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Overweight consumers' salient beliefs on
omega-3-enriched functional foods in
Australia's Illawarra region

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1 **Overweight consumer salient beliefs on omega-3 enriched functional foods in Australia's**
2 **Illawarra region**

3

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- 1 **Overweight consumer salient beliefs on omega-3 enriched functional foods in Australia's**
- 2 **Illawarra region**
- 3 Research Brief
- 4

1 **ABSTRACT**

2 **Objective:** To determine consumer salient beliefs toward functional foods enriched with omega-3 fatty
3 acids.

4 **Design:** Focus group interviews with adult consumers using the Theory of Planned Behavior (TPB) as
5 a theoretical framework.

6 **Setting:** Community-based residents living in the Illawarra region of New South Wales, Australia.

7 **Participants:** Forty-two overweight participants (29 female; 13 male) aged 30-80y recruited by
8 advertisement and attending one of six focus groups which were recorded and transcribed *verbatim*.

9 **Analysis:** Content analysis was carried out and sub-categories were developed to capture the emerging
10 themes according to the TPB model.

11 **Results:** Most participants were aware of a range of potential benefits of omega-3 fatty acids, but they
12 had reservations about the ability of omega-3 enriched foods to deliver a health benefit. They were
13 concerned about whether these foods were labelled clearly and about the possibility of overdosing.
14 Family and friends were viewed as important in introducing participants to novel foods on the market.
15 Participants regarded dietitians as a credible source and were least trusting of food companies and
16 scientists. Overall, participants reported that cost was a major barrier and they would not necessarily
17 trade taste for health benefits. Adding omega-3 fatty acids was viewed more as a gimmick rather than a
18 real health benefit. **Conclusions and Implications:** The consumer attitudes and purchase intentions
19 identified in this study will be helpful to educators as they plan messages and strategies to guide dietary
20 choices related to products enriched with omega-3 fatty acids.

21 **Keywords:** salient beliefs, functional foods, focus group, qualitative studies, omega-3 fats, health claims

22

INTRODUCTION

1
2 There is a considerable body of evidence showing the beneficial effects of marine based omega-3 fatty
3 acids on human health.¹ Unfortunately a large portion of the population is unable to consume enough of
4 this essential nutrient from fish alone.² Emerging nutrition science and food technology, combined with
5 growing consumer interest in health and wellbeing, has led to the development and marketing of
6 omega-3 enriched foods such as bread, milk and eggs, which are referred to as functional foods. Not
7 only have consumers heard of these and other enriched foods, 50% of US adults believe that the
8 associated claims about their health benefits are true.³ In addition, consumers are demanding more
9 information on how to achieve better health through their diet.⁴ A study in the US found that 95% of the
10 population believed that food possessed the potential to improve health by doing more than just
11 providing nutrients.⁵

12
13 Although the British Nutrition Foundation and American Dietetic Association define functional food as
14 ‘*a food having health promoting benefits and/or disease preventing properties over and above its usual*
15 *nutritional value*’^{6,7}, there is no universally accepted definition. Functional foods seem to fall into a
16 grey area, somewhere between foods and medicines, with the precise boundaries on either side far from
17 clear.⁸ This is more than just a theoretical concern. From the viewpoint of nutrition education, the
18 functional food category does not fit straightforwardly into any of the long-established food
19 educational models and there are concerns relating to consumer acceptability and perception.⁶ With
20 evidence showing that food choice affects dietary quality as measured by intake^{9,10}, it seems
21 appropriate that greater attention be given to the factors that facilitate or constrain the use of functional
22 foods.

23
24 The field of cognitive psychology suggests that the best predictor of human behavior is a person’s
25 conscious decision to perform the behavior. The Theory of Planned Behavior (TPB) provides a model

1 that can help explain consumers' purchase intentions to use functional food products. According to the
2 TPB, a person's behavioral intention is determined by the attitude they hold towards the behavior, the
3 degree of social pressure felt by the person to perform or not perform the behavior, and the degree of
4 control that the person feels they have over performing the behavior.¹¹ These three factors in turn are
5 determined by a number of beliefs and subsequently how each is evaluated. It has been demonstrated
6 that the TPB, or modified versions of it, is applicable in explaining consumers' food choice¹²⁻¹⁴,
7 including supplement use¹⁵ and genetically modified products.¹⁶ However, to date this model has not
8 been applied to understanding consumer behavior regarding the use of functional food products.

9
10 Focus groups can be used to access a diverse range of opinions and viewpoints and determine salient
11 beliefs. A focus group discussion is defined as "a carefully planned discussion designed to obtain
12 perceptions on a defined area of interest in a permissive, non threatening environment".¹⁷ This
13 approach is suggested by Ajzen & Fishbein as the method of choice to determine salient beliefs about
14 the topic area of interest.¹¹ In the present study, the utility of the method was strengthened by focussing
15 on specific products rather than investigating functional food products in general.¹¹ In addition,
16 consumers' attitude toward functional food could be expected to be influenced by general attitudes such
17 as attitude toward technology or food neophobia¹⁸, beliefs about the production process, perceived
18 healthiness¹⁹ and beliefs about the quality of the resulting product. This is particularly relevant as the
19 range of omega-3 functional foods entering the market place is increasing.

20
21 The aim of this study was to gain an understanding of the salient beliefs underlying Australian
22 consumer attitudes and purchase intentions with regard to omega-3 enriched functional foods. Using
23 focus group discussions, consumer beliefs and attitudes were determined for the purpose of developing
24 a survey instrument to test the generalizability of these opinions in a larger population sample.

METHODS

Focus group interviews examining salient beliefs and attitudes regarding functional foods were conducted with a cross-section of adult consumers in the Illawarra region of New South Wales (NSW), Australia. Compared to the NSW average, the population residing in the Illawarra is more socially disadvantaged and hospitalisation rates from coronary heart disease in the Illawarra were 20% higher in men and 14% higher in women than the state average in 2001.²⁰ The study employed a qualitative research design, with overweight participants recruited. This group reflects a potential target population for functional foods enriched with omega-3 fatty acids because people from this region of Australia have a relatively high risk of cardiovascular disease.

Participants

Participants were recruited through general advertising in local media. Fifty potential participants expressed interest in the study and all were invited to attend one of six focus group discussions. An information sheet and a consent form were mailed to each potential participant. Each participant was offered a small payment (AUS\$20) to offset any inconvenience that might have resulted from involvement in the study. Approval for the conduct of the study was provided by the University of Wollongong / Illawarra Area Health Service Human Research Ethics Committee.

Focus group procedure

The focus groups were conducted between July and August 2002. All groups were conducted in a community centre located in the Illawarra region. Focus groups were audio taped and later transcribed to allow systematic analysis of the discussion. Each focus group ran for approximately one hour and was conducted by a moderator and an observer. To ensure consistency between the groups the same trained moderator ran each group and all groups were monitored by an independent observer for quality assurance purposes.¹⁷ An interview guide was developed by the research team (CP, LT, PW) following the general guidelines provided by Krueger.¹⁷ Using the TPB theoretical framework, 10 questions were devised to determine consumer awareness, beliefs, attitudes and barriers to using functional foods

1 enriched with or providing omega-3 fatty acids. The interview guide was pre-tested using
2 undergraduate nutrition students and review by the research team. At the beginning of each session
3 instructions were provided to the group, the purpose of the interviews was outlined and it was
4 emphasised that there were no right or wrong answers. During the sessions, participants were
5 encouraged to speak until no more views were expressed, then the moderator probed and clarified
6 points. In short, probes were primarily used to encourage participants to clarify meanings or explain
7 points of incongruence in their answers. To introduce the concept of functional food, sample products
8 were provided as prompts for discussion (Questions 1 – 5)-, Flora's *Pro-activ*[®] and Meadow Lea's
9 *Logicol*[™] (margarines with added plant sterols), Yakult's fermented milk drink (a probiotic beverage)
10 and Buttercup's *Wonder White*[®] bread (with high-amylose resistant starch). Specific omega-3 enriched
11 food products were used as prompts for discussion (Questions 6 – 10)- Tip Top's *Up*[™] bread and
12 Meadow Lea's *Hi Omega*[®] margarine (both enriched with omega-3 fatty acids).

