The comparative cost of food and beverages at remote Indigenous communities, Northern Territory, Australia

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ndigenous people living in remote communities experience the poorest health and economic outcomes of any population group in Australia.^{1,2} Improving health and education outcomes are two government priorities aimed at addressing this inequality.^{3,4} Poor quality diet contributes importantly to the burden of disease¹ and must be addressed if health and education targets are to be met.3,4 Population-level food consumption in remote communities is characterised by low consumption of fruit and vegetables, high consumption of sugar (particularly sugar-sweetened carbonated beverages) and refined starchy foods (particularly fortified white bread).5 Consumer food choice is complex but income and the price of food are recognised as key factors influencing choice,6-8 with a likely greater impact among low-income groups.9

Data on the cost of food and factors affecting cost are important to inform social and health policies. There is no national approach to monitoring the cost of food outside capital cities and some regional centres. ¹⁰ A food price survey of the two major supermarket chains across Australia reported lower prices in South Australia (SA), the eastern mainland states and the Australian Capital Territory, with the highest prices (>4% higher than the national average) reported in the Northern Territory (NT). ¹¹ Greater variation was reported for fresh products such as fruit and vegetables than for packaged groceries

Abstract

Objective: To determine the average price difference between foods and beverages in remote Indigenous community stores and capital city supermarkets and explore differences across products.

Methods: A cross-sectional survey compared prices derived from point-of-sale data in 20 remote Northern Territory stores with supermarkets in capital cities of the Northern Territory and South Australia for groceries commonly purchased in remote stores. Average price differences for products, supply categories and food groups were examined.

Results: The 443 products examined represented 63% of food and beverage expenditure in remote stores. Remote products were, on average, 60% and 68% more expensive than advertised prices for Darwin and Adelaide supermarkets, respectively. The average price difference for fresh products was half that of packaged groceries for Darwin supermarkets and more than 50% for food groups that contributed most to purchasing.

Conclusions: Strategies employed by manufacturers and supermarkets, such as promotional pricing, and supermarkets' generic products lead to lower prices. These opportunities are not equally available to remote customers and are a major driver of price disparity.

Implications: Food affordability for already disadvantaged residents of remote communities could be improved by policies targeted at manufacturers, wholesalers and/or major supermarket chains.

Key words: food cost, remote Indigenous, public policy

such as processed cereals, a likely result of the higher market share of packaged groceries compared to fresh produce held by the major supermarket chains.¹¹ The rise in private label or generic products was noted, though impact on food cost was not reported.¹¹

The cost of food has been reported through the Market Basket Survey to be 49% higher in remote and very remote areas compared to the capital city in the NT¹² and through the Healthy Food Access Basket to be 31% higher in very remote areas more than 2,000 km from the capital city in Queensland.¹³ Substitution of branded products with generic products was reported to reduce the price of the basket of food in Queensland by 24% in major cities compared to only 9% in very remote areas.¹³ Information on the factors driving these price differences is limited by the commercial-in-confidence

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Submitted: August 2014; Revision requested: November 2014; Accepted: January 2015

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The authors have stated the following conflict of interest: Prof. Kerin O'Dea is a Non-Executive Director on the Board of Outback Stores

Aust NZ J Public Health. 2016; 40 (Suppl. 1) S21-S26; doi: 10.1111/1753-6405.12370

nature of the data. There is, however, much commentary on the factors that increase the cost of food in remote locations, including small community size, the cost of transport and store management practices – but with little supporting empirical evidence.^{14,15}

The NT and Queensland surveys are based on a basket of foods that meet the nutrient needs of a hypothetical family. 12,13 These types of surveys provide valuable ongoing evidence to inform policy and advocacy initiatives both in terms of relative poverty (i.e. price difference in remote communities compared to urban centres) and absolute poverty (i.e. proportion of income required to purchase foods in remote communities). One limitation, however, is that they are based on a hypothetical basket of foods rather than foods that are actually purchased. 16

This study aimed to: i) examine the price difference of commonly purchased food and beverages in remote community stores in the NT to capital city supermarkets; and ii) explore the disparity across supply categories (fresh vs. packaged) and food groups. This analysis of commonly purchased food and beverages, rather than hypothetical foods, provides evidence of the true price disparity experienced by remote customers and the drivers of the price differentials.

Methods

A cross-sectional survey compared the prices of food in remote communities to that of supermarkets in the NT and SA.

Sampling

Data were collected from a convenience sample of 20 remote stores¹⁷ in the NT, many accessible by non-surfaced (graded) roads or by sea and hundreds of kilometres from urban centres with supermarkets. A list of grocery products, such as Granny Smith apples 1 kg and Sanitarium Weet-Bix 750 g, (the product list) was compiled from the store point-of-sale reports for the 30 December 2012 to 31 March 2013 period. Retail prices were collected from the 20 stores for this product list for the week ending 2 June 2013. Supermarket retail prices were collected for the product list from two major Australian supermarket chains in each of the two capital cities on 31 May 2013. The design included two supermarkets to maximise the products included in the study and to provide a fair estimate of the choice available to customers in Darwin and Adelaide. The

Darwin suburb selected, Casuarina, was the only postcode area¹⁸ within 20 km of the Darwin central business district where the two major supermarkets chains were colocated. The postcodes¹⁸ for all supermarkets within a 20 km radius of Adelaide central business district were sourced. The Index of Relative Socio-economic Advantage and Disadvantage (IRSAD) was sourced for all postcodes where the two major supermarkets co-existed, and the suburb with the IRSAD closest to the selected Darwin suburb (1037) – Prospect (1036) – was selected,¹⁹ ensuring the suburbs were similar in terms of socioeconomic advantage and disadvantage.

Data collection

Two retail associations that operated in the 20 remote stores (one in eight, the other in 12 stores) provided electronic point-of-sale data for each store, including product description, unit volume, quantity sold and value of sales. Data were imported into a purpose-built Access 2003 database (Remote Indigenous Stores and Takeaways (RIST) project)20 for each association. Weights and volumes were determined for food and beverage products and RIST food groups allocated.²⁰ Products were coded by a Food Standards Australia New Zealand (FSANZ) coder according to FSANZ Food and Nutrient Survey databases.21,22 A product list was compiled for each store association that included the top 80% of grocery sales for the stores combined and where an exact or similar product was supplied in the participating supermarkets. The product lists were then joined and duplicate products deleted, resulting in a list of 453 products.

Each grocery product was categorised according to supply, either as fresh products – defined as 'fresh fruit and vegetables and fresh or frozen meat sourced from local suppliers', or packaged groceries – defined as 'predominantly processed foods sourced from a wholesaler, and dairy and bread products sourced from nationally owned companies'.

The two association databases were systematically examined for unique identifiers of fruit, vegetable and meat products (which do not carry barcodes like grocery products do) on the list, to ensure all relevant prices were captured. An average remote retail price was determined for each product based on the product's average price (dollar sales divided by quantity sold) in each store, and then an average unit price (\$/kilogram). Total

food and beverage expenditure for the 20 remote stores was determined.

Supermarket retail prices for the product list were collected via online websites^{23,24} from a registered address in both cities. The use of online pricing was validated through assessment of the online and in-store retail prices of 50 food and beverage products for two NT supermarkets at two time points in 2013. The prices collected were both the advertised (the prices customers pay) and non-discounted prices (according to the guidelines for food basket surveys [NT and Queensland]). The advertised price of generic products that were comparable to branded products was collected where available. Where the brand and size of the product were not available, the guidelines for data collection for the Market Basket Survey conducted by the NT Government 25 were adhered to. Additional protocols were required: i) where there was no appropriate substitute (e.g. avocado), no substitution was made; where there was an appropriate substitute (e.g. washed for brushed potatoes), substitution was made; ii) where a flavour of a brand was not available, another flavour of the same brand and product size was substituted (e.g. chicken for cheese-flavoured crisps); iii) where generic products were substituted for branded products, only like products were substituted (e.g. tea bags were substituted for tea bags, though not for tea bag rounds); and iv) generic products were only substituted where the unit price was less than the advertised price for branded products. The brand, product description and unit volumes of all products were recorded. In a few instances, where the product was missing in both supermarkets or in the remote stores (due to the data collection period being different to the period of developing the product list), the product was removed from the analysis. Standard weights previously collected from wholesalers supplying to remote stores and directly from remote stores for fresh fruit and vegetables were used where necessary. An average supermarket retail price was determined for each product based on the two supermarket prices.

Analysis

For each product the price difference was defined as the 'mean price of the product in remote stores compared to the mean price of that product in supermarkets (expressed as a percentage difference)' for: i) Darwin advertised prices, ii) Darwin non-discounted

prices, iii) Darwin with generic product substitution and iv) Adelaide advertised prices; across: a) the entire product list, b) supply categories, c) RIST food groups and d) AUSNUT food groups. The median is reported as the average price difference.

Ethics

This study was conducted with the approval of the Central Australian Human Research Ethics Committee, the Human Research Ethics Committee at Charles Darwin University and the Human Research Ethics Committee of the Northern Territory Department of Health and Menzies School of Health Research. Approval for the use of remote store sales was granted by the Chief Investigators of the SHOP@RIC study, Arnhem Land Aboriginal Progress Aboriginal Corporation and Outback Stores.

Results

Online supermarket prices

The validation study demonstrated that variation between online and in-store prices occurred for 66% of the products in Darwin supermarkets. The variation was commonly small with online prices 5–10% higher than in-store prices, although it was occasionally large (either less or more expensive) for some fresh fruit and vegetables and branded grocery products.

Price data

Remote store and supermarket price data were available for 443 groceries on the product list (Table 1). On average, a product was present in 10 of the 20 stores. When variation across remote stores was

considered, on average the maximum price for a product was 21% (Interquartile Range [IQR] 13%, 31%) higher than the minimum price. These products represented 63% of the total expenditure on food and beverages in remote stores (Table 1). In relation to Darwin supermarket prices, 36% of items were discounted in at least one of the supermarkets. Where generic products were substituted for branded products, 51% of the products on the product list were substituted in at least one of the supermarkets.

Price difference of total product list

Products were almost always more expensive in remote stores than Darwin supermarkets, with only 5% of products cheaper in remote stores (Figure 1).

| | | Remote expenditure | | Per cent increase in cost (remote stores compared to supermarkets) | | | |
|--|------------------------|--------------------|---|--|---------------------------------|-------------------------------|------------------------------|
| Food categories / groups | | n | % total food and beverage dollars | Darwin advertised price | Darwin non- discounted price | Darwin generic products price | Adelaide advertised price |
| | | | | Median (IQR) | | | |
| Total product list | | 443 | 63 | 60 (33, 101) | 47 (30, 81) | 106 (53, 213) | 68 (39, 105) |
| Food categories | | | | | | | |
| Supply | Fresh products | 65 | 11 | 36 (14, 73) | 35 (5, 73) | 36 (14, 73) | 46 (17, 74) |
| | Packaged groceries | 378 | 52 | 67 (38, 107) | 47 (32, 86) | 136 (63, 228) | 74 (42, 109) |
| Select RIST ^a food groups | | | | | | | |
| Fruit | Fresh | 14 | 2 | 46 | 46 | 46 | 54 |
| Vegetables | Fresh | 12 | 1 | 4 | 4 | 4 | 11 |
| | Frozen | 3 | <1 | 72 | 51 | 73 | 75 |
| | Not fresh ^b | 7 | <1 | 28 | 28 | 74 | 31 |
| Liquid drinks | All other | 28 | 3 | 75 | 72 | 99 | 82 |
| | Cordial | 15 | 1 | 60 | 33 | 70 | 63 |
| | Diet drinks | 14 | 2 | 110 | 87 | 395 | 117 |
| | Soft drinks | 25 | 9 | 131 | 130 | 397 | 138 |
| | Water | 8 | <1 | -9 | -9 | 45 | -5 |
| AUSNUT ^c 2007 food grou | ps | | | | | | |
| Beverages | | 100 | 17 | 76 | 60 | 180 | 82 |
| Cereals & cereal products, Fast Foods and Takeaway Foods | | 88 | 14 | 59 | 41 | 143 | 66 |
| Eggs & egg products | | 2 | <1 | 19 | 19 | 24 | 12 |
| Fats & oils | | 13 | 1 | 39 | 39 | 77 | 43 |
| Fish & fish products | | 5 | <1 | 35 | 35 | 80 | 41 |
| Fruit | | 14 | 2 | 46 | 46 | 46 | 54 |
| Infant formulae & foods | | 2 | <1 | 51 | 38 | 51 | 60 |
| Meat, meat products, poultry & game | | 70 | 13 | 55 | 47 | 57 | 56 |
| Milk & milk products | | 33 | 6 | 52 | 45 | 140 | 69 |
| Sauces, pickles, soups, snacks | | 34 | 3 | 101 | 85 | 193 | 108 |
| Seeds & nuts | | 3 | <1 | 37 | 37 | 233 | 45 |
| Sugar preserves & confectionery | | 52 | 6 | 86 | 49 | 102 | 92 |
| Vegetable & vegetable dishes | | 25 | 2 | 21 | 21 | 27 | 28 |
| Additives and cooking ingredients | | 2 | <1 | 11 | 11 | 11 | 17 |

^{*}n=441 for the product list in Adelaide supermarkets.

a: Remote Indigenous Stores and Takeaway.²⁰

b: includes canned and dried vegetables.

c: Australian Food and Nutrient Database.²¹

On average, products were 60% (Table 1) more expensive in remote stores compared to Darwin supermarket advertised prices, with a wide price differential across products (Figure 1). Remote store products were, on average, 68% more expensive than Adelaide supermarket advertised prices (Table 1). Remote stores were on average 47% more expensive than Darwin supermarket nondiscounted prices and on average 106% more expensive when generic products were substituted for branded products in Darwin supermarkets (Table 1). When the actual weight/volume purchased of the 443 products was factored in, the price was 55% higher in remote stores compared with the potential cost of the same weight/volume of these products in Darwin supermarkets.

