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October 2001

## Impact evaluation of a folate education campaign with and without the use of a health claim

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### Recommended Citation

Williams, P. G.; McHenery, J.; McMahon, Anne; and Anderson, H.: Impact evaluation of a folate education campaign with and without the use of a health claim 2001.  
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## Impact evaluation of a folate education campaign with and without the use of a health claim

### Abstract

**Objective** To measure the impact of a Kellogg/Northcott Society multimedia folate education campaign, run nationally from July 1998 to June 1999, with and without the use of health claims.

**Method** Three national telephone surveys of over 500 Australian women aged 18-44 in July and November 1998 and May 1999.

**Results** Awareness of the role of folate in the prevention of birth defects rose by 8% in the first 6 months of the campaign (without health claims) and by 15% in the second half (when health claims were incorporated). Awareness of the recommendation to take folate before pregnancy rose from 21% at baseline to 29% in November 1998 and 44% in May 1999. At the end of the campaign, the foods most commonly cited as sources of folate were leafy green vegetables (72%), breakfast cereals (70%), fruit (41%) and bread (40%).

**Conclusion** Inclusion of a specific health claim explaining the role of folate in preventing birth defects appeared to increase the impact of the folate education campaign.

**Implications** 1. Changing food regulations to permit health claims may increase the impact of health promotion campaigns involving industry partnerships. 2. Future folate programs should target young women (aged 18-24), those in rural areas and those on lower incomes.

### Keywords

folate, health claims, nutrition

### Disciplines

Arts and Humanities | Life Sciences | Medicine and Health Sciences | Social and Behavioral Sciences

### Publication Details

This article was originally published as: Williams, PG, McHenry, J, McMahon, A & Anderson, H, Impact evaluation of a folate education campaign with and without the use of a health claim, *Australian and New Zealand Journal of Public Health*, 2001, 25(5), 396-404. Copyright Public Health Association of Australia. The original journal can be found [here](#).

**Title:** **IMPACT EVALUATION OF A FOLATE EDUCATION  
CAMPAIGN WITH AND WITHOUT THE USE OF A  
HEALTH CLAIM**

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**Running Title:** Folate evaluation

**Key Words:** folate, health claims, nutrition

**Word Count:** 6500

1 **Abstract**

2

3 **Objective**

4 To measure the impact of a Kellogg/Northcott Society multimedia folate education campaign, run  
5 nationally from July 1998 to June 1999, with and without the use of health claims.

6

7 **Method**

8 Three national telephone surveys of over 500 Australian women aged 18-44 in July and November  
9 1998 and May 1999.

10

11

12 **Results**

13 Awareness of the role of folate in the prevention of birth defects rose by 8% in the first 6 months of  
14 the campaign (without health claims) and by 15% in the second half (when health claims were  
15 incorporated). Awareness of the recommendation to take folate before pregnancy rose from 21% at  
16 baseline to 29% in November 1998 and 44% in May 1999. At the end of the campaign, the foods  
17 most commonly cited as sources of folate were leafy green vegetables (72%), breakfast cereals  
18 (70%), fruit (41%) and bread (40%).

19

20

21 **Conclusion**

22 Inclusion of a specific health claim explaining the role of folate in preventing birth defects appeared  
23 to increase the impact of the folate education campaign.

24

25

1 **Implications**

- 2 1. Changing food regulations to permit health claims may increase the impact of health promotion  
3 campaigns involving industry partnerships.
- 4 2. Future folate programs should target young women (aged 18-24), those in rural areas and those  
5 on lower incomes.

## 1           **Introduction**

2   In 1995, the National Health and Medical Research Council (NH&MRC) published an expert  
3   report on the role of folate in the prevention of neural tube defects such as spina bifida.<sup>1</sup> One  
4   of the recommendations in the report was that food manufacturers should be allowed to  
5   voluntarily fortify foods with folate. Subsequently Standard A9 was amended to permit the  
6   addition of folate to a range of foods. Kellogg (Aust) responded by announcing a decision to  
7   add folate to all its fortified breakfast cereals and in 1996 added folic acid at a level of 25% or  
8   50% of the recommended dietary intake (RDI) - ie, 50 or 100µg folate per serve - to 25 of their  
9   products.<sup>2</sup>

10  
11   At that time, Standard A1(19) of the Food Standards Code prevented food manufacturers  
12   making any claims about the therapeutic or prophylactic action of products or referring to any  
13   disease or physiological condition on any packaging or in any advertisements for food.<sup>3</sup>

14   However, health claims were allowed in a number of other countries, including the USA.<sup>4</sup> In  
15   1996 the then National Food Authority (NFA) released a concept paper to reconsider this  
16   issue.<sup>5</sup> In 1997, the Australia New Zealand Food Authority (ANZFA - formerly the NFA)  
17   released a proposal (P153) suggesting a regulatory framework for managing health claims.<sup>6</sup>

18  
19   As part of the review of this proposal, ANZFA set up a pilot study to test the proposed  
20   framework. The health claim selected for the pilot was the relationship between folate and  
21   neural tube defects.<sup>7</sup> Criteria were developed to assess foods that were suitable for inclusion in  
22   the trial and manufacturers had to submit an application for foods to be approved to  
23   participate. An important element of the pilot was that manufacturers were allowed some  
24   flexibility in the wording and means of communication of the health claim. A Code of Practice

1 was released which gave information on the elements of the claim that had to be included and  
2 provided some suggested wording and guidance on the context of the communications that  
3 were to be allowed, but claims did not need pre-approval.<sup>8</sup> A voluntary logo developed by  
4 ANZFA could also be used by manufacturers as part of their communications, but this was not  
5 compulsory. The pilot began in December 1998 and was initially to run for 12 months, but was  
6 later extended to January 2001.

7  
8 This paper reports details of Kellogg's participation in the folate health claim pilot and the  
9 results from evaluation of the impact of the Kellogg program on awareness of the food sources  
10 and health benefits of folate among women of child-bearing years. The research aimed to  
11 assess:

- 12 a) The memorability and relevance of the campaign messages to the target audiences
- 13 b) The impact of the mass media advertising campaign on levels of consumer knowledge of  
14 folate and its influence on health
- 15 c) Comparison of the effect of advertising using a health claim and advertising not using a  
16 health claim on consumer knowledge of folate
- 17 d) The effect of the campaign on sales of products that carried the folate logo or specific  
18 folate messages.

19

20

## 1 **Description of the Kellogg Folate Education Program**

2 From July 1998 to June 1999, Kellogg conducted a range of consumer education activities  
3 about folate, targeting women aged 18-44 years. The program consisted of two distinct parts:  
4 an education campaign using general nutrition messages, from July to December 1998, and a  
5 second program using the approved health claim to communicate more directly about the role  
6 of folate in the prevention of neural tube defects, from January to June 1999. The program  
7 used a social marketing approach based on the Health Belief Model of behavioural change<sup>9</sup>  
8 and addressed the following four elements of the model:

- 9 1. Perceived susceptibility/severity – using print advertisements and public relations activities
- 10 2. Perceived benefits – using television and print advertisements
- 11 3. Cues to action – using new packaging designs including a distinctive logo
- 12 4. Perceived barriers – using consumer brochures and on pack messages that included menu  
13 suggestions.

14

### 15 ***Nutrition Education Campaign***

16 Before the commencement of the health claim pilot in December 1998, Kellogg had already  
17 commenced a significant communication campaign about folate in association with the  
18 Northcott Society (formerly the NSW Society for Crippled Children). This campaign consisted  
19 of on-pack messages and advertising about the general nutrition benefits of a diet containing  
20 folate-rich foods, with the objective of increasing awareness of the need for folate in women of  
21 child-bearing age. Kellogg also developed a distinctive round folate logo (Figure 1). This logo  
22 was used on the front of 12 Kellogg's breakfast cereals that contained 50% RDI per serve.

23



1 Because of Standard A1(19), the communications from Kellogg could not directly link folate  
2 and neural tube defects. The messages were limited to approved nutrition messages about the  
3 normal role and need for folate (eg, *Folate is a B-group vitamin that is needed for the normal*  
4 *growth and development of cells. A balanced diet rich in folate is important for everybody*  
5 *particularly women in child bearing years*). They also included the recommendation that  
6 women in child bearing years should be including 400µg folate in their diet each day and  
7 provided advice on how to achieve this. This target was approximately twice the usual intake  
8 according to the 1995 National Nutrition Survey.<sup>10</sup>

9  
10 To support direct branded advertisements from Kellogg, there were also a number of public  
11 relations activities and a strong series of communications with the Northcott Society as part of  
12 the Kellogg "Facts for Life" program. This corporate nutrition education initiative had started  
13 in March 1998, with the release of the Kellogg's Fact for Life Index report and a summit  
14 meeting of health professionals in Sydney to discuss the issue of increasing consumer  
15 confusion about nutrition and dietary recommendations.<sup>11,12</sup> The first theme of the Facts for  
16 Life program was about heart disease (in conjunction with the National Heart Foundation).  
17 The second focus on folate was launched at a media breakfast with the support of the  
18 Commonwealth Minister for Health and Family Services. An awareness-raising cartoon  
19 postcard and an information brochure with a folate diet checklist and sample meal plan were  
20 developed to distribute at PR events and in response to consumer enquiries.

21  
22 Because the Fact for Life communications with the Northcott Society were not advertisements  
23 for food, they were able to incorporate messages about folate and neural tube defects directly,  
24 without contravening standard A1(19). The elements of this first stage of the folate education  
25 program are set out in Table 1. Two television advertisements were developed by the J Walter

1 Thompson advertising agency which were central to the folate communication program.  
2 "Trolley" featured a mother shopping with a pram and filling it with Kellogg cereals with the  
3 folate logo along with other folate-rich foods like spinach and oranges. "Ultrasound" showed  
4 an ultrasound image of a foetus blowing a kiss to thank its Mum for taking plenty of folate  
5 before she became pregnant. The estimated value of this first stage of the program was  
6 \$600,000.

