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Research report

WHOLEheart study participant acceptance of wholegrain foods ☆

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ABSTRACT

This qualitative study explored the concept of acceptance of wholegrain foods in an adult population in the UK. Data was generated via focus groups with volunteers from a randomised controlled wholegrain based dietary intervention study (the WHOLEheart study). WHOLEheart volunteers, who did not habitually eat wholegrain foods, were randomised to one of three experimental regimes: (1) incorporating 60 g/day whole grains into the diet for 16 weeks; (2) incorporating 60 g/day whole grains into the diet for 8 weeks, doubling to 120 g/day for the following 8 weeks; (3) a control group. Focus groups to examine factors relating to whole grain acceptability were held one month post-intervention. For participants incorporating whole grains into their diet, acceptance was dependent upon: (a) 'trial acceptance', relating to the taste, preparation and perceived impact of the wholegrain foods on wellbeing, and (b) 'dietary acceptance' which involved the compatibility and substitutability of whole grains with existing ingredients and meal patterns. Barriers to sustained intake included family taste preferences, cooking skills, price and availability of wholegrain foods. Although LDL lowering benefits of eating whole grains provided the impetus for the WHOLEheart study, participants' self-reported benefits of eating wholegrain foods included perceived naturalness, high fibre content, superior taste, improved satiety and increased energy levels provided a stronger rationale for eating whole grains.

Introduction

The health benefits of eating wholegrain foods have generated an interest in understanding consumers' attitudes towards and acceptance of whole grains, with a view to informing both the commercial development of this new product category and health promotion campaigns to encourage increased wholegrain intake.

Whole grains are classified as the entire edible portion of seeds and kernels and wholegrain foods are defined as those containing 51% of wholegrain ingredients by weight per reference amount customarily consumed (Seal, 2006). Epidemiological evidence has supported the approval of generic heart health claims (Joint Health Claims Initiative, 2002) and claims associated with a reduced risk of coronary heart disease for wholegrain foods in the US, UK, Denmark and Sweden (Richardson, 2003; Seal, Brownlee, & Jones, 2007). US national dietary guidelines recommend a daily intake of 3 servings of wholegrain foods per day (US Department of Health and Human Services, 2010) and in the UK adults are recommended to eat a variety of wholegrain foods wherever possible (Food Standards Agency, 2005).

Notwithstanding the potential health benefits of eating wholegrain foods, approximately one third of UK adults eat no whole grains on a daily basis and only 5% have an intake equivalent to 3-servings per day (Harnack, Walters, & Jacobs, 2003; Lang, Thane, Bolton-Smith, & Jebb, 2003; Thane, Jones, Stephen, Seal, & Jebb, 2005). Reasons for low levels of whole grain consumption have been hypothesised as: (i) a lack of awareness of wholegrain foods (Smith, Kuznesof, Richardson, & Seal, 2003); (ii) a lack of public understanding of the health benefits of whole grain (Arvola et al., 2007); (iii) a lack of salience in the health image of whole grain (Arvola et al., 2007); (iv) expected or experienced low sensory quality of wholegrain foods (Kantor, Jayachandran, Allshouse, Putnam, & Lin, 2001); (v) limited availability of wholegrain foods (Arvola et al., 2007; Smith et al., 2003); (vi) higher prices of wholegrain foods (Kantor et al., 2001); and (vii) a lack of familiarity with whole grain preparation methods (Kantor et al., 2001). To date US and European consumer-related wholegrain research has examined consumers' awareness (Arvola et al., 2007; Marquart, Pham, Lautenschlager, Croy, & Sobal, 2006), beliefs (Marquart et al., 2006), health related beliefs (Arvola et al., 2007) and perceptions of functional health benefits of whole grains (Dean et al., 2007).

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Table 1
Intervention group treatments and numbers recruited to focus group studies.

	Baseline	Baseline-8 wk	8 wk-16 wk	N completers	N focus group
Control	<1 serving/day WG	<1 serving/day WG	<1 serving/day WG	100	14
Intervention 1	<1 serving/day WG	3 servings/day WG	3 servings/day WG	85	19*
Intervention 2	<1 serving/day WG	3 servings/day WG	6 servings/day WG	81	20*

* Participants from intervention group 1 and intervention group 2 attended pooled focus groups. One serving was equivalent to 20 g of whole grains (i.e. the amount of whole grains found in an average slice of UK bread).

