Impact of a mass media campaign linking abdominal obesity and cancer: a natural exposure evaluation

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Abstract

A mass media campaign aired in the Australian state of Victoria aimed to increase awareness and encourage identification of the abdominal circumference for men and women that placed them at increased risk of cancer. The evaluation assessed the extent to which ad exposure was associated with improvement in awareness, intentions and behaviours with respect to weight and cancer. Respondents were overweight or obese adults aged 30–69 years and exposure to the advertisement occurred via commercial television programmes in a natural setting. Questionnaire assessment occurred before, immediately after and 2 weeks following exposure to the advertising, and a comparison group who did not recall the ad completed the same interviews. For the main analyses, the exposure group was those who recalled the advertisement at post-exposure and follow-up (n = 101). Those who did not recall it at either stage comprised the unexposed group (n = 81). The campaign achieved its primary objective of increased awareness of the link between obesity and cancer and the specific waist sizes indicative of risk, as well as increased behavioural intentions with respect to weight and cancer. However, it did not have an effect on self-awareness of weight status, perceived personal risk of cancer or weight loss behaviour.

Introduction

The most recent Australian National Health Survey showed that between 1990 and 2005, the prevalence of adult obesity doubled from 9 [1] to 18% [2]. This trend is echoed throughout the developed world with obesity increasing from 23 [3] to 34% [4] in the United States over a comparable period and in England from 15 to 23% in the decade from 1993 to 2003 [5]. The World Health Organization (WHO) describes obesity as a ‘global epidemic’ [6]. The Australian prevalence figures are based on self-reported height and weight and therefore likely represent an underestimate [7] with the most recent measured data showing that obesity prevalence was 20% in the year 2000 [8]. Moreover, waist circumference may provide a more accurate indication of increased risk of disease [9] and data suggest rates of abdominal obesity in Australia (24%) [8] may exceed those of estimates based on guidelines for body weight classification.

Evidence suggests the increase in overweight and obesity is at least partly due to modifiable lifestyle factors such as diet and exercise [6, 10, 11]. Recent research indicates a link between obese body mass index (BMI of 30+ kg/m²) [12] and increased risk for cancer of the colon [13], breast (post-menopause) [14], endometrium [15] and oesophagus [16]. Overweight (BMI of 25.0–29.9 kg/m²) [12] is similarly associated with these cancers, with less effect on risk. Furthermore, increased risk of cancer at these sites is indicated by a waist circumference.
circumference of >100 cm for men and >85 cm for women [17]. A 2005 population survey of residents of Victoria, Australia, indicated that on the basis of unprompted recall, only 1% were aware of the link between weight and cancer [18]. As well, many Australians do not recognize that they are overweight and therefore at increased risk of cancer and the proportion that misclassify their weight status is increasing over time [2, 19]. In other countries, personal perceptions of weight as healthy have also been found to differ from that of the clinical definition [20, 21].

In 1998, the WHO noted that the mass media represents a potentially effective avenue for obesity prevention [6]. The mass media provides a highly cost-effective means of reframing a particular health issue as a public health problem and promoting relevant health behaviour change solutions to a large audience, to manage and prevent chronic disease [22–26]. To date, locally and internationally none have addressed the link between obesity and cancer, although a small number of campaigns have highlighted the relationship between obesity and heart disease and diabetes or as a risk to health in general [27–30]. Overall though, few have addressed obesity directly but rather focussed on contributing factors such as diet and exercise [28,31–38]. For the small number addressing obesity, evaluation findings support their effectiveness in influencing knowledge and awareness of overweight and obesity as a health risk factor and the need for relevant lifestyle behaviour change [27, 29, 30]. However, findings on their ability to stimulate sustained behaviour change have generally been more limited [27, 28, 33].

Given the problem posed by obesity both in Australia and other developed countries, there is a pressing need for population-based interventions that seek to manage and prevent it and evaluation of their effectiveness. This study presents an evaluation of the first known television campaign to highlight the association between abdominal obesity and cancer and employed a naturalistic design to provide a more accurate estimate of the real impact of the campaign. The obesity and cancer campaign evaluation aimed to determine the impact of the advertisement among the target group and to assess the extent to which ad exposure was associated with improvement in awareness, intentions and behaviours with respect to weight and cancer. The findings will add to the limited literature on the potential of mass media campaigns as a medium by which to influence obesity-related beliefs and behaviours.

### Methods

#### Campaign background

In May 2007, Cancer Council Victoria launched the ‘Piece of String’ television advertising campaign aimed at addressing obesity and cancer in the state of Victoria, Australia (population 5.3 million) [39]. The campaign ran for 6 weeks during pre-booked advertising placements in 46 television programmes (23 metropolitan and 23 rural), with average weekly target audience rating points (TARPS) of 170. The campaign was targeted towards adults >30 at risk of obesity-related cancer through being overweight. The ad depicts a domestic scene with a young girl measuring two pieces of string to the target waist circumferences specified in the ad and her unsuccessful attempts to wrap the long string around her father’s waist. Research is cited indicating that being overweight increases your risk of some types of cancers and the target waist measurements that men and women should not exceed. The ad can be viewed at: [http://www.cancervic.org.au/downloads/obesity_prevention/obesity_tv_ad.mpg](http://www.cancervic.org.au/downloads/obesity_prevention/obesity_tv_ad.mpg)

The Piece of String ad had its conceptual basis in social cognitive theories of behaviour change [40–44]. The primary objectives of the campaign were to increase awareness of the link between cancer and obesity and to encourage viewers to identify whether they are at increased risk of cancer due to their weight. The secondary objective was to influence lifestyle behaviours with respect to weight. The television advertisement was supported by a helpline and website providing further detail on the research referred to. A kit containing print materials and a tape measure was provided to callers and website registrants.
Initial focus group testing indicated that the ad provided new information about the link between cancer and obesity required to create awareness. The use of waist measures provided an objective tool for respondents to identify themselves as being at risk of obesity-related cancers and encouraged them to do so. There was also some indication that viewers would recall the specific waist measurements.

**Design and sample**

Evaluation of the short and medium term impact of the ad campaign was undertaken using a Natural ExposureSM Advertising Research methodology [45] where respondents view the campaign in commercial television programmes in their usual home environment. Respondents were asked to watch a television programme they normally choose and in which the ad had been placed, without cuing them that the ad was the focus of the research. Respondents were randomly recruited from the Roy Morgan Single Source database of 55,000 previous survey participants. Inclusion criteria were met by 4317 respondents who were overweight or obese (BMI $\geq 25$ kg/m$^2$) [12], aged 30–69 years and resided in Victoria. The sample was stratified to compose 50% parents of children under 17. The evaluation employed a pretest–post-test control-group design comprising three phases: pre-exposure, post-exposure and follow-up interview. At pre-exposure, 519 respondents were recruited to watch a television programme they usually viewed, during which the ad was scheduled to air. Of these, the exposure group viewed the ad both immediately post-exposure and again at follow-up ($n = 101$). The comparison group did not recall the ad at either phase ($n = 81$).

**Measures and procedure**

Sociodemographic characteristics measured were age, sex, BMI, location, parental status, daily TV hours, work status, education, income and Index of Relative Socio-Economic Advantage/Disadvantage (IRSAD). The IRSAD is a socio-economic index based on postcode and derived from area attributes such as income and occupation [46].

The pre-exposure interviews took place 1–3 days before each programme aired in the first week of the campaign. The post-exposure interviews were conducted 1–2 days after the scheduled programme and the follow-up interviews were approximately 2 weeks after the scheduled programme.

**Pre-exposure interview**

At pre-exposure, respondents were asked a series of questions to provide unprompted assessments of their awareness of the link between cancer and overweight/obesity (and related lifestyle factors: diet and exercise), awareness of their own weight status, perceived personal risk of cancer, short-term behavioural intentions with regard to weight loss, as well as actual weight loss behaviour (see Table I). To reduce response bias and cuing to cancer, each question regarding cancer was embedded with equivalent questions in relation to having a car accident and a house fire. These questions were asked again at post-exposure in order to measure any immediate change in awareness, intentions and behaviours and again at follow-up interview to assess medium term change.

**Post-exposure interview**

At post-exposure, respondents who had watched a programme within which the ad aired (and at least some of the ad breaks) were asked whether they had seen any advertisements during the programme with a health or illness message. Those who had were asked to describe the message (unprompted recall). If they did not mention cancer and weight, or had not seen such an ad, it was described in full (prompted recall). Respondents who recalled seeing an ad with a cