Cost, availability and nutritional composition comparison between gluten free and gluten containing food staples provided by food outlets and internet food delivery services between two areas of London with differing UK deprivation indices

Hanci, O[1] and Jeanes, YM[2]

[1]Consultant Paediatrician, Royal Surrey County Hospital, Guildford, [2]Dietitian, Principal Lecturer in Clinical Nutrition, University of Roehampton, London

Introduction

Coeliac disease affects approximately 1% of the UK population, it is managed by adhering to a strict gluten free (GF) diet. However, barriers to adherence with this diet include amplified cost and limited availability of gluten free products, especially in light of the diminishing availability of GF foods on prescription.

Study Aim

To compare the cost, availability and nutritional composition of manufactured GF products with their gluten-containing (GC) counterparts, provided by food retailers (physical stores and online) between two areas of London with distinctly contrasting deprivation indices.

Methods

- A cross-sectional survey of 26 food categories was conducted in May 2017, data was collected on the cost, availability and nutritional composition of GF and GC foods. The allocated UK Deprivation Index (based on a multifactorial scale of poverty, ranking all postcodes in England with 1 being the most deprived) for Richmond CCG is 24730, making it one of the best ranked in London, whereas Enfield CCG is ranked 12795, one of the worst in rankings within the M25.
- Fifty physical stores were surveyed (10 in each category); premium, regular and budget supermarkets, convenience stores and health food stores. Online retailers of manufactured GF products which offered a delivery service to the areas under study were also included.
- Food categories included traditionally wheat based (listed within table 2) and eleven everyday foods usually containing gluten (for example sauces, sausages, battered fish, ready meals).
- The mean value from the cheapest and most expensive GF and GC food for each category were compared.

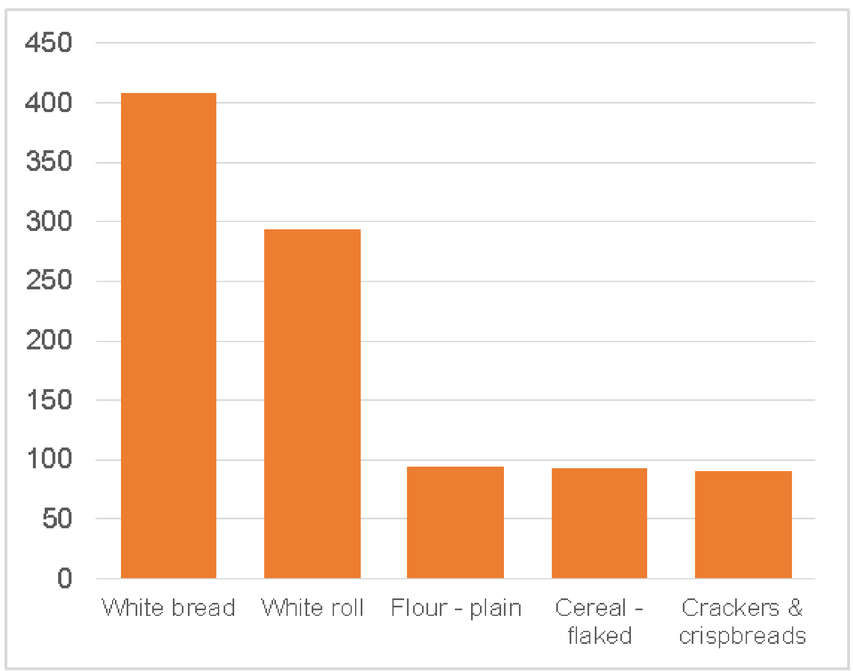
Results

No convenience stores and only one budget supermarket, out of ten surveyed, stocked any traditionally wheat based manufactured GF items (Table 1). The availability of GF foods across the two regions were similar. Premium and regular supermarkets stocked significantly more GF breads than Health food stores (Table 2).

The online GF food suppliers superseded all of the physical stores in the number of manufactured GF items available (Table 1). However, over half of the GF items were more expensive in online stores than in regular supermarkets.