7

### 8 ***Folate Health Claim***

9 In December 1998, when the pilot health claim commenced, Kellogg took the opportunity to  
10 change a number of the existing folate communications and strengthen their impact by directly  
11 explaining the role of folate in the prevention of birth defects. The two TV advertisements  
12 were changed to incorporate the approved health claim, new on-pack messages were designed,  
13 and a new magazine advertisement was developed for Special K - a cereal that was particularly  
14 consumed by the target audience (women in child-bearing years). Table 2 sets out the details of  
15 this second stage of the program, which had estimated value of \$550,000.

16

17

### 18 **Evaluation methods**

19

#### 20 ***Television advertisements***

21 Both of the television advertisements were consumer tested to assess their memorability,  
22 involvement, motivation and ability to communicate the desired information. Millward Brown  
23 Australia was commissioned to undertake the evaluation using their TV LINK methodology.  
24 Each advertisement was tested separately in a central location with 60 females aged 25-45

1 years, who were planning to have children, ensuring a representative mix of socio-economic  
2 groups.

3

#### 4 ***Consumer awareness surveys***

5 The impact of the folate education program was evaluated by means of three consumer surveys  
6 that were conducted in Australia at baseline – July 1998 (survey 1), after the nutrition  
7 education campaign – November 1998 (survey 2), and after incorporation of the folate health  
8 claim – May 1999 (survey 3).

9

10 The three telephone surveys were conducted by Newspoll Market Research nationally among  
11 females aged between 18-44 years. The number of subjects interviewed were 588 in survey 1,  
12 605 in survey 2 and 549 in survey 3. Respondents were selected by means of a stratified  
13 random sample process. This included a quota set for capital cities and non-capital city areas,  
14 quotas set for each telephone area code, random selection of household telephone numbers  
15 within each area code, and random selection of an individual in each household by a last  
16 birthday screening question. To ensure the sample included those people who tend to spend a  
17 lot of time away from home, a system of call backs and appointments was incorporated.  
18 Interviewers were fully trained and briefed on the requirements of the study. The results of the  
19 surveys were weighted by a combination of age, age left school, and area to ensure that they  
20 were nationally representative.

21

22 The following five survey questions were asked:

23 1) Thinking now about health and in particular the vitamin called folate. Have you heard of  
24 folate before today?

25

1 *For those who answered Yes to question one*

2 2) As far as you are aware, what foods do you think contain folate? (What other foods?)

3 3) Can I just check with you which, if any, of the following types of food do you believe  
4 contain folate? (Bread, breakfast cereal, cheese, fish, fruit, leafy green vegetables, red  
5 meat).

6 4) As far as you are aware, what are the health conditions that folate can reduce the risk of, if  
7 taken as recommended? What others?

8 5) Before today, had you heard that it is recommended that folate be taken 6 weeks before  
9 becoming pregnant in order to reduce the risk of spina bifida?

10

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

12 *Age:* 18-24, 25-34, 35-44 years

13 *Children:* whether there were children under of the age of 18 in the household

14 *Marital status:* married (including de facto) or not married (including divorced, separated,  
15 widowed)

16 *Work status:* full time, part-time, or not employed

17 *Area:* respondents were grouped by State and also by whether they lived in a capital city or not.

18 The Capital City area comprises Sydney, Melbourne, Brisbane, Adelaide and Perth. Other  
19 areas (X-city) include ACT and Tasmania.

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

23 • *White collar* – professional, paraprofessional, manager, administrator, clerk, salesperson or  
24 other white collar worker, or

1 • *Blue collar* – tradesperson, plant and machine operator, labourer, retired with previous  
2 occupation unknown, other blue collar worker, student, home duties, unemployed.

3 *Age left school*: 16 years or less, or 17 years and older.

4 *Household income*: less than \$30,000, \$30,000 to \$49,999, \$50,000 and above.

5 *Given birth*: whether respondents had ever given birth.

6

7 Differences between groups were examined by the chi-squared test and the level of  
8 significance for comparisons set at  $p < 0.05$ .

9

10

### 11 ***Sales data***

12 The impact of the folate campaign on product sales was monitored in relation to the 12  
13 products that carried the folate logo or specific folate health messages (All Bran<sup>™</sup>, Bran  
14 Flakes, Corn Flakes, Just Right<sup>®</sup>, Just Right<sup>®</sup> Just Grains, Complete<sup>™</sup>, Mini Wheats<sup>™</sup>  
15 [4 varieties], Special K<sup>®</sup>, and Sultana Bran<sup>™</sup>). Two sets of data were used:

16 1) the volume (kg) of sales of products was compared in the fiscal years ending July 1998 and  
17 1999, and

18 2) the percentage of households buying the products with the folate branding (household  
19 penetration) was tracked using national supermarket scanning data. The 26 week periods  
20 ending December 1998 and July 1999 were compared.

21

22

## 1 **Results**

2

### 3 *Television advertisement evaluations*

4 Both television advertisements were found to be effective in communicating the folate health  
5 messages. Table 1 sets out the results from the consumer testing, compared to normal values  
6 for Australian advertisements found by Millward Brown in their previous testing. When asked  
7 “What was the main thing you will remember particularly when you see the ad repeatedly on  
8 TV”, unprompted 32% of “Trolley” viewers and 33% of “Ultrasound” viewers nominated  
9 taking folate prior to and during early pregnancy. In summary, the evaluation found “both of  
10 these executions provide excellent examples of immediate challenging advertising, delivering  
11 a relevant, rational, ‘new news’ claim in an involving and credible manner” (personal  
12 communication, Millward Brown Australia).