Price difference of supply categories

Fifteen per cent of products were categorised as fresh products and 85% as packaged groceries. Packaged grocery products represented half of total food and beverage expenditure in remote stores. The average price difference of fresh products in remote stores compared to the Darwin supermarket advertised prices was about half that of packaged grocery products and markedly reduced when compared to Darwin supermarket non-discounted prices (Table 1).

Price difference of food groups

When compared with Darwin supermarket advertised prices, fresh fruit and vegetables in remote stores exhibited a lower average price difference than the total product list. Fresh fruit had a markedly higher average price difference than fresh vegetables. Canned, dried and frozen vegetables exhibited a greater difference than fresh vegetables. Bottled water was cheaper in remote stores compared to Darwin supermarket advertised prices. Sugar-sweetened carbonated beverages exhibited a higher average price difference than artificially flavoured beverages in remote stores compared to Darwin supermarket advertised prices. More than half the total food and beverage expenditure in remote stores was attributed to: beverages; cereals and cereal products; meat, meat products and poultry; milk and milk products; and sugar, preserves and confectionery. The average price difference was more than 50% for each of these food groups (Table 1).

Conclusion

The findings of this study demonstrate a 60% price difference, on average, in a food or beverage product between remote community stores in the NT and Darwin supermarkets. Framed in this way, the disparity is greater than that most recently

reported by the NT Government-based on a hypothetical basket of foods (49%), ¹² although less so (55%) when the actual weight/volume of products sold is factored in. The five food groups (beverages, cereals, meat, milk and sugar) that contributed 56% to total food and beverage expenditure exhibited an average price difference of more than 50% when compared to Darwin supermarkets. These data suggest that customers living in remote communities experience great disadvantage in terms of food affordability.

Evidence suggests that food affordability is worsening in remote communities, with an increasing gap in prices between remote community stores and the Darwin supermarket over the past four years.¹²

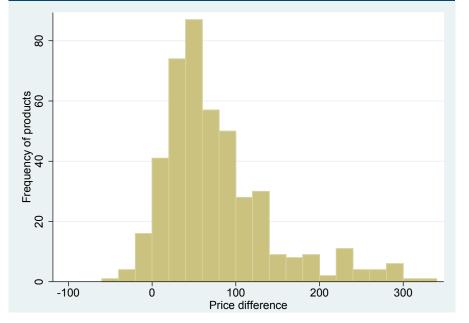
The findings of this study are consistent with national evidence demonstrating that the price disparity is even greater when compared to supermarkets outside the NT.¹¹

The average price difference is closer to that reported by the NT Government when Darwin supermarket non-discounted prices (47%) are considered. This is a relevant comparison (and is in line with the NT Government survey that collects data on non-discounted, not advertised, prices) in terms of the capacity of remote stores to offer promotional price discounts compared to major supermarket chains. However, the advertised prices represent the cost of products to supermarket customers at the time of the study.

One of the two key ways in which discounts are offered to supermarket customers is through promotional pricing that is funded by manufacturers. ¹¹ Therefore, the business conducted between major supermarkets and manufacturers is likely to lead to greater opportunity for lower prices for supermarket customers, an opportunity not equally available to remote store customers.

Where generic products were substituted for branded products in supermarkets, the price disparity markedly increased. As noted by the Australian Competition and Consumer Commission (ACCC), there is a rise in the availability of private label or generic products through supermarkets, 11 which are generally cheaper than branded products. A recent study suggests that cost savings of 44% can be achieved across food groups where generic products are substituted for branded products; it suggests that the promotion of generic products,

Figure 1: Distribution of the price difference of 443 products (as the mean price of food and beverage products in remote stores compared to the mean price of that product for Darwin advertised supermarket prices, [expressed as a percentage difference]).



across the core food groups, could be an effective strategy to assist customers on low incomes to consume a diet in line with recommendations for good health. ²⁶ Generic products are not currently available through wholesalers supplying remote community stores in the NT in the same range or at the same level of savings as in supermarkets.