13 Data Analysis

14 Each focus group discussion was tape-recorded and transcribed, producing on average 30 pages of
15 transcript. A computer software package for qualitative analysis, NVivo 2.0 (2002, QSR International
16 Pty Ltd), was used for data management and coding.²¹ Using the TPB model, transcribed conversation
17 was categorised into one of the three areas of belief related to behavior: *behavioral beliefs*, which are
18 assumed to influence attitudes toward the behavior; *normative beliefs*, which constitute the underlying
19 determinants of subjective norms; and *control beliefs*, which provide the basis for perceptions of
20 behavioral control. Content analysis was carried out and sub-categories were developed to capture the
21 emerging themes. An iterative process of subcategorisation was conducted as suggested by Knodel.²²
22 After the preliminary analysis by a single coder (CP), two other members (LT, PW) of the research
23 team assessed the categorization of conversation as well as the content of each category and
24 sub-category. All three members of the team discussed areas of disagreement and a consensus was
25 reached. Because the purpose of this study was exploratory, with an aim to elicit salient beliefs about

1 functional foods, quantification (e.g. frequency counts) was not undertaken; rather, examples from the
2 discourse are presented to illustrate the interpretive frames that emerged, along with the corresponding
3 themes.²³

4 **FINDINGS**

5 Of the 109 people who responded to media advertisements 50 agreed to attend a focus group, however
6 8 people failed to attend leaving a final number of 42. Of those who originally expressed interest and
7 subsequently declined to participate, the major reason cited was that they expected to be involved in a
8 dietary intervention trial. Six focus groups were scheduled and conducted at the same venue. Each
9 focus group included 6-9 participants and lasted 50 to 80 minutes. The mean age of participants was
10 48 years with the majority being female (65%). Fifty-seven percent of participants were married, 27%
11 single and another 16% single but living with a partner. (Table 1).

13 ***Salient Behavioral Beliefs***

14 Most participants indicated they believed that omega-3 fats were good for them, often describing
15 them as being good for general health (Table 2). In addition, there was strong agreement that most
16 people, from children to the elderly, could gain health benefits from including more omega-3 fats in the
17 diet. When participants were asked to discuss their beliefs about eating a diet high in omega-3 (or foods
18 high in omega-3 or foods enriched with omega-3) a prevalent view was that they had a role in the
19 prevention and treatment of heart and vascular disease. There was confusion about the mechanism of
20 action, with a number of participants stating that omega-3 fatty acids were important in lowering
21 cholesterol; however, this did not detract from the believed importance of this nutrient in the diet. In
22 addition a number of participants were strong advocates of the benefits in ameliorating inflammatory
23 diseases, most notably arthritis. Some expressed the belief that omega-3 fatty acids improve visual
24 function and asthma and have both a brain health promoting role, as well as a therapeutic role in the
25 treatment of Alzheimer's disease.

1

2 There was a commonly expressed view that the health benefits of dietary omega-3 fats were only
3 achievable when they were included in the diet over a long period of time. However, there was also a
4 prevailing belief that the ongoing use of these products is largely determined by how effective they are
5 for the individual; that is, did they alleviate symptoms or make the individual feel better and did these
6 benefits take long to be observed? Many participants expressed the view that functional foods
7 enriched with marine omega-3 fatty acids were a good way of delivering this nutrient in the diet,
8 particularly as an alternative to fish, and especially for children. In general, participants saw
9 functional foods as a logical dietary option (eg fibre is good for you and children prefer white bread,
10 therefore white high fibre bread is a sensible innovation). Also, these foods were seen to overcome
11 other barriers to good nutrition such as access to fresh fish products.