13

14

### 15 *Consumer surveys*

16 The overall percentage of women who had heard of the vitamin folate rose significantly from  
17 July 1998 to November 1998 and again in May 1999 (Table 4). The increase in awareness was  
18 broadly based across demographic groups (including age, location, household income, and  
19 households with and without children). In the first stage (July - Nov 1998) the increase was not  
20 significant for younger women (18-24 years) nor for those in households without children, or  
21 living X-city.

22

23 In both stages of the campaign there was a significant increase in the proportion of women  
24 who were aware of folate and who spontaneously mentioned either breakfast cereals,  
25 vegetables, green leafy vegetables, bread or fruit as a food source (Table 5). Meat, fish and

1 dairy foods are generally poorer dietary sources of folate, contributing less than 18% of the  
2 total daily intake in adult women in the 1995 national nutrition survey,<sup>13</sup> and the proportion of  
3 women nominating these foods as folate sources did not change greatly over the evaluation  
4 period. Vegetables and breakfast cereals were the best known sources. Fruit was not as well  
5 recognised, but prompted awareness rose to 41% by May 1999.

6  
7 Age, work status, age of school leaving, and SES were not related to knowledge of food  
8 sources. However by May 1999, when prompted, women living in capital cities were  
9 significantly more likely than those living elsewhere to mention breakfast cereals (78% vs  
10 55%), leafy green vegetables (77% vs 65%) and bread (46% vs 28%) as folate sources. They  
11 also had significantly greater increases of knowledge over the period of the campaign. For  
12 example, capital city residents citing leafy green vegetables rose from 51% in July 1998 to  
13 77% in May 1999, versus 53% to 65% amongst those living X-city. Those on higher incomes  
14 and those who had given birth also had better knowledge of food sources of folate.

15  
16 Table 6 shows the results from question 4 in the survey. Some respondents identified “Spina  
17 bifida” specifically, whereas other mentioned “birth defects” generally as being related to  
18 folate. Data on both responses are presented in Table 6. Unprompted awareness of the role of  
19 folate in reducing risk of birth defects increased progressively throughout the surveys across all  
20 demographics, whereas there was no change in beliefs related to heart disease or cancer. There  
21 were no significant differences related to work status or age of leaving school, but in general  
22 those who lived in capital cities, had higher incomes or in were in white collar SES groups,  
23 and women who had children were more aware of the link between folate and birth defects.  
24 Women in the 25-34 age group (those most likely to become pregnant) had the greatest  
25 increase in awareness over the three surveys.

1 Prompted awareness of the recommendation to have a higher intake of folate before  
2 conception was higher than unprompted awareness (Tables 6 and 7), and was also higher and  
3 increased more amongst women in capital cities, those who had given birth, and those on  
4 higher incomes (Table 7). Notably there was some variation between the States. Women in  
5 Western Australia, where there had been major government education programs since  
6 1992,<sup>14,15</sup> had the highest level of awareness at the start and the end of the program. Tasmania,  
7 where the Kellogg television advertisements were not shown, started with the lowest absolute  
8 levels of awareness and had the lowest increases over the 12 months, along with Western  
9 Australia.

10  
11 Figure 2 compares some of the key changes in awareness in the first and second stages of the  
12 education program. There were greater changes in all aspects in the second stage, when health  
13 claims were used, with almost double the increase in the percentage of women aware that  
14 folate is linked to birth defects (15% vs 8%), and an even greater improvement in awareness  
15 that it is recommended to take folate before becoming pregnant (22% vs 8%).

16

17

### 18 ***Sales data***

19 The total volume of sales of the 12 folate branded products declined by 4.6% from the year  
20 1997/98 to 1998/99. At the same time, the total volume of all Kellogg cereal sales increased by  
21 1.9%. The household penetration of the folate products declined from 54.3% in Jul-Dec 1998  
22 to 50.4% in Jan-Jun 1999. It appears, therefore that the significant investment in folate  
23 education campaign did not result in any significant improvement in sales of those products  
24 carrying the specific folate messages and claims. However it is possible that the campaign had



1 a positive effect overall in maintaining continued growth of Kellogg's market share (at a time  
2 when some competitors sales were declining).

3  
4  
5

## 6 **Discussion**

7 Throughout the period of the Kellogg/Northcott communications, there were also other  
8 education programs promoting the importance of periconceptional folate. The Victorian Folate  
9 campaign was launched in early 1999 and other food companies participating in the pilot  
10 health claim trial used on-pack messages as well. Because of this it is not possible to attribute  
11 the changes in public awareness solely to this campaign. However, this was the only national  
12 multi-layered campaign with a significant media presence in TV and magazines over the  
13 period of the evaluation. It is notable that areas where Kellogg TV advertising was not shown  
14 (Tasmania and country areas) all reported smaller increments in awareness than elsewhere.  
15 That may suggest that effective TV advertising is a powerful vehicle for increasing public  
16 awareness of health issues. The pre-testing of the advertisements used in this campaign  
17 showed that the target audience responded well because they were being given new news in an  
18 appealing and memorable format.