The majority of products included in this study were packaged grocery products, for which the price difference was double that of fresh products. The current policy of the two store associations included in this study aims to support healthy food purchasing by minimising prices on fresh fruit and vegetables specifically, and provides one explanation for this difference.^{27,28} However, fresh fruit and vegetables contribute minimally to expenditure in the fresh product category. The difference in packaged groceries and fresh products is in line with national evidence¹¹ and suggests that remote stores purchasing from the major national wholesaler that distributes to independent stores²⁹ are unable to compete with the major supermarket chains on packaged grocery products. This is significant given that packaged grocery products in this study contributed to half the total food and beverage expenditure in remote stores. When non-discounted supermarket prices were considered, the fresh product price difference remained relatively stable though declined for packaged grocery products, demonstrating that most of the savings for supermarket advertised prices can be attributed to packaged grocery products.

Fruit, vegetables and beverages are key target categories for improving the nutritional quality of diets in remote communities.5 Fresh fruit and especially fresh vegetables exhibited a relatively small average price difference. Bottled water is one of the few products that is cheaper in remote stores than in supermarkets, while artificially sweetened beverages in remote stores exhibited a smaller price difference than sugar-sweetened carbonated beverages. These findings reflect the long-term advocacy work of public health researchers, policy makers and service providers and the current pricing policies of the two relatively large retail associations in the study that aim to support healthy food purchasing.^{27,28} The data reported here are likely to represent a best case scenario in terms of price differences between remote stores and supermarkets for fruit, vegetables and beverages, and provide

empirical support for such pricing policies.

This study has some limitations. First, the sample was limited to remote community stores in the NT, where factors affecting the cost of food may be different from other remote areas in Australia. It was also limited to stores owned or managed by two associations; hence, prices may be reduced by the buying power and pricing policies of these relatively large organisations, thereby affecting the generalisability of the findings to all remote community stores. The disparity could be even greater for stores with reduced buying power and/or without pricing policies directed at reducing costs of targeted healthy foods and beverages. Second, the use of online supermarket prices is likely to moderately underestimate the price disparity between remote store and in-store supermarket purchases.

A key strength of this study is that this is the first time such price and sales data have been made available to conduct this type of analysis. We thank the store associations for the transparency and cooperation. These data, based on the foods and beverages on which remote customers spend most of their money, provide a new way to examine the price differences between the remote store and urban supermarket food supply, which has been identified as a gap in the literature. ¹⁶

The relative disparity experienced by customers buying food and beverages in remote communities, as reported by earlier food basket surveys, is confirmed by this study. Although based on price differences and not affordability, we suggest that the cost of food contributes substantially to the absolute poverty experienced by people living in remote communities. Addressing the challenging Close the Gap targets for Indigenous Australians living in remote communities, specifically those related to health and education outcomes, would be helped by access to cheaper healthy foods.^{3,4}

This study categorised food differently to previous surveys and demonstrates that grocery products, the products contributing most to purchasing expenditure, are where the greatest price disparity is observed. The work of the store associations involved in the study to address target food groups for improved health is clear. The findings suggest, however, that remote stores are not able to access the same market power as urban supermarkets through promotional pricing and supply of generic products to bring lower prices to customers. The data

support findings in the literature that the relationship between manufacturers and large supermarket chains has a marked impact on the price of food¹¹ and thereby on the disparity in prices between remote stores and urban supermarkets. Therefore, the wholesale cost of food from the manufacturer or supplier and the contribution to the relative disparity by the growth of the generic product market in supermarkets appear to be two key factors explaining higher food costs in remote communities, in addition to other previously identified factors such as small community size, the high cost of transport and store management practices.^{14,15}

Implications

To our knowledge, this is the first attempt to systematically examine the price differences of foods and beverages between remote stores and urban supermarkets for products commonly purchased in remote stores.

More work is required to better understand the key factors contributing to the high cost of food in remote communities in order to inform effective policy development. Expanding price surveys to include additional remote and regional stores purchasing from the major national wholesaler that distributes to independent stores would provide further insights.

This study suggests that options to address food affordability include:

- generating savings at the manufacturer and/or wholesaler level that are passed onto customers
- exploring retail partnerships that provide remote customers with access to similar benefits as supermarket customers
- exploring opportunities to increase the supply and promotion of low cost, quality, nutritious products in remote stores.

Given the concern of governments about the poverty and poor health of remote living Indigenous people, any strategy to reduce the price of basic healthy foods in remote stores should be a high policy priority.

Acknowledgements

We are grateful to Anthony Gunther and Adam Barnes who uploaded and managed the store sales data and Robyn Liddle who assisted with database management; and Alastair King and Carrie Turner who provided comment on the manuscript.

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