) where possible. After obtaining informed consent, the researchers asked the survey questions and recorded the responses online for the participant using the electronic tablets. Descriptive statistics were used to analyse survey data using Statistical Package for the Social Sciences version 25 (IBM SPSS Statistics 25.0).[15]

Semi-structured interview data

Managers of each retail food outlet were invited to participate in an individual semi-structured interview to gain an understanding of their experiences, approximately one month post-implementation of the strategy. Written informed consent was provided by all managers who participated. Interviews were conducted in a public area (food court) within the hospital. Interviews were conducted by an experienced researcher and were summarised at the time using field notes. Interview questions focused on business impacts, customer impacts and strategy feedback and are detailed in Supplementary File 3. Questions were developed by the research team, in consultation with the steering committee. Content analysis was used to explore the qualitative data collected from the semi-structured interviews.[16] Due to the sample size, the analysis was completed without the use of specialised software.

Results

Implementation

Full implementation of the strategy occurred at the end of May 2017. Seven retail food outlets and 14 vending machines were included in the study. There was a total of more than 200 different types of bottled and canned beverages for sale across the retail food outlets and vending machines during the data collection period. All retail food outlets and vendors were willing to work with project staff to achieve compliance with the site-specific 'Healthier Drinks at Healthcare Facilities' strategy.

Beverage sales results

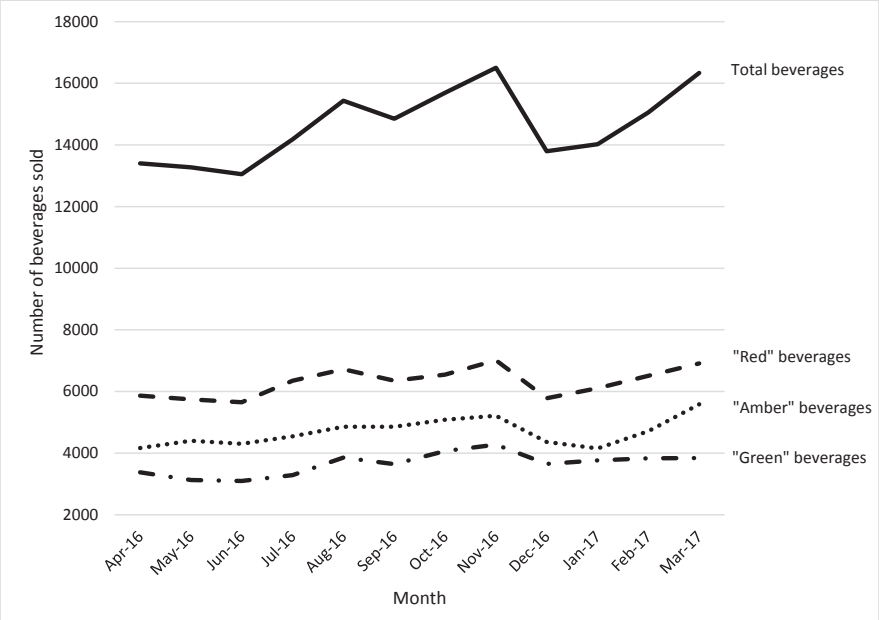
Analysis of twelve months of initial sales data prior to implementation (April 2016 to March 2017) found no seasonal difference in beverage sales, both in total sales (p=0.42) or in sales of any category (see Figure 1). No statistically significant difference was found in biannual total beverage sales (p=0.21). Total monthly beverage sales did vary, with the highest sales seen in November 2016 (16,505 beverages) and the lowest sales in June 2016 (13,051 beverages).

Comparisons of beverage sales data pre- and post-implementation are shown in Tables 2, 3 and 4. One month of sales data for one vending machine was missing due to technology issues, therefore was excluded from data analysis. Based on sales from previous months, this machine sold 'green' and 'amber' products and represented only 2.5% of total vending machine sales each month, therefore it was not deemed to affect overall outcomes. Retail food outlets account for approximately 80% of total sales, with vending machines contributing the remaining 20%. Overall, for both retail food outlets and vending machines, the mean monthly total beverage sales did not change (p=0.243). There was a significant increase in the proportion of 'green' beverages sold (25% vs. 28%, p=0.002), and a significant decrease in the proportion of 'red' beverages sold (43% vs. 38%, p=0.011). The proportion of 'amber' did not change (32% vs. 34%, p=0.083), see Table 2. In the case of retail food outlets, there was a significant increase in the proportion of 'green' beverages sold (26% vs. 28%, p=0.001), a decrease in the proportion of 'amber' beverages sold (31% vs. 29%, p=0.028), and no change for 'red' beverages (43% vs. 43%, p=0.882), see Table 3, while for vending machines the pattern of change differed, being a significant increase in the proportion of 'green' and 'amber' beverages sold (23% vs. 26%, p=0.011 and 38% vs. 54%, p=0.000, respectively), and a significant decrease in the proportion of 'red' beverages sold (39% vs. 20%, p=0.000), see Table 4.

