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# Examining the nutritional quality of food and beverage consumed at Melbourne aquatic and recreation centres

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**O**besity is a significant issue in Australia with 63% of adults and 25% of children overweight or obese.<sup>1</sup>

Over-consumption of discretionary foods and beverages, such as sugar-sweetened drinks, sweet baked goods and savoury snacks contribute to excess weight.<sup>2</sup> In contrast to National recommendations, discretionary foods accounted for more than one-third of total energy intake among Australian children aged 4–18 years in 2011/2012.<sup>3</sup>

Aquatic and recreation centres largely identify themselves as health-promoting settings, although they have been described as 'obesogenic' environments for children in Canada and the UK.<sup>4</sup> Consequently, some government and recreation providers are introducing guidelines for healthier food provision at such facilities.<sup>5</sup> However, the significance of aquatic and recreation centre cafes in the consumption of discretionary food in Australia is unclear.

## Objective

Assess the nutritional quality of food and beverage consumed by patrons of a sample of aquatic and recreation centres in metropolitan Melbourne.

## Methods

Four aquatic and recreation centres in metropolitan Melbourne were selected, based on having a large cafeteria (with facilities to prepare food on site), and an indoor swimming pool offering children's swimming lessons year-round.

## Abstract

**Objective:** Examine the nutritional quality of food and beverages consumed across a sample of community aquatic and recreation centres in metropolitan Melbourne, Australia.

**Methods:** Interviewer-administered surveys of randomly selected patrons attending four aquatic and recreation centres were conducted to ascertain food and beverage items consumed over two data collection periods (May–June 2014, January–February 2015). We selected centres in and around metropolitan Melbourne with a sit-down cafeteria and children's swimming classes. We classified items by government nutrient profiling guidelines; 'green' (best choice), 'amber' (choose carefully) or 'red' (limit).

**Results:** A total of 2,326 surveys were conducted (response rate 63%). Thirty-five per cent of surveyed patrons consumed food or beverages while at the centre; 54% of patrons purchased from the café and 61% brought items to the centre. More than half the food consumed from the café was 'red', increasing to 92% for children. One in five children visiting the centre consumed a 'red' item bought from the centre café.

**Conclusions:** The nutritional quality of food and beverages consumed at recreation centres was generally poor, with the on-site cafés providing the majority of discretionary items consumed.

**Implications for public health:** Community aquatic and recreation centres provide an opportunity to promote healthy eating by increasing the provision of healthy options and limiting discretionary food and drink items.

**Key words:** nutrition, policy, aquatic and recreation centre, sport, child

Exiting patrons were surveyed to ascertain food and beverage purchasing and consumption patterns. Surveys were conducted over 20 visits (between three and seven visits per centre). Visits were on weekdays, during May and June 2014 (winter) and January and February 2015 (summer). Two researchers collected data using the QuickTapSurvey application on electronic tablets. Every third adult patron (over 17 years) exiting the centre was approached. A 12-item questionnaire was developed asking what food and beverages had been

consumed by patrons while attending the centres, and whether these were purchased at the centre or brought from home. Survey respondents were additionally asked to report on their activities at the centre and general demographics (e.g. age, residential postcode). Survey respondents in a group were asked to report on food consumption for accompanying group members. Responses were often given after consultation among the group members. Observable demographic information on refusals was

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collected (gender, age range and the number of children with an adult).

Survey data was exported into Stata for analysis. Food and beverages were categorised into 'green' (best choice), 'amber' (choose carefully) or 'red' (limit) using a state-wide government nutrient guide<sup>6</sup> by an Accredited Practising Dietitian. Coffees were assumed to contain skim milk in order to conduct conservative primary analyses. For items whose nutrition content or portion size was unclear, it was attributed the healthier rating of different possible compositions, with assumptions and an alternative unhealthier rating noted. In sensitivity analyses, alternative ratings were used; however this had little impact on overall ratings and is not reported here. Items were classified after data collection into eleven categories based on the most commonly reported products; coffee, other hot drinks, cold drinks, fruit and vegetables, savoury snacks, cold meals, hot meals, confectionary, frozen confectionary, sweet baked goods, and other. This study was approved by the Ethics Committee at The Alfred (Melbourne, Victoria, Australia).

## Results

Researchers conducted 2,326 surveys, collecting food and beverage consumption on 1,117 children and 2,433 adults. The response rate was 63%, ranging from 67% to 56% across centres. Patrons without accompanying children were more likely to agree, as were men, and those aged over 35 (taking into account the presence of a child). Respondents were 65% female, with age

reported as follows: 18–24 (8%), 25–34 (13%), 35–44 (26%), 45–54 (17%), 55–64 (14%), and 65+ (23%).

Thirty-five per cent of respondents consumed food or beverages at the centre, of which 54% were obtained from the centre café, and 61% brought from outside the centre. The most commonly consumed items from the on-site café were coffee (29% of items purchased at the centre), hot meals (20%), sweet baked goods (10%), confectionary (10%) and frozen confectionary (9%). Confectionary (12%) and sweet baked goods (12%) were more popular in winter, and frozen confectionary (14%) and hot meals (25%) were more popular during summer. The most commonly consumed items brought from home were fruit and vegetables (35% of items brought from home), savoury snacks (27%) and sweet baked goods (10%).

Around 17% of visitors consumed 'red' items at the centre, with 64% of patrons buying these items at the centre, and 43% bringing them from home. 'Amber' foods or beverages were consumed by 10% of visitors, with 12% patrons buying at the centre, and 89% bringing these items from home. Twenty-three per cent of visitors consumed 'green' items at the centre, with 43% buying these items at the centre, and 63% bringing 'green' items from home.

More than one in five surveyed children consumed at least one 'red' item from the centre café. In contrast, 15% of children consumed 'red' items brought from home. 'Green' items brought from home were consumed by 27% of children attending the

centres, while only 3% of children consumed a 'green' item from the centre café.

Of all food and beverage items consumed from the café, 55% were 'red'. Among children who consumed items from the café, 92% consumed at least one 'red' item (Figure 1), and 82% consumed 'red' items only.

There did not appear to be differences in consumption patterns between different centres.

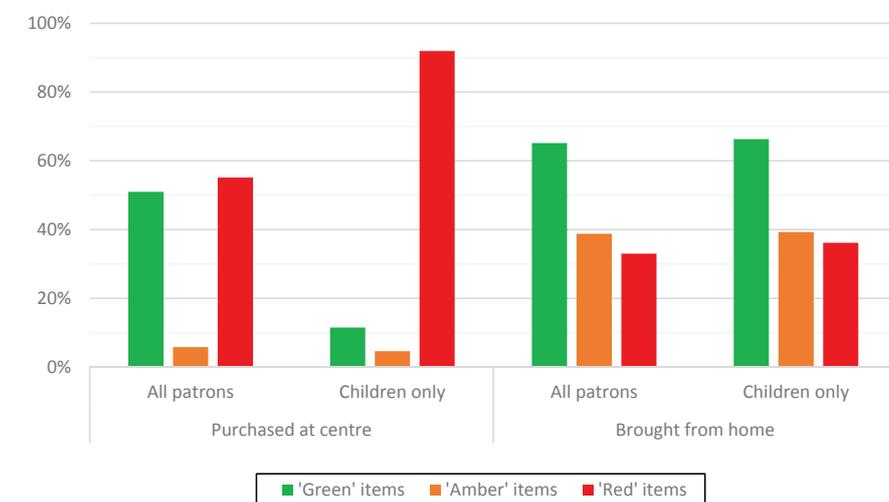
## Discussion

In this study identifying the nutritional quality of food and beverages consumed in metropolitan aquatic and recreation centres, we found that items bought from the on-site centre cafés are the dominant source of 'red' items consumed at the centres. This was particularly the case for children, with around one in five children attending the centres consuming at least one 'red' food or beverage from the centre café and of all children consuming items from the centre, 92% chose at least one 'red' item. With 57,000 children's swimming lessons being offered at this organisation's centres each week, improving the nutritional quality of food and beverages available for purchase has the potential to reduce a large number of children's exposure to, and consumption of, unhealthy options within this setting. Australian children are currently exceeding recommendation for percentage of daily energy from discretionary items, with current intake around 35%.<sup>3</sup> This study shows that sports and recreation centres potentially contribute to this excess intake.

Reducing the consumption of 'red' items at aquatic and recreation centres is likely to reduce overall consumption of these products. In a Canadian outdoor community pool, an increase in the proportion of healthy foods available led to an increase in sales of these items, reinforcing our understanding that accessibility of these products contributes to their intake.<sup>7</sup> Community aquatic and recreation centres may be an opportunistic setting to implement policies to decrease the availability of 'red' items to influence consumption patterns.

The World Health Organization has highlighted targeting the availability of healthy food choices as an important strategy to combat obesity.<sup>8</sup> The recent Lancet Obesity Series similarly recommended to create environments to support the formation of children's healthy food preferences. One such

**Figure 1: Proportion of aquatic and recreation centre patrons consuming food and beverages at the centre, according to source and health rating of the food consumed. Food and beverages are categorized as 'green' (best choice), 'amber' (choose carefully) or 'red' (limit).**



measure is restricting unhealthy food retail in environments where children gather,<sup>9</sup> such as schools, preschool and places of recreation. A recent Canadian study evaluating healthy options in vending machines found that recreation centres implementing nutrition guidelines had fewer of the 'least healthy' foods compared to centres with no guidelines.<sup>10</sup>

A limitation of our study was the small number of centres surveyed. Although the precise results are not representative of the broader population attending these centres, it is likely that the overall consumption patterns are similar across all aquatic and recreation centres. A strength of our methodology is that data includes surveys conducted in winter and summer, limiting any seasonal bias in consumption behaviours. Our surveys also had a moderate response rate, and were conducted immediately on exit of the centres, limiting recall bias.

In line with international and Victorian state recommendations,<sup>5,8</sup> the aquatic and recreation services provider assessed here has recently implemented a food and beverage policy to improve the availability and promote consumption of healthy items, and to reduce the availability of less healthy choices. The current study demonstrates the potential impact of such a policy for public health nutrition. Future research will seek to evaluate the impacts of such policy implementation on the consumption of discretionary food and beverages and any shifts to consumption of healthier options.

## Conclusions

This survey of metropolitan Melbourne aquatic and recreation centres demonstrates the role they play in children and families' consumption of discretionary foods. The introduction of healthy food and beverage policies that limit the availability of discretionary foods has the potential to positively impact consumption of these food and beverages.

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