19

20 The results of this evaluation are generally consistent with those of other studies of consumer  
21 knowledge of folate. Surveys of women aged 18-44 years in metropolitan Perth found the  
22 percent of women who were aware of the association between folate and spina bifida rose from  
23 40% in 1995 to 44% in 1997 and in the Tasmania Eat Well survey of 1997 and 1998, the  
24 figures were 17% and 25%.<sup>16</sup> Comparable results were also reported in the ANZFA outcome

1 evaluation report of the folate health claim trial which combined data from four national  
2 surveys carried out in 1998 and 1999<sup>17</sup>. In those surveys in 1999 the overall awareness of  
3 folate among women of childbearing years was 89% (compared to 84% in this survey) and the  
4 proportion aware of the role of folate in preventing birth defects was 46% (compared to 44%  
5 in this survey). In Western Australia, where there had been earlier concerted population-based  
6 health promotion campaigns, reported knowledge of the folate-spina bifida association in 1995  
7 was estimated to be much higher at 67.5%<sup>18</sup>. In the three Newspoll surveys reported here, the  
8 results from WA were higher than other States (28.6% in July 1998, 36.4% in November 1998,  
9 42% in May 1999), but the values were lower than those reported in 1995<sup>18</sup>, indicating that  
10 there is a need for constant reinforcement of these messages to keep awareness levels high.

11  
12 The baseline values on awareness of the folate-birth defects link reported here are generally  
13 lower than those in the ANZFA survey reports, but similar to results from the CSIRO National  
14 Nutrition Survey (which reported the same proportion of women aged 18-45 who were aware  
15 of the link to birth defects in November 1998 – 29%). The evaluation of an education  
16 campaign in six isolated Victorian communities in late 1997 found 18% women aged 15-44  
17 knew of the association between folate and spina bifida<sup>19</sup>, which is also similar to the value of  
18 21% found in this survey in July 1998. The wording of question 5 in the Newspoll surveys  
19 may have underestimated the proportion of women who were aware of the recommendations  
20 on the need for folate before conception, because current advice is to take folate at least 4  
21 weeks before conception, not 6 weeks as suggested in the survey question. Nonetheless there  
22 was a clear increase in awareness of this advice over the period of the three surveys.

23  
24 However, it is also clear from the results reported here that there are some sectors of the  
25 community with a much lower awareness of the folate message. Women aged 18-24, those in

1 rural areas and those on lower incomes, were less knowledgeable about folate. Ideally these  
2 groups should be the targets for future education programs.

3  
4 The most notable finding was that while knowledge of food sources of folate increased equally  
5 in both stages of the campaign, much greater awareness of the link to birth defects and the  
6 need for increased folate before pregnancy was achieved in the second stage. This is not  
7 surprising since these messages were not able to be given in Kellogg paid advertising or on  
8 food packs before the health claim pilot began. The unpaid community service announcements  
9 from the Northcott Society in Stage One did not achieve sufficient exposure to have had any  
10 great impact. This finding supports the view that changing food legislation to allow health  
11 claims more generally may encourage more effective health promotion activities with industry  
12 partnerships.<sup>20</sup> Such intersectoral programs are a key focus in the new national public health  
13 nutrition strategy.<sup>21</sup>

14  
15 Some commentators have expressed concern that health claims on foods may present an  
16 unbalanced message about dietary recommendations to the public, favouring processed and  
17 manufactured foods.<sup>22,23</sup> While there was significant branding of both Kellogg and the  
18 Northcott Society on the advertising, the messages focussed on a whole of diet approach and  
19 awareness of non-cereal folate sources such as leafy green vegetables and fruit increased  
20 throughout the campaign, albeit not to the same extent as cereals. Messages on cereal packs  
21 would no doubt focus consumers' attention on those foods as good folate sources. However,  
22 this may not be inappropriate, since the free folic acid used in fortified food is more  
23 bioavailable than naturally occurring forms of folate<sup>24</sup> and recent studies have suggested that  
24 fortified cereals may be one of the most effective means of increasing folate status in  
25 women.<sup>25-27</sup>

1  
2 Changes in dietary behaviour are usually slow. They do not automatically follow from changes  
3 in knowledge or awareness of nutritional issues, because many other factors such as taste  
4 preferences, culture, economic situation and health beliefs all impact food choice.<sup>28</sup> The  
5 increases in awareness and knowledge about folate that have occurred over the past few years  
6 are a necessary first step to the desired outcomes of increased dietary folate intake, improved  
7 blood folate status and decreased incidence of neural tube defects. However, as the sales data  
8 for cereals with the folate health claim show, it may be unrealistic to expect measurable  
9 changes of food purchase patterns in the relatively short time frame of this study. This study  
10 did not attempt to measure whether women reported eating more folate-rich foods. At the same  
11 time it appears there have been increases in intake of fruit and vegetables in recent years,  
12 which may in part have been supported by the increased awareness of these foods as a source  
13 of folate.<sup>29</sup>

14  
15 In the debate over health claims, one of the challenges confronting food regulators has been the  
16 lack of empirical evidence for their effectiveness, and there have been calls for more studies to  
17 evaluate this.<sup>30,31</sup> Health claims by themselves will not necessarily change behaviour. In  
18 Ireland, McDonnell and others found that although awareness of folate was high, few women  
19 were taking supplements preconceptionally.<sup>32</sup> It seems that there needs to be ongoing  
20 education to alert women to the options available to improve food selection for obtaining  
21 400µg folate.<sup>33</sup> This evaluation of one large multi-media campaign, comparing the impact  
22 without and with the use of health claims, appears to support the view that when the specific  
23 preventative health benefit can be communicated clearly to consumers, messages become more  
24 compelling and impactful.