Audit results

Audit results from baseline, one month post-implementation and March 2018 (10

Figure 1: Baseline beverage sales data for the one year prior to implementation (April 2016 to March 2017) of the *Healthier Drinks at Healthcare Facilities* strategy specific to Children's Health Queensland Hospital and Health Service.



months post-implementation) indicated that, overall, the retail food outlets and vending machines were moving towards compliance with the percentages specified in the strategy (Table 5). At one month post-implementation, all retail food outlets were compliant with the strategy, however, vending machines still required further changes. Ten months post-implementation, retail food outlets were non-compliant, and vending machines were meeting the criteria for 'red' beverages available, but not for 'green' or 'amber' beverages.

Survey results

A total of 102 visitors completed the survey in July 2017. A total of 54% of visitors had purchased a bottled or canned beverage from either a retail food outlet or vending machine on the day of the survey, with the majority of purchases (30%) being water (including still, sparkling and naturally sweetened), followed by other (20%) and sugar-sweetened soft drinks (13%). When asked, 53% of visitors reported that they had noticed changes regarding the types of beverages sold within the hospital. A total of 97% of visitors gave positive comments regarding the strategy implementation.

A total of 105 employees completed the online survey in July 2017. Only 6% of employees had been working at a CHQ facility for less than six months, 26% for between six months and two years, 40% for more than two years and up to five years, 10% for more than five years and up to 10 years, and 18% for more than 10 years. Allied health employees contributed the most responses (40%), followed by employees from administration (28%), nursing (24%), medical (7%) and executive (1%) areas. The majority (70%) of employees had not noticed any changes to the types of bottled and canned beverages on sale. The usual product of choice was water (35%), followed by artificially sweetened soft drinks (26%), >99% fruit juice (13%), other (9%, commonly coffee, nothing or kombucha), sugar-sweetened soft drinks (6%), flavoured milk and iced tea (5% each) and <99% fruit juice/drink (1%). Eighty-four per cent of employees were supportive of the strategy changes.

Table 2: Comparison of mean monthly beverage sales data for all retail food outlets and vending machines for the six months prior to implementation, and the six months following implementation of the *Healthier Drinks at Healthcare Facilities* strategy specific to CHQ.[a]

	Pre-implementation	Post-implementation	*p*-value
"Green" beverages sold (n)	4,390	4,493	0.681
"Green" beverages sold (%)	25	28	**0.002****
"Amber" beverages sold (n)	5,637	5,631	0.990
"Amber" beverages sold (%)	32	34	0.083
"Red" beverages sold (n)	7,423	6,135	**0.005****
"Red" beverages sold (%)	43	38	**0.011***
Total beverages sold (n)	17,457	16,259	0.243

Notes:

a: CHQ, Children's Health Queensland Hospital and Health Service. Proportions displayed represent the proportion of all beverages sold in retail food outlets and vending machines.

Refer to the following documents for beverage classification criteria.[12,14]

Post-implementation results were significantly different from pre-implementation results via independent t-tests

**p<0.05, **p<0.01, ***p<0.001.*

Table 3: Comparison of mean monthly beverage sales data for all retail food outlets for the six months prior to implementation, and the six months following implementation of the *Healthier Drinks at Healthcare Facilities* strategy specific to CHQ.[a]

	Pre-implementation	Post-implementation	*p*-value
"Green" beverages sold (n)	3,584	3,479	0.580
"Green" beverages sold (%)	26	28	**0.001****
"Amber" beverages sold (n)	4,328	3,570	**0.039***
"Amber" beverages sold (%)	31	29	**0.028***
"Red" beverages sold (n)	6,095	5,368	**0.030***
"Red" beverages sold (%)	43	43	0.882
Total beverages sold (n)	14,008	12,417	0.054

Notes:

a: CHQ, Children's Health Queensland Hospital and Health Service. Proportions displayed represent the proportion of all beverages sold in retail food outlets and vending machines.