Seventy four percent of GF foods surveyed were more expensive than their GC counterparts; GF white bread had the greatest cost excess of 408% compared to GC white bread (Figure 1).

Figure 1. Percentage greater cost of GF foods compared with GC foods (p/100g)



Sixty percent of surveyed GF foods contained higher energy, 73% contained more fat and 60% had more saturated fat compared with published values for GC foods (all per 100g).

Table 1. Percentage of manufactured GF products available according to store type (values expressed as median (IQR)).

Premium Supermarkets	Regular Supermarkets	Budget Supermarkets	Convenience/ corner stores	Health Food Stores	Online Food Retailers
58 (54-69)	73 (71-81)	0 (0)	0 (0)	39 (38-48)	85 (75-93)

Table 2. Number of different brands available of each GF surveyed item in stores (5 in each category) within the Enfield CCG geographical area (values expressed as median (IQR)).

Gluten Free product	Premium Supermarkets	Regular Supermarkets	Budget Supermarkets	Convenience/ corner stores	Health Food Stores	p-value*
White bread	4 (3-4)[c,d,e]	4 (3-4)[c,d, e]	0	0	1 (0-1)	<0.001
Brown bread	7 (6.5-8)[b,c,d,e]	4 (3-5)[c,d,e]	0	0	1 (0-1)	<0.001
White rolls	1 (1)[c,d]	1 (1-1.5)[c,d]	0	0	1 (0-1)	0.001
Brown rolls	1 (1)[c,d]	1 (1)[c,d]	0	0	1 (0-1)	0.001
Cereal bars	5 (0-5.5)	8 (5.5-14)[c,d]	0	0	8 (5.5-8.5)[c,d]	0.001
Cereal – flaked	3 (1-3)[c,d]	4 (4-6.5)[a,c,d]	0	0	1 (1-4.5)[c,d]	<0.001
Cereal – other	10 (1-12.5)[c,d]	8 (6.5-11.5)[c,d]	0	0	8 (7-12)[c,d]	0.001
Pasta	4 (2.5-4)[c,d]	5 (3.5-6)[c,d]	0	0	4 (3.5-9)[c,d]	0.001
Flour – plain	1 (1)[c,d]	2 (1.5-3)[a,c,d]	0	0	0 (0-5.5)	0.004
Flour – other	2 (1-2)[c,d]	3 (0.5-5)[c,d]	0	0	0 (0-11.5)	0.015
Crackers & crispbreads	9 (6-12)[c,d]	12 (7-15.5)[c,d]	0	0	10 (7.5-12)[c,d]	0.001
Pizza bases	1 (0-1)	0 (0-0.5)	0	0	0 (0)	0.046
Biscuits	9 (3.5-12.5)[c,d]	17 (13.5-26)[a,c,d,e]	0	0	9 (3.5-10)[c,d]	<0.001
Cake – sponge	0 (0-3.5)	3 (2-5)[c,d,e]	0	0	0 (0-1.5)	0.007
Sandwiches and wraps	0 (0)	0 (0)	0	0	0 (0)	NS

*** Kruskal-Wallis H test [a] Significantly more than premium supermarkets [b] Significantly more than regular supermarkets [c] Significantly more than budget supermarkets [d] Significantly more than Convenience stores [e] Significantly more than health food stores (all p<0.05, following Mann-Whitney tests)**

Conclusion

Availability of manufactured GF products remains poor, especially in convenience stores and budget supermarkets, serving those from poor socio-economic cohorts, the elderly and physically disabled. The stores where availability has improved from previous published findings are associated with the greatest additional cost.

The inferior comparative nutritional quality of manufactured GF products emphasizes the need for those on a medically indicated GF diet to be advised and monitored by adequately trained health professionals, such as dietitians.

Acknowledgements:

Sponsored dissertation award from Coeliac UK, Sponsorship from Abbott for registration and travel costs