12

13 Some participants raised the concern that omega-3 enriched foods may not contain enough of the
14 functional ingredient to be effective and noted that the dosage would need to be clearly stated for use.
15 This was the reason that supplements had greater appeal for some over functional foods. However, the
16 opposite was apparent when considering the nutritional needs of children. Functional foods were
17 considered a better choice than supplements for children and adolescents and the elderly, a finding that
18 has also been reported elsewhere.²⁹

19

20 Participants indicated that foods perceived as unhealthy (eg. chocolate or soft drink) were regarded as
21 less acceptable carriers for omega-3 fatty acids despite acknowledging the logical argument for the
22 contrary – a finding which has been reported elsewhere.²⁹

23

24 Overall our data showed reasonable support for functional foods as a convenient and logical way to
25 achieve a healthful diet. Some participants expressed concerns that functional foods had the potential to

1 undermine a person's ability to achieve a healthful diet by creating confusion about what constitutes a
2 healthful food and by downplaying the total diet approach. Concerns were also raised about the risk of
3 overexposure of active ingredients. Overall though, functional foods were viewed as a way to increase
4 the number of options available to consumers for incorporating omega-3 fatty acids if included as a part
5 of a total diet approach.

6

7 *Salient Normative beliefs*

8 Communication among family members was important in spreading the word about new or novel foods
9 entering the market. Furthermore, the incorporation of these foods into the diet depended on overall
10 acceptance by the family unit. Similarly the opinions expressed by friends appeared to be important in
11 exposing consumers to new, novel food products. Medical and health professional opinion was also an
12 important factor with nutritionists regarded as an independent source of information. Participants
13 considered independence very important to credibility along with scientific evidence for claims, even
14 though they found it difficult to interpret and evaluate scientific results. There was a general belief that
15 scientific findings were inconsistent, confusing, and probably biased. These beliefs were amplified
16 when related to functional food products and industry-sponsored research. In general participants
17 were very skeptical of advertising even though they acknowledged the need to inform the market of
18 new food innovations through advertising. There was apparent distrust of labeling and the legislation
19 controlling claims on food packages. In general, food companies and their advertising were not valued
20 very highly by consumers.

21 The normative influences on participants' use of functional foods in this study are consistent with the
22 results of studies investigating more general health-related behaviors.¹⁵

23

24 *Salient Control Beliefs*

25 There was little evidence that access to functional foods was a barrier perceived by the participants in

1 this study, even though socially disadvantaged families disproportionately live in areas where there are
2 few large supermarkets ³⁵. Non-supermarkets typically stock a limited range of foods where prices
3 are higher thus limiting access to functional foods, even if available.³² Lack of control over purchasing
4 is another potential barrier, but only minor reference was made to this as a legitimate concern for
5 individuals within the groups. Taste and texture was fundamentally important to all food purchasers.
6 There was no evidence to suggest that participants would trade taste for health and they expressed the
7 view that if the tastes weren't at least equal to comparable products then they would not buy them,
8 which is consistent with many studies investigating dietary habits.³³ Some participants expressed the
9 view that a major barrier that prevented them from purchasing functional food products was the fact
10 that they had little time during shopping to decipher the positive and negative attributes of various
11 products and to determine the appropriate place for them within their own diet. Of all the discussion
12 areas, cost of products generated the most discussion and consistent response. Most participants
13 believed that foods promoted as having health benefits cost more. This cost was not always seen as
14 worth the investment, particularly if the health claims were not believed or ambiguous.