25

1

2 **Conflict of Interest**

3 None. Three of the authors were employed by Kellogg (Aust) Pty Ltd at the time of the  
4 education campaign, but neither they nor their departments have received funding for this  
5 study or other projects.

6

7 **Acknowledgments**

8 Kellogg (Aust) Pty Ltd provided access to the Newspoll survey results. We would like to thank  
9 John Davis, Project Director, and Antonella Sterrantino, Senior Research Executive, at  
10 Newspoll Market Research, for assistance with the statistical analysis and interpretation of the  
11 consumer survey results. Rick Reilly and Andrew McCowan at the JW Thompson advertising  
12 agency and Michelle Hutton and Germaine Graham at the Hill and Knowlton public relations  
13 company played a major role in the planning and design of the campaign.

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**Table 1. Elements of Stage One of the Folate Education Program (without health claim)**

<b>Activity</b>	<b>Who From</b>	<b>Media</b>	<b>Timing</b>	<b>Estimated Reach</b>
<b>Public Relations</b>				
1. Media Launch	<ul style="list-style-type: none"> <li>• Kellogg</li> <li>• Northcott</li> <li>• Minister for Health</li> </ul>	National TV news, radio. <i>Daily Telegraph, The Age</i> and regional newspapers	27/7/98	>1,000,000
2. Folate Awareness Day-Celebrity Mums mural painting	<ul style="list-style-type: none"> <li>• Kellogg</li> <li>• Northcott</li> </ul>	Sydney TV & radio. <i>Daily Telegraph</i> Melbourne & Brisbane radio	27/8/98	>440,000
<b>Magazines</b>				
1. Two advertorials on folate	<ul style="list-style-type: none"> <li>• Kellogg</li> <li>• Northcott</li> </ul>	<i>Time</i> (3 issues) <i>Who Weekly</i> (3 issues)	Aug-Sept 98 }	
2. One advertorial on the Northcott Society	<ul style="list-style-type: none"> <li>• Northcott</li> </ul>	<i>Time</i> (3 issues) <i>Who Weekly</i> (3 issues)	Aug-Sept 98 }	18% 18-39 year old females, 4 times
3. Two advertisements • Ultrasound • Pregnancy test	<ul style="list-style-type: none"> <li>• Northcott</li> </ul>	<i>Time</i> (6 issues) <i>Who Weekly</i> (5 issues)	Aug-Sept 98 }	
<b>Television</b>				
1. "Trolley" 30 second advertisement	<ul style="list-style-type: none"> <li>• Kellogg</li> <li>• Northcott</li> </ul>	Sydney, Melbourne, Brisbane, Adelaide, Perth (2399 TARPs)*	Aug-Sept 98	40% 18-44 year old females, 3 times
2. "Ultrasound" 30 second public service announcement	<ul style="list-style-type: none"> <li>• Northcott</li> </ul>	Sydney, Melbourne, Brisbane, Adelaide, Perth (141 TARPs)	Aug-Oct 98	20% of 18-44 year old females, 1 time
<b>Publications</b>				
1. Kaz Cook postcard	<ul style="list-style-type: none"> <li>• Kellogg</li> <li>• Northcott</li> </ul>	PR events	Aug-Dec 98	-
2. "Don't be late with folate" brochure	<ul style="list-style-type: none"> <li>• Kellogg</li> <li>• Northcott</li> </ul>	Health professionals; Consumer enquiries	Aug-Dec 98	-
<b>On-pack</b>				
1. Whole back of pack – folate menu plan	<ul style="list-style-type: none"> <li>• Kellogg</li> </ul>	Special K	Jul-Dec 98 }	
2. One third back of pack-message from Kellogg nutritionists	<ul style="list-style-type: none"> <li>• Kellogg</li> </ul>	Bran Flakes, Just Right, Just Right Just Grains, Komplete, Mini Wheats (4 varieties), Sultana Bran	Jul-Dec 98 }	18% of total population
3. Front of pack - Folate Logo	<ul style="list-style-type: none"> <li>• Kellogg</li> </ul>	12 cereals containing 100µg folate per serve	Jul – Dec 98 }	

\* TARPs (Target Audience Rating Points) is a measure of audience reach used when purchasing media time. It is a summation of the percentage of target audience in a viewing area watching the specific TV channel at the time the advertisement was shown times the reach, in the area of the media buy. It does not estimate national reach.