Refer to the following documents for beverage classification criteria.[12,14]

Post-implementation results were significantly different from pre-implementation results via independent t-tests

**p<0.05, **p<0.01, ***p<0.001.*

Table 4: Comparison of mean monthly beverage sales data for all vending machines for the six months prior to implementation, and the six months following implementation of the *Healthier Drinks at Healthcare Facilities* strategy specific to CHQ.[a]

	Pre-implementation	Post-implementation	*p*-value
"Green" beverages sold (n)	806	997	0.077
"Green" beverages sold (%)	23	26	**0.011***
"Amber" beverages sold (n)	1,316	2,061	**0.005****
"Amber" beverages sold (%)	38	54	**0.000*****
"Red" beverages sold (n)	1,328	767	**0.002****
"Red" beverages sold (%)	39	20	0.000***
Total beverages sold (n)	3,449	3,842	0.302

Notes:

a: CHQ, Children's Health Queensland Hospital and Health Service. Proportions displayed represent the proportion of all beverages sold in retail food outlets and vending machines.

Refer to the following documents for beverage classification criteria.[12,14]

Post-implementation results were significantly different from pre-implementation results via independent t-tests

**p<0.05, **p<0.01, ***p<0.001.*

Semi-structured interview results

All managers of the retail food outlets (n=3) completed the semi-structured interview one month after implementation, taking on average 15 minutes to complete. Results revealed that the overall impact on business was perceived as minimal, with negligible negative customer reactions and feedback. Bottled and canned beverage sales for one franchise represented only 2% of total sales. The implementation guides developed specifically for the project were reported by all to be a positive resource that was informative and helped them to understand what changes were needed in a practical sense. The overall communication strategy including the ability to participate in discussions and negotiations with the steering committee and project staff, and the time allowed to make the required changes, were reported to be a positive aspect by all managers. Additionally, it was reported that

the relationships with suppliers and company representatives was not affected by the strategy implementation. The only concern expressed was that more advance notice to customers should have been provided to reduce queries to serving staff in the retail food outlets.

Discussion

The implementation of the 'Healthier Drinks at Healthcare Facilities' strategy within the LCCH was deemed a success. Auditing results showed that there was a slow but steady decrease in the provision of less healthy beverage options and a corresponding increase in healthier options in the facility. Overall a positive shift in consumer purchasing patterns of bottled and canned beverages was evident, with an increased proportion of 'green' beverages and decreased proportion of 'red' beverages sold. This was accompanied by the support of the majority of surveyed employees and visitors and encouraging reactions from managers of the retail food outlets.

When considering the beverage sales data in relation to the audit results, it was encouraging to find that despite full compliance not being achieved within the data collection time frame, positive changes from a public health perspective were evident. Additionally, our results reflect findings from similar studies conducted in Australia that focused on changes to the availability of beverages. The most comparable is the study by Huse and colleagues in 2016.[17] Their intervention was also in a healthcare setting and results indicated a decrease in the proportion of 'red' beverages sold, and an increase in the proportion of both 'green' and 'amber' beverages sold, with total sales remaining steady.[17] Another study by Butler and colleagues[18] focused on a very different setting, that of a community food store in a remote Aboriginal community, but showed similar results. There was no change in the total volume of beverages sold, but a shift towards purchasing beverages that contained lower or zero amounts of free sugar.[18] A third study conducted across three major hospital sites in Melbourne focused on vending machines sales only, with a similar intervention to the current study, 'red' beverages were to make up no more than 20% of total beverages on sale.[19] Results showed that sales of less healthy items at

Table 5: Audit results for three time points – baseline, one month post implementation and 10 months post implementation using the audit tool developed as part of the Healthier Drinks at Healthcare Facilities strategy specific to CHQ.[a]

	Compliance criteria	April 2017	July 2017	March 2018
RETAIL	"Green" ≥50%	35%	50%	51%
	"Amber" ≤30%	43%	30%	23%
	"Red" ≤20%	22%	20%	26%
VENDING	"Green" ≥50%	33%	37%	36%
	"Amber" ≤30%	36%	41%	56%
	"Red" ≤20%	31%	22%	8%

Note:

a: CHQ, Children's Health Queensland Hospital and Health Service. Percentages indicate relative availability of each beverage category in either retail food outlets or vending machines.

12-month post-policy implementation were 56.1% lower compared to expected sales based on pre-intervention trends.[19] Our results also align with international literature. The food and beverage choices in vending machines in a paediatric hospital in Canada were altered to provide healthier options in a study by van Hulst and colleagues.[20] Data collection focused on participant responses to the intervention and demonstrated increased knowledge and perceptions of healthy choices, with the potential for this to lead to greater changes in purchasing behaviours.[20] Vending machines were again the target of a healthier food initiative in a study by Gorton and colleagues[21] that occurred across two hospital sites in Auckland, New Zealand. Although this study focused on foods rather than beverages, results showed the sales volumes were not affected, and the total sugars per 100g product sold decreased by 30%.[21] These results are promising, as they demonstrate further scope for the current project. When considered together, these studies demonstrate the initial viability of this type of intervention across different settings, and this warrants further research on a larger scale, for example, across multiple healthcare and community settings concurrently.

