

Original Article

Food fears: a national survey on the attitudes of Australian adults about the safety and quality of food

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A national telephone survey of a representative sample of 1200 Australian adults was conducted in March 2002 in order to identify the factors of greatest concern to consumers in relation to the safety and quality of food, to measure recent trends in views about hazards in the food supply, to explore beliefs about the safety of additives and to discover whether consumers use food labels to check for ingredients of concern. Forty five percent of Australians responded that they were more concerned about the safety and quality of food than they were five years previously, while only 5% were less concerned. The most common potential hazards volunteered were additives and chemical residues (28%), followed by food processing/handling/freshness (21%), food hygiene or contamination (14%), and also genetic modification (14%). More than half of the respondents believe that additives and preservatives are harmful to your health and that many foods contain high levels of pesticides. A greater proportion of consumers claimed to be conscious of checking for additives, either general or specific, on food labels than for information on the salt or sugar content of products. Food regulators, journalists, the food industry and health professionals need to work together to correct misconceptions about the risks to health posed by common food additives and pesticide residues.

Key Words: food safety, additives, pesticides, food labels, Australia

Introduction

Concerns about the safety and quality of food are among the most important components of Australian attitudes toward food and health today.¹ Yet while there has been increased regulatory attention focused to improve control of food safety and foodborne illness,^{2,3} in many countries studies have reported that consumers generally appear less concerned about this than other issues, such as food additives and food processing in general.⁴ It has been suggested that much consumer concern about food relates to "virtual risks", based on claims about hypothetical health problems - such as those from pesticides, GM foods, packaging or food additives - that are based on plausible scientific theories, but lack any empirical scientific evidence.⁵ Some of this concern may also be fuelled by misinformation from the media, the Internet and other sources. Such misinformation can have harmful effects on the health of consumers or cause them to spend money on products with no real benefit.⁶

In order to examine some of the current food fears and beliefs amongst adult Australians, a survey was designed to identify the factors of greatest concern to consumers in relation to the safety and quality of food, to measure recent trends in views about hazards in the food supply, to explore beliefs about the safety of additives and to discover whether consumers use food labels to check for ingredients of concern.

Methods

The Food Fears survey was conducted by Newspoll Market Research from 22-25 March 2002. It was included as part of their weekly telephone Omnibus survey, conducted on a representative sample of 1200 adults aged 18 and over throughout Australia, which covers all States, including both metropolitan and country areas. Respondents were selected by means of a stratified random sample process. This included a quota set for capital cities and non-capital city areas, quotas set for each telephone area code, random selection of household telephone numbers within each area code, and random selection of an individual in each household by a last birthday screening question. To ensure the sample included those people who tend to spend a lot of time away from home, a system of call backs (up to three attempts) and appointments was incorporated. Interviewers were fully trained and briefed on the requirements of the study. To reflect the national population distribution, results were post-weighted to Australian Bureau of Statistics data on age, age left school, sex and geographical area.

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In addition to questions about the respondent demographics, the following four questions were asked:

Q1 *Thinking now about different factors that affect the safety and quality of food. What factors do you personally think are the biggest potential hazards to the safety and quality of the food in Australia nowadays? Which others?*

Q2. *Compared to five years ago would you say you personally are more concerned about the safety and quality of the food in Australia, less concerned, or would you say there has been no change to your level of concern in the past five years? IF MORE CONCERNED: is that a lot more concerned or a little more concerned? IF LESS CONCERNED: is that a lot less concerned or a little less concerned?*

Q3. *For each of the following statements about food, please tell me if you personally think it is true or false:*

- a) *additives and preservatives are harmful to your health*
- b) *artificial food colourings can cause hyperactivity in children*
- c) *food allergies are more commonly caused by food additives than by naturally occurring food components*
- d) *many foods contain a high level of pesticide residues*
- e) *artificial sweeteners can cause cancer and multiple sclerosis*
- f) *every year millions of Australians suffer from food poisoning.*

(Note: Table 4 indicates which of these statements are generally regarded as true or false and the evidence to support this).