15

16 As an adjunct to the TPB model utilised in this analysis, participants' were asked which products would
17 be the best carriers of omega-3 fatty acids. The responses were consistent, with participants preferring
18 to wholesomeness of the carrier products as an important factor. Also, participants considered everyday
19 products such as milk, bread, margarine and yoghurt to be the best carriers of this functional ingredient
20 with snack and occasional foods as a distant second choice. Further probing revealed that although this
21 may be logical (people don't eat enough omega-3 fat but people drink diet coke, therefore the addition
22 of omega-3 fatty acids in diet coke is logical), participants were suspicious of this strategy and viewed
23 it as a gimmick, rather than a legitimate health proposition. Participants believed that the overall health
24 proposition of the functional foods should be consistent with other health messages, i.e. low fat, low
25 salt, low sugar.

1

2 *General beliefs about functional foods*

3 We did not find any evidence of salient beliefs related to healthfulness of functional foods, which was
4 surprising. Compared to conventional foods, functional foods are often processed with a relatively high
5 degree of technological manipulation, which has parallels with the manufacturing of genetically
6 modified (GM) foods. Attitudinal studies into consumer views of GM foods indicate that a general
7 resistance to use these products may influence use of other high-tech foods.³⁴ Furthermore, in a
8 cross-national study of Danish, Finnish and American consumers, interactions between the types of
9 functional food products and extent of enrichment were important determinants of consumers'
10 perceptions of their healthfulness.¹⁹ The authors of that study described prevailing cultural values of
11 'mastery' or 'harmony' that help to explain these attitudes.¹⁹ People or cultural values that can be
12 described as high in mastery emphasize active mastery of the social and natural environment through
13 self-assertion. High-mastery people tend to view functional foods positively.¹⁹ On the other hand,
14 'harmony' refers to values that co-exist with nature and resist technological manipulation of natural
15 resources. We do not know the extent to which harmony people would most likely oppose the use of
16 functional foods. Participants in our study were aware of the level of technical manipulation involved
17 in the development of these products. National media coverage from the market release of several
18 omega-3 enriched products in Australia preceding the interviews may have contributed to an
19 understanding and acceptance (or rejection) of the concept. It is also possible that those who
20 self-selected for these focus group interviews tend toward high 'mastery' values.

21

22 **IMPLICATIONS FOR RESEARCH AND PRACTICE**

23 In the past food behavior has formed the focus of many promotion and health education campaigns
24 with the aim of improving nutrient intakes.³⁵ With the emergence of functional foods there is a need to
25 develop education campaigns and design behavior change models to ensure that those segments of the

1 population who can benefit the most from these novel products actually use them.³⁶ To this end
2 understanding consumer beliefs and attitudes toward functional foods is critical to both commercial
3 success and achieving positive health outcomes from the introduction of enriched functional foods.
4 However, more targeted research is required to determine whether salient beliefs re omega-3 enriched
5 functional foods are shared by other adults of this self-selected Australian sample and therefore caution
6 is required in interpreting these results.

7

8

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10 to thank all the participants who took part in this study and acknowledge Chung Sau Chan for his
11 assistance in conducting the focus groups and Lyn Politis for her help in transcribing the taped
12 interviews.

13

1 **Table 1** Focus group characteristics

2

	Focus group number						Total
	1	2	3	4	5	6	
Number of participants	9	9	6	7	6	5	42
Gender (n)							
Males	6	0	2	2	3	0	13
Females	3	9	4	5	3	5	29
Age (years)	49	42	47	50	51	51	48 (Mean)
Marital status (n)							
Single	2	3	3	2	0	1	11
Single, living with mate	2	2	0	0	2	0	6
Married	5	4	3	5	4	4	25
Focus group duration (min)	50	80	60	65	60	55	-

3

1 **Table 2** Categories of salient behavioral beliefs related to the use of omega-3 enriched functional foods

Category	Sample Quote	Speaker
Provide long term health benefits	But do you think, if we started eating healthy, things like this (omega enriched bread), as young as (name) is, (oh yes) then it would make a difference over time, instead of starting when you're older!	Group3, F
Help to manage chronic disease	I've got heart disease and omega-3 oil is good if you have heart disease.	Group 1, F
	Well as you get older the fish oil definitely helps your arthritis. In a lot of people the fish oil helps arthritis.	Group3, M
	Because I heard it's good for asthma, arthritis...It's for a whole range (of conditions) not just for lowering cholesterol. So I am pretty happy that these are on the market now that I can give to him.	Group 2, F
	Well I know that it's a very good brain food and it keeps us functioning and the brain needs omega-3. But also possibly, people that suffer or a suffering from Alzheimer's.	Group 4, M
Otherwise deliver the health benefits of fish	Because of the fact that I've got two boys that won't eat tuna - one of them will eat a bit of fish - and this is a way of supplementing that then (yeh).	Group 4, F
Have an advantage over supplement	Put it this way, I would rather not take it in tablets whatsoever, I'd rather not take any stuff like that in tablets, my wife does, but none of my children (do).	Group 5, F
May undermine the concept of a healthy diet	But we get two different messages. We get a message that everyone should be eating a balanced diet and exercise and the other message we're getting is, hey, you don't need to, yeh, because you can take this instead. So many people won't eat a balanced diet.	Group 3, F
May be at risk of overexposure or inadequate intake of a nutrient	If they're putting in enough (omega-3) to be beneficial, you could get to a point where you are taking too much...particularly if it's being put into nearly every food or if you can never get to a stage where you are taking too much, therefore they are not putting in enough to be useful.	Group 1, F
	I take my own supplements and that way I would know how much I am taking. I am not having my food doctored up and not knowing exactly the levels I am taking.	Group 1, F

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Table 3 Categories of salient normative beliefs related to the use of omega-3 enriched functional foods

Category	Sample Quote	Speaker
Normative beliefs generated with reference to:		
Family members	With different products, we just see if it's one the family will like	Group 4, F
Friends	It's my best mate that told me about fish oil for arthritis.	Group 3, M
Medical practitioner	If a doctor or medical person said that it would improve my health, I'd have a serious look at it. But advertising (by) itself wouldn't influence me.	Group 1, F
Nutritionist	It's not just these people (food industry) making the claim, it's the nutritionists and all that across the country and across the world are making the same claim.	Group 2, F
Scientists	And the other thing too is who did the research? Because if they do their own research it doesn't mean that it's honest.	Group 5, F
Food Industry	There are lots of loopholes in the labeling of foods they (Food industry) can get around the legislation.	Group 5, F

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Table 4 Categories of salient control beliefs related to the use of omega-3 enriched functional foods

Category	Sample Quote	Speaker
Salient control beliefs based on perceptions of:		
Availability at the supermarket and lack of control over purchasing	I do most of my shopping at Woolies or Coles, and if it's not there I'm not going to buy it am I!	Group 3, M
Taste/Texture	No! (I would not eat these products) because of my fish hate, I'd be turned off (laughter) Supposing I didn't have that fish taste maybe yes I'd buy it.	Group 1, F
Lack of clarity in dosage and effect	I'd like to know the difference. If I was going to start taking some omega-3 tablets...I want to know what my benefits are going to be. If I don't feel any different next week, how long will it take?	Group 5, F
Lack of time to read labels	I honestly don't have time to get there and read labels and decipher all this stuff as you say and every time you buy a product...	Group 1, F
Cost	...a discussion came up about them (functional foods) at work day, and one of the comments was the cost, because they are expensive and a lot of people because of their financial situation have to take that into consideration (mmmm)...I think with the food supply that if it is generally proved to do what they claim then the next avenue to go would be to lower them down to everybody's reach. If that's their claim, that they're doing it not for profit or only partially for profit and for the good of people's health and the average family, they should lower it down to everybody's reach	Group 1, M

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