**Table 2. Elements of Stage Two of the Folate Education Program (including health claim)**

<b>Activity</b>	<b>Who From</b>	<b>Media</b>	<b>Timing</b>	<b>Estimated Reach</b>
<b>Magazines</b>				
One Special K advertisement: "Spoonfeeding"	• Kellogg	<i>Woman's Weekly, She, Woman's Day, Family Circle, Marie Claire</i>	Mar-Jun 99	57% 25-39 year old females, 2 times
<b>Television</b>				
1. "Ultrasound" 30 second advertisement	• Kellogg	Sydney, Melbourne, Brisbane, Adelaide, Perth, Canberra (3750 TARPs)	Apr-May 99	65% 18-44 year old females, 4 times
2. "Trolley" 30 second advertisement for Special K	• Kellogg	Brisbane and Qld regional (1819 TARPs)	Jan-Mar 99	30% 30-49 year old females, 3 times
<b>Publications</b>				
1. Kaz Cook postcard	• Kellogg • Northcott	PR events	Jan-Jun 99	-
2. "Don't be late with folate" brochure	• Kellogg • Northcott	Health professionals; Consumer enquiries	Jan-Jun 99	-
<b>On-pack</b>				
1. Whole back of pack - "Help you baby's start to life"	• Kellogg	Special K		} } } }
2. Side panel of pack – health claim message from Kellogg nutritionists	• Kellogg	Bran Flakes, Just Right, Just Right Just Grains, Komplete, Mini Wheats (4 varieties), Sultana Bran	Jan-Jun 99	} } } } } } }
3. Front of pack – Folate Logo	• Kellogg	12 cereals containing 100µg folate per serve		} }

**Table 3. Consumer evaluation of the folate television advertisements  
(percentage of women aged 25-45)**

	<b>“Trolley” (=60)</b>	<b>“Ultrasound” (n=60)</b>	<b>Australian Norm</b>
Easy to understand	76	56	56
Provided new information	81	87	39
Relevant	87	84	65
Believable	93	93	67
Interesting	39	61	38

**Table 4. Percentage of women aged 18-44 years aware of folate  
Mean (95% CI)<sup>#</sup>**

	<b>July 1998</b> n = 588	<b>November 1998</b> n = 605	<b>May 1999</b> n = 549
All	63 (57-66)	72* (67-77)	84 <sup>†</sup> (80-88)
Ages			
18-24y	55 (40-70)	63 <sup>a</sup> (50-76)	85 <sup>†</sup> (74-96)
25-34y	66 (57-75)	76* (58-84)	87 <sup>†</sup> (80-94)
35-44y	64 (56-72)	73* (66-80)	82 <sup>†</sup> (76-88)
Location			
Capital city	61 (54-68)	77* <sup>b</sup> (71-83)	90 <sup>†b</sup> (85-95)
X-city	66 (58-74)	63 (54-72)	75 <sup>†</sup> (67-83)
Household income			
<\$30,000	53 <sup>c</sup> (42-64)	74* (64-84)	76 <sup>c</sup> (57-85)
>\$50,000	75 (66-84)	76 (68-84)	91 <sup>†</sup> (85-97)
Children in house			
Yes	66 (59-73)	76* <sup>d</sup> (70-82)	87 <sup>†</sup> (82-92)
No	58 (48-68)	64 (55-73)	81 <sup>†</sup> (73-89)

Notes:

<sup>#</sup> Confidence intervals

\* significantly different from July 1998 ( $p < 0.05$ )

<sup>†</sup> significantly different from November 1998 ( $p < 0.05$ )

<sup>a</sup> significantly different from age >24 ( $p < 0.05$ )

<sup>b</sup> significantly different from X-city ( $p < 0.05$ )

<sup>c</sup> significantly different from > \$50,000 ( $p < 0.05$ )

<sup>d</sup> significantly different from women with no children aged 17 or under in house ( $p < 0.05$ )

**Table 5. Percentage of women aged 18-44 years nominating foods as sources of folate  
Mean (95% CI)<sup>#</sup>**

		<b>July 1998</b> n = 588	<b>November 1998</b> n = 605	<b>May 1999</b> n = 549
Leafy green vegetables	U <sup>a</sup>	29 (24-34)	33 (28-38)	41 <sup>†</sup> (35-47)
	T <sup>a</sup>	52 (46-58)	61* (56-66)	72 <sup>†</sup> (67-77)
Breakfast cereals	U	17 (13-21)	26* (21-31)	37 <sup>†</sup> (31-43)
	T	43 (37-49)	55* (51-61)	70 <sup>†</sup> (65-75)
Fruit	U	7 (4-10)	12* (8-16)	11 (7-15)
	T	31 (26-36)	40*(36-44)	41 (35=47)
Bread	U	5 (3-7)	6 (3-9)	10 <sup>†</sup> (6-14)
	T	24 (19-29)	32* (27-37)	40 <sup>†</sup> (34-46)
Meat	U	9 (6-12)	8 (5-11)	9 (6-12)
	T	20 (15-25)	19 (15-23)	24 (19-29)
Fish	U	1 (0-2)	3 (1-5)	2 (0-4)
	T	19 (15-23)	27* (22-32)	32 (26-38)
Cheese	U	5 (3-7)	4 (2-6)	6 (3-9)
	T	7 (4-10)	7 (4-10)	10 (6-14)

Notes:

<sup>#</sup> Confidence intervals

<sup>a</sup> U = unprompted; T = total prompted and unprompted

\* significantly different from July 1998 ( $p < 0.05$ )

<sup>†</sup> significantly different from November 1998 ( $p < 0.05$ )

**Table 6. Percentage of women aged 18-44 believing folate reduces disease risk  
Unprompted Mean (95% CI<sup>#</sup>)**

	<b>July 1998</b> n = 588	<b>November 1998</b> n = 605	<b>May 1999</b> n = 549
<b>Heart disease</b>	6 (3-9)	3 (1-5)	3 (1-5)
<b>Cancer</b>	5 (3-7)	3 (1-5)	4 (2-6)
<b>Spina bifida</b>	13 (9-17)	15 (11-19)	20 <sup>†</sup> (15-25)
<b>Birth defects</b>			
All (inc Spina bifida)	21 (16-26)	29* (24-34)	44 <sup>†</sup> (38-50)
<b>Ages</b>			
18-24y	14 (4-24)	21 <sup>a</sup> (10-32)	36 <sup>†</sup> (22-50)
25-34y	25 (17-33)	34* (25-43)	52 <sup>†</sup> (42-62)
35-44y	21 (14-28)	29* (19-33)	40 <sup>†</sup> (32-48)
<b>Location</b>			
<i>Capital city</i>	20 (14-26)	31* (24-38)	49 <sup>†b</sup> (41-57)
<i>X-city</i>	22 (15-29)	25 (17-33)	34 <sup>†</sup> (25-43)
<b>Household income</b>			
<\$30,000	14 <sup>c</sup> (6-22)	25* <sup>c</sup> (15-35)	35 <sup>c</sup> (24-46)
>\$50,000	28 (19-27)	39* (30-48)	50 <sup>†</sup> (40-60)
<b>Children in house</b>			
Yes	23 (17-29)	33* <sup>d</sup> (26-40)	48 <sup>†d</sup> (41-55)
No	17 (10-24)	23 (15-31)	38 <sup>†</sup> (29-47)
<b>SES</b>			
<i>white collar</i>	23 (17-29)	32* <sup>e</sup> (25-39)	48 <sup>†e</sup> (40-56)
<i>blue collar</i>	18 (11-25)	24 (16-32)	38 <sup>†</sup> (29-47)

Notes:

<sup>#</sup> Confidence intervals

\* significantly different from July 1998 ( $p < 0.05$ )

<sup>†</sup> significantly different from November 1998 ( $p < 0.05$ )

<sup>a</sup> significantly different from women >24 years ( $p < 0.05$ )

<sup>b</sup> significantly different from X-city ( $p < 0.05$ )

<sup>c</sup> significantly different from > \$50,000 ( $p < 0.05$ )

<sup>d</sup> significantly different from women with no children aged 17 or under in house ( $p < 0.05$ )

<sup>e</sup> significantly different from women from blue collar SES group ( $p < 0.05$ )



**Table 7. Percentage of women aged 18-44 years aware of recommendation to increase folate intake before pregnancy**  
**Mean (95% CI)<sup>#</sup>**

	<b>July 1998</b> n = 588	<b>November 1998</b> n = 605	<b>May 1999</b> n = 549
All	37 (31-43)	45* (39-51)	67 <sup>†</sup> (61-73)
Location			
<i>Capital city</i>	37 (30-44)	49* <sup>a</sup> (42-56)	75 <sup>†a</sup> (68-82)
<i>X-city</i>	36 (27-45)	38 (29-47)	52 <sup>†</sup> (43-61)
<i>NSW</i>	37 (27-47)	46 (36-56)	68 <sup>†</sup> (58-78)
<i>Vic</i>	33 (22-44)	43 (32-54)	73 <sup>†</sup> (63-83)
<i>Qld</i>	28 (16-40)	37 (24-50)	53 <sup>†</sup> (38-68)
<i>SA</i>	46 (30-62)	47 (30-64)	71 <sup>†</sup> (55-87)
<i>WA</i>	54 (38-70)	58 (42-74)	73 (59-87)
<i>Tas</i>	24 (1-47)	34 (7-61)	44 (14-74)
Household income			
<\$30,000	27 <sup>b</sup> (17-37)	38* <sup>b</sup> (27-49)	59 <sup>†b</sup> (48-70)
>\$50,000	51 (41-61)	56 (46-66)	72 <sup>†</sup> (63-81)
Given birth			
<i>Yes</i>	40 <sup>c</sup> (33-47)	50* <sup>c</sup> (27-49)	70 <sup>†</sup> (63-77)
<i>No</i>	31 (22-40)	37 (28-46)	63 <sup>†</sup> (53-73)

Notes:

<sup>#</sup> Confidence intervals

\* significantly different from July 1998 ( $p < 0.05$ )

<sup>†</sup> significantly different from November 1998 ( $p < 0.05$ )

<sup>a</sup> significantly different from X-city ( $p < 0.05$ )

<sup>b</sup> significantly different from > \$50,000 ( $p < 0.05$ )

<sup>c</sup> significantly different from niliparous women ( $p < 0.05$ )

**Figure 1. Folate logo used on cereal packs**



**Figure 2. Summary of key changes in awareness  
Mean and 95%CI**