Q4. *Thinking now about the ingredients shown on food labels. Which of the following ingredients, if any, would you say you are very conscious of checking for on the label:*

- a) *additives in general*
- b) *MSG*
- c) *artificial colourings*
- d) *artificial sweeteners*
- e) *preservatives*
- f) *artificial flavourings*
- g) *salt content*
- h) *sugar content*
- i) *none/don't know.*

For the purposes of analysis, subjects were divided into the following demographic categories:

Age: 18-24, 25-34, 35-49, 50+ years

Area: respondents were grouped by State and also by whether they lived in a capital city or not. The Capital City area comprises Sydney, Melbourne, Brisbane, Adelaide and Perth. Other areas (X-Cap) include the remaining parts of each state, and also ACT and Tasmania.

Socio-economic status (SES): respondents were grouped based on the occupation of the main income earner of the household, using the Australian Bureau of Statistics ASCO statistical classification. This was subdivided to:

- *White-collar* – professional, paraprofessional, manager, administrator, clerk, salesperson or other white-collar worker, or
- *Blue-collar* – tradesperson, plant and machine operator, labourer, retired with previous occupation unknown, other blue-collar worker, student, home duties, unemployed.
- *Household income:* less than \$30,000, \$30,000 to \$59,999, or \$60,000 per annum and above.

Differences between groups were examined by the chi-squared test and the level of significance for comparisons set at $P < 0.05$. No ethics committee approval was sought for this study. Newspoll conducts the Omnibus survey weekly and, as a member of the Market Research Society of Australia, adheres to their Code of Professional Behaviour.

Results

Table 1 shows the quotas set for respondents, by state and location. The standard Newspoll Omnibus survey excludes the Northern Territory. Reflecting their incidence in the population, an equal number of males and females were interviewed for the Survey. The response rate to usable phone calls was 11%, which is typical for national telephone opinion polls like the Newspoll Omnibus. (The strict “last birthday” screener and the 50:50 quotas on males and females results in a significantly lower response rate than would be achievable without these criteria being applied. However Newspoll believes this technique provides a more representative sample.)

The non-respondents were made up of:

1. no answer/ answering machine/ engaged
2. the target respondent (ie person in the household with the last birthday) not being available over three calls
3. quotas full
4. refusals or terminations.

Table 2 summarises the unprompted responses to the first question, which asked which factors are the biggest potential perceived hazards to the safety and quality of food in Australia. The most common responses were those about additive and chemical residues in food (28% of respondents), with agricultural residues being cited more than twice as often as additives and preservatives. The next three largest categories of responses were food processing, handling and freshness (21%), food hygiene or contamination (14%) and genetically modified foods (14%). No more than one in twenty respondents noted other factors such as environmental issues, hormones and inadequate labelling.

Table 1. Respondent quotas used in the telephone survey

	Capital city	Rest of the state	Total
NSW (inc. ACT)	200	150	350
VIC	200	100	300
QLD	100	100	200
SA	100	50	150
WA	100	50	150
TAS (city & x-city)		50	50
Total	700	500	1200

Table 2. Factors Australian adults mention "top of mind" as the biggest potential hazards to the safety and quality of food (unprompted percentage)[†]

	Total	Sex		Age				Location		SES	
	All (N=1200)	Male (N=600)	Female (N=600)	18-24 (N=88)	25-34 (N=216)	35-49 (N=376)	50+ (N=520)	Capital (N=700)	X-Cap (N=500)	White (N=636)	Blue (N=564)
Pesticides/additives/preservatives (total)	28	28	29	9 ^a	26 ^b	38 ^c	28 ^b	27	31	33	24 ^{***}
<i>Sprays like pesticides, fertilisers</i>	21	22	20	8 ^a	21 ^b	28 ^c	20 ^b	20	24 [*]	25	17 ^{**}
<i>Additives/preservatives/MSG</i>	9	8	9	2 ^a	7 ^b	11 ^b	10 ^b	9	8	10	8
Food processing/handling/freshness (total)	21	21	21	17 ^a	24 ^b	17 ^a	24 ^b	23	18 [*]	20	22
<i>packaging/preparation of foods</i>	8	9	7	6 ^a	12 ^a	7 ^a	8 ^a	8	7	8	8
<i>food handling</i>	7	6	7	6 ^a	5 ^a	6 ^a	8 ^a	7	5	5	8
<i>not fresh/too old</i>	4	4	4	3 ^a	4 ^a	4 ^a	4 ^a	5	3 [*]	4	4
<i>foods not kept at right temperature</i>	3	3	4	2 ^a	3 ^a	3 ^a	4 ^a	3	3	3	3
<i>improper storage/transport</i>	3	3	2	2 ^a	4 ^a	2 ^a	3 ^a	3	2	3	3
Food hygiene/contamination/bacteria	14	13	16	10 ^a	19 ^b	12 ^b	15 ^b	17	11 ^{**}	14	15
Genetic modification	14	14	14	8 ^a	14 ^a	15 ^a	14 ^a	14	14	16	11 ^{**}
Quarantine issues (eg imported disease, foot and mouth, mad cow)	6	9	3 ^{***}	2 ^a	6 ^a	7 ^a	6 ^a	5	7	6	5
Environmental issues (eg pollution; greenhouse gases, water quality)	5	7	4 ^{**}	3 ^a	6 ^a	8 ^b	4 ^a	6	4	7	3 ^{**}
Hormones in animals	3	3	4	0 ^a	3 ^a	4 ^a	3 ^a	3	4	3	3
Take-away and fast foods	3	2	4 ^{**}	3 ^a	3 ^a	3 ^a	4 ^a	3	4	2	4
False/misleading/inadequate labels	3	3	3	1 ^a	2 ^a	5 ^a	3 ^a	3	3	4	2
None/Don't know	30	30	31	55 ^a	31 ^a	23 ^a	28 ^a	28	34 [*]	26	34 ^{**}

[†]For age differences, numbers with different superscripts are significantly different $P < 0.05$; * $P < 0.05$ ** $P < 0.01$ *** $P < 0.001$

Generally those in the 18-24 age group expressed significantly fewer concerns than older adults, and white-collar workers were a little more likely to be concerned than blue-collar workers about some issues. There were few differences in the responses of those living in capital cities compared to those from other locations, except that the city dwellers were significantly more concerned about food hygiene (17% vs 11%; $P < 0.001$). There were no significant differences in responses between sexes for most issues, although females were slightly less likely to mention quarantine issues (like foot and mouth disease and mad cow disease) and environmental issues, and slightly more likely to be concerned than males about take away and fast foods (see Table 2).

Figure 1 summarises the data on how consumer concern about the safety and quality of food has changed over the previous five years. 45% of adult Australians reported they were more concerned about the safety and quality of Australian food in 2002 than they had been five years before (23% a lot more concerned), while only 5% were less concerned. The rest claimed their views had not changed (Table 3). The proportion of females with increased concern was higher than males (49% vs 42%; $P < 0.025$). A greater proportion of younger adults (18-24) were less concerned compared to five years ago than older adults ($P < 0.05$). People from lower income households (<\$30,000) were more likely to be more concerned compared to five years previously, than those from households with incomes over \$60,000 (52% vs 39%; $P < 0.01$). There was no significant difference in the changed level of concerns between those living in capital cities or elsewhere.

Table 4 shows the percentage of respondents agreeing with six statements about food safety. More than half of the respondents believed that additives and preservatives are harmful, and females were more likely than males to believe this (64% vs 52%; $P < 0.001$) as did significantly more of those with annual household incomes <\$30,000 compared those with >\$60,000 (63% vs 49%; $P < 0.001$).

Females were also more likely to believe that artificial colours can cause hyperactivity and that food additives commonly cause food allergies. More than half of the respondents believed that many foods contain high levels of pesticide residues. Those living out of capital cities were more likely to believe that additives cause allergies (72% vs 62%; $P < 0.001$), as did blue-collar workers compared to white-collar workers (70% vs 62%; $P < 0.01$). Approximately one in four respondents believed that artificial sweeteners can cause cancer and multiple sclerosis, although a further four in ten were uncertain about this.

Around forty percent of all respondents either did not know or did not agree that millions of Australians suffer from food poisoning each year. Conversely, females were more likely than males to agree with this statement, as were those aged 18-34 years compared to those in older age groups, notably those aged 50+ ($P < 0.001$).