It can be suggested that a saturation point has been reached in the current implementation – despite an overall change in the proportion of beverage sales post-implementation, there is little fluctuation across each month. This would indicate that further modification of the beverage environment is required to extend these positive effects over time (for example, a further reduction in the availability of or complete removal of 'red' beverages).

Aspects of implementation that were not captured formally in data collection procedures, but became evident to researchers throughout the project process (due to the nature of their involvement on-site and as part of the steering committee), did have an influence on the interpretation of findings, and is a learning for ongoing research and how these outcomes may be best measured. Clear and concise communication was a critical success factor for the implementation and outcomes of this strategy. There were many staff and product changes that were beyond the control of the project team but did have the potential to have a significant impact on the project. There was a change in the overall manager of the retail facilities, changes in product configurations and limited engagement from certain vendors in the initial stages. These difficulties were overcome through the combined efforts of both researchers and clinical staff who were required to be on-site and working closely with all retail food outlet and vending staff involved in the intervention. Prior to implementation, the project team expected criticism and negative responses from both employees and visitors. This was based on past experiences from team members and compounded by the fact that implementation proceeded with minimal notification. The results of the visitor and employee surveys were therefore unexpected and inform and drive change toward a more positive environment if further changes were to be considered.

Limitations

The main limitation of this research was the inability to collect revenue data and understand the impact of this on beverage sales and the perspectives of visitors and employees. Using total beverages sold in units as a proxy, however, still showed that overall sales did not change. Social desirability bias is acknowledged as a potential limitation as it could not be accounted for with the use of an online survey.[22] Additionally, conducting the study within one hospital with a small interviewee sample size limits

the generalisability of findings. Also, the amount of free sugars in drinks was not directly measured, however, the availability of beverages containing free sugars and the impact on consumer purchasing behaviours was quantified. Finally, the deployment of the strategy and collection of the required data took longer than originally anticipated, required multiple collaborations with a number of key stakeholders, and researchers needed to be physically on the ground and engaged through all processes within the hospital while the changes were occurring. While this could be seen as a limitation, it could also be viewed as a learning, which requires a greater focus in future implementation interventions.

Strengths and reflections

The impact of the approach taken by the research team cannot be underestimated in terms of time and driving meaningful outcomes. Researchers used a mixed-methods approach with the collection of complementary and meaningful data, were completely integrated with the project implementation team on the ground, spent significant amounts of time on-site, and were viewed from the outset as being an important and valuable aspect of the overall project. This could be viewed as extremely resource-intensive from a research perspective, however, it was critical to the overall success of the project. The implementation of the strategy and the evaluation of the effectiveness would not have been successful without this research integration, overarching support from the health system and transparency from all stakeholders from the outset. Inclusion of executive members and individuals from diverse backgrounds within the steering committee propelled interest and engagement, also promoting the importance and inclusion of a research component to policy implementation. While all retail food outlets and vendors were contractually obliged to comply, all were in support of the new strategy and worked diligently to make the required changes and comply as part of usual business processes. Contractual obligations were not used as a negative motivator. Rather, project staff interacted regularly with retail managers, built positive relationships over time and provided support. This systematic process enabled all involved to work cohesively to achieve the required outcomes. Additionally, important documentation including particular implementation and strategy details, compliance criteria, audit tool and results were regularly updated and checked to ensure the change in policy was embedded into routine operations. Ongoing auditing has been incorporated into ongoing duties within a specific department, and managers of the retail food outlets and vending representatives are now required to provide monthly beverage sales data to the on-site food services and nutrition support quality coordinator for ongoing monitoring and evaluation.

Conclusion

When considering the actual implementation of the strategy and the positive outcomes achieved, it is evident that this overall systems approach to the provision of bottled and canned beverages in the healthcare facility is a viable and effective strategy. An increase in the availability of 'green' beverages, in conjunction with a decrease in 'red' beverages, has reduced the amount of free sugar available to the public and influenced consumer purchasing patterns. Further changes to reduce the availability of sugar-sweetened beverages and assessment of this impact across multiple healthcare settings is warranted.

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Supporting Information

Additional supporting information may be found in the online version of this article:

Supplementary File 1: Survey questions for employees.

Supplementary File 2: Survey questions for visitors.

Supplementary File 3: Semi-structured interview questions for retail managers.