These studies represent an important first stage in understanding how individuals characterise wholegrain foods. However, the elicitation of attitudes and perceptions prior to purchase and consumption fails to address potential factors affecting acceptance in the purchasing, preparation, cooking and eating environments. This study attempted to address this deficit by examining wholegrain acceptance as perceived and experienced by volunteers participating in a randomised, parallel controlled study based on whole grains (the WHOLEheart Study) (Brownlee et al., 2010), where the screening of volunteers for electively low levels of wholegrain intake meant whole grains represented a relatively new ingredient within the participants' diets. The aims of the study were therefore: to explore the factors affecting the acceptance of wholegrain foods within the WHOLEheart volunteer cohort; to identify potential barriers to sustained wholegrain intake, providing insights where appropriate to the reasons for low wholegrain intake identified above; and to reflect upon the interdisciplinary research design for acceptance studies.

Methods

The sample was drawn from a volunteer base of participants ($n = 266$) who had completed their involvement in the WHOLEheart dietary intervention study. WHOLEheart was a randomised controlled study to test the impact of increased consumption of wholegrain foods on cardiovascular disease risk, specifically LDL cholesterol concentrations (see Brownlee et al., 2010). The examination of attitudes and experiences of preparing, cooking and eating wholegrain foods formed part of the research design that was granted ethical approval by the UK National Research Ethics Service. WHOLEheart study volunteers were screened for low habitual intake of whole grains and participants were then randomised into one of three experimental regimes as detailed in Table 1 above.

Intervention subjects were provided with a range of wholegrain foods including wholemeal bread, a variety of wholegrain breakfast cereals, oats, wholewheat pasta and wholegrain snacks, such as oat based cereal bars and whole wheat crisp equivalents, from which they could self-select preferred foods. The wholegrain breakfast cereals, pasta and rice were provided in pre-packaged portion sizes for men and women with labels noting the wholegrain serving equivalents. For example, one pre-packaged portion of brown rice for a man was equivalent to three and a half servings of whole grains.

At one month post-completion of the study, all WHOLEheart participants were invited to attend a focus group to discuss their experiences of the study. The nature of the focus group technique, which is to foster candid, interactive discussions on topics prompted by a moderator in a permissive non-threatening environment (Krueger, 2000) was used for its appropriateness in exploring beliefs, perceptions and experiences (Fern, 2001; Stewart & Shamdasani, 1990). To encourage interactive exchanges between the participants, such as the swapping of anecdotes and personal experiences (Barbour, 2007) WHOLEheart participants were recruited into either a 'control' or 'dietary substitution' focus group according to their volunteer status during the study.

The start dates for volunteer involvement in WHOLEheart were staggered over an 18 month period. When approximately 6–8 participants had completed the study, they were invited to attend a focus group and the discussions progressed with a commitment from at least four volunteers. Thirteen one month follow-up focus groups were conducted with four control groups and nine intervention groups, totalling 53 participants (see Table 2), between March 2006 and July 2007.

The focus groups followed a questioning route outlined in semi-structured discussion guides. Dietary substitution volunteers were asked questions relating to their motivations for volunteering in the study, general experience of the study, experiences of incorporating both three and where appropriate six servings of whole grains into their daily diet and general dietary recommendations (including potential whole grain-consumption recommendations of three servings per day). Discussion topics for control participants mirrored those for intervention subjects by exploring volunteering motivations, wholegrain knowledge, general food behaviours and general dietary recommendations (including potential whole grain-consumption recommendations of three servings per day). Control group participants were also shown examples of foods given to intervention participants to prompt and facilitate discussions on whole grains. The discussions lasted approximately one and a half hours and were audio-recorded and fully transcribed for analysis. The computer-assisted qualitative data analysis software NVivo7 (QSR International Pty, Australia) was used to manage the data set and facilitate the analysis through its coding and retrieval functions (Gibbs, 2002; Lewins & Silver, 2007).

The data analysis used a constant comparative approach (Glaser & Strauss, 1967) to develop key themes. This thematic analysis began with detailed descriptive coding or the affixing of 'labels' to data (or pieces of narrative) which had an 'inherent meaning' (Spiggle, 1994). The analysis then moved to a more analytical level through the comparison of data and codes between: (a) control participants' perceptions of and intervention participants' experiences associated with wholegrain foods; and (b) intervention participants' experiences of eating three and six servings of whole

Table 2
Focus group profiles.

Group Number	Number of participants	Gender		Control	Intervention	
		Male	Female		I1 (3 units)	I2 (6 units)
1	4	2	2	Control		
2	2		2			2
3	3	2	1		1	2
4	5	3	2		3	2
5	4	3	1		2	2
6	4	2	2	Control		
7	3	1	2		3	
8	6	3	3		3	3
9	3	2	1	Control		
10	8	2	6		4	4
11	3	1	2			3
12	3		3	Control		
13	5	1	4		3	2
Total	53	22	31	4	9	