When asked which ingredients they claimed to be very conscious of checking for on food labels, more than three quarters of respondents nominated some kind of food additive (Table 5). This was significantly greater than the proportion that nominated salt or sugar ($P < 0.001$).

Females and those people aged 35-49 were more likely to check labels for all of the ingredients that were nominated than males or those of other ages, but there was no significant difference by income or place of residence.

Discussion

There has been a significant increase in consumer concern about food safety and the quality of the Australian food supply over the past five years. While the reasons for this are unclear, it may be that media coverage of some major stories about food safety has raised public concerns. In recent years, there have been several incidents causing serious illness or death or involving major product recalls; for example:

- E. coli in mettwurst in South Australia - 52 involved, including 23 children with a life threatening illness, and one child died
- Contamination of a leading brand peanut butter with Salmonella – with a cost to the manufacturer of over \$55 million
- Hepatitis A in oysters in NSW - 440 people involved and one person died.

In Europe there has been the emergence of “mad cow disease” as a major food safety risk as well as a serious outbreak of foot and mouth disease in British cattle. In addition there has been continuing controversy over the safety of genetically modified foods.^{7,8}

Nonetheless, these are not the issues that the survey respondents identified as their major food safety concerns. If the results from this representative survey are extrapolated to the whole population, over 8 million adult Australians believe additives and preservatives in foods are harmful to their health. Most adults claimed to be

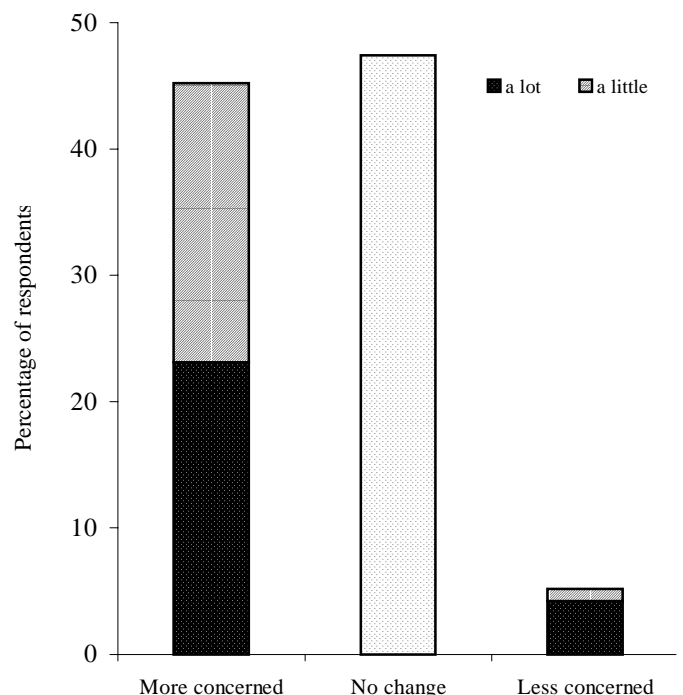


Figure 1. Concern about the safety and quality of food compared to five years ago ($N = 1200$)

Table 3. Concern about the safety and quality of food compared to five years ago (percentage)[†]

	Total		Sex		Age				Household Income		
	All (N=1200)	Male (N=600)	Female (N=600)	18-24 (N=88)	25-34 (N=216)	35-49 (N=376)	50+ (N=520)	<\$30K (N=326)	\$30-59999 (N=339)	\$60000+ (N=319)	
Lot more concerned	23	21	26*	13 ^a	21 ^b	23 ^b	27 ^b	29 ^x	23 ^y	19 ^y	
Little more concerned	22	21	23	24 ^a	23 ^a	23 ^a	21 ^a	23 ^x	22 ^x	20 ^x	
Total more concerned	45	42	49*	37 ^a	44 ^a	46 ^a	48 ^a	52 ^x	45 ^y	39 ^y	
Little less concerned	4	3	6**	10 ^a	3 ^b	4 ^b	3 ^b	3 ^x	3 ^x	5 ^x	
Lot less concerned	1	1	1	0 ^a	0 ^a	1 ^a	2 ^b	1 ^x	1 ^x	1 ^x	
Total less concerned	5	4	7**	10 ^a	3 ^b	5 ^b	5 ^b	5 ^x	4 ^x	7 ^x	
No change	48	54	42***	50 ^a	51 ^a	48 ^a	45 ^a	41 ^x	50 ^y	55 ^y	
Don't know	2	1	3**	4 ^a	1 ^a	1 ^a	3 ^a	3 ^x	1 ^y	0 ^y	

[†]For age and income differences, numbers with different superscripts are significantly different $P < 0.05$; * $P < 0.05$ ** $P < 0.01$ *** $P < 0.001$

Table 4. Belief about statements on food safety (percentage)

Statements and whether true or false	True		True All	False All	Don't know All
	Males	Females			
Additives and preservatives are harmful to your health. <i>Actually False</i> ^{39,40}	52	64***	58	32	11
Artificial food colourings can cause hyperactivity in children. <i>Actually True but uncommon</i> ^{26,27}	72	83***	78	13	10
Food allergies are more commonly caused by food additives than by naturally occurring food components. <i>Actually False</i> ^{29,31}	61	70**	66	20	14
Many foods contain a high level of pesticide residues <i>Actually False</i> ²³	55	59	57	26	17
Artificial sweeteners can cause cancer and multiple sclerosis <i>Actually False</i> ^{21,22,41}	25	27	26	35	39
Every year millions of Australians suffer from food poisoning <i>Actually True</i> ^{3,42,43}	57	63***	60	29	11

** $P < 0.01$ *** $P < 0.001$

using food labels to check for the presence of additives when making purchasing decisions. This finding is consistent with the results of a number of other surveys that have found additives to be the consumer's prime food safety concern.⁹⁻¹² In general between about a quarter and a half of respondents in those surveys said they look for information on additives. In one recent study with Australian shoppers, information on additives was rated as the most desired health information on food labels, ahead of information about nutrient content.¹³ Similar trends have been reported in New Zealand¹⁴ and there 55% of main householder shoppers thought that a "no preservatives" claim was useful, even on canned products that are not allowed to have preservatives added.¹⁵

In Australia, addition of additives to foods and maximum permitted residue limits are closely regulated by Food Standards Australia New Zealand. There are well

developed processes to determine permitted levels that will not result in harm, which have been accepted internationally.¹⁶ Yet in this survey consumers were just as likely to be concerned about those aspects that are well regulated and subject to thorough approval (such as additives and pesticides) as they were concerned about the more realistic threats from food hygiene problems. Perhaps one of the reasons for the continuing concern that consumers have about additives is the widespread use of negative claims on food products. A survey of the labelling of processed food in Australia in 2001 found that over 20% of all product labels carried "preservative free" claims and that in some food categories the proportion was over 40%.¹⁷ This contrasts with the position on negative claims set out in the Australian food industry's Code of Practice on the Provision of Information on Food Products, which discourages the use of claims such as

Table 5. Ingredients Australians claim to be very conscious of checking for on food labels (prompted percentage)[†]

	Total	Sex		Age			
	All (N=1200)	Male (N=600)	Female (N=600)	18-24 (N=88)	25-34 (N=216)	35-49 (N=376)	50+ (N=520)
Additives (total)	77	71	82***	75 ^a	75 ^a	81 ^a	75 ^a
Additives in general	50	43	57***	30 ^a	39 ^a	59 ^b	55 ^b
MSG	58	53	63***	43 ^a	58 ^b	67 ^c	57 ^b
Artificial colours	42	36	47***	28 ^a	40 ^a	50 ^b	41 ^a
Artificial sweeteners	45	42	47	36 ^a	40 ^a	53 ^b	44 ^a
Preservatives	44	37	50***	34 ^a	35 ^a	52 ^b	46 ^b
Artificial flavours	43	37	49***	34 ^a	39 ^a	53 ^b	40 ^a
Salt	52	48	55*	38 ^a	46 ^a	56 ^b	56 ^b
Sugar	58	51	66***	52 ^a	52 ^a	63 ^b	60 ^b
None/don't know	16	20	13***	16 ^a	20 ^a	12 ^b	17 ^a

[†]For age differences, numbers with different superscripts are significantly different $P<0.05$; * $P<0.05$ *** $P<0.001$

“no preservative”, unless the consumer would normally expect the substance to be present in the food.¹⁸ The stated reason for this advice is to not exacerbate consumers’ negative views about additives and processed foods in general.

Consumers appear to be using food labels to avoid additives they believe could be unhealthy. Australians reported being more concerned about checking for artificial additives and residues than they were about ingredients like salt and sugar, that should be limited to have a diet in line with the Dietary Guidelines for Australians.¹⁹ This behaviour was consistent with their stated beliefs about the biggest potential hazards and also with the results from the 1996 ANZFA survey of consumer behaviour in relation to use of food labels.¹¹ This contrasts to the views of health professionals like dietitians and GPs, who see the nutritional information and allergy warnings as the most useful information on food labels.²⁰ There is a need for continuing concerted education to correct these consumer misconceptions.

Many of the respondents had beliefs about statements on food safety that are not supported by good evidence. In the past there have been controversies over the safety of saccharin and cyclamate. More recently there have been unsubstantiated claims made that the artificial sweetener aspartame can cause cancer or multiple sclerosis, which may be the reason a quarter of respondents believed this of artificial sweeteners in general, even though authoritative scientific reviews dismiss such claims as without any foundation.^{21,22} Similarly, in contrast to the view of the majority of respondents, regular surveys of the Australian food supply show declining levels of pesticide residues and no evidence of values exceeding the safety limits established in toxicology reviews.²³

Other common beliefs may reflect caution or lack of knowledge about complex scientific issues. More than three quarters of those interviewed believed artificial colours can cause hyperactivity - almost identical to the 78% agreement to the same statement reported in another study in 2001.²⁴ This view was popularised by the

Feingold diet in the 1970s, but although there clearly are some individuals who are sensitive,²⁵ controlled investigations have shown the incidence is low - even among those who believe themselves to be intolerant - and most studies have shown there are no grounds for this concern in relation to the vast majority of children.^{26,27}

Some incorrect beliefs about other statements may have been due to an incomplete understanding of the issue. It is known that food allergies are dependent on immunological reactions to protein components in foods. For this reason Standard 1.2.3 of the new Food Standards Code requires the mandatory declaration of many natural ingredients that have the potential to cause allergic reactions in significant proportions of the population, including eggs, milk, peanuts, soy and seafood.²⁸ Food additives are not related to true food allergies, and although they can cause some chemical sensitivities, more serious medical problems are caused by reactions to naturally occurring food ingredients.^{27,29-31}

Some of the views expressed in this survey reflect a broader fear of the increasing “artificiality” of the modern food supply, with consumers concerned about their lack of control over and knowledge of the ingredients in foods that they buy but no longer understand.³² It may also be fuelled by misinformation available from potentially unreliable sources such as the Internet. Misinformation that is held with conviction is more accurately described as “misbelief”. Misbelief can become a deeply rooted part of an individual’s belief system or personal philosophy and is much less easily corrected than mere misinformation.³³

It is likely that correction of unfounded fears about foods will only be successful with consistent, long-term strategies across a number of sectors. Firstly, food regulation should be based on good science. Governments are sometimes driven by political rather than scientific considerations in decisions about food regulation - for example the need to protect consumer confidence has been a driving force in many decisions relating to genetically modified foods.³⁴ Information on labels needs

to be truthful and non-alarmist. Secondly, the media need to put stories in proper context. Misplaced concern about the food safety can affect food choices adversely. The 1989 scare about the ripening agent Alar in the US caused sales of apples to plummet there as parents thought they might be poisoning their children.³⁵ A useful set of guidelines from an advisory group convened by the Harvard School of Public Health and the International Food Information Council can help journalists and scientists communicate responsibly about emerging issues on food safety.³⁶

The food industry has a role to play too. Claims that products are free from additives are likely to support continuing consumer misbeliefs that such ingredients are potential hazards to be avoided. Information provided by the consumer advisory services of food companies can help disseminate more accurate information. Lastly, health professionals have a duty to correct misinformation about food risks and place advice in the context of a balanced total diet.^{6,37} The Dietary Guidelines for Older Australians were among the first to highlight the importance of safe food handling as part of a complete message about healthy eating.³⁸ All sectors have a role to help reinforce the message that proper food handling is a much more important priority to protect consumer safety than avoiding approved and safe food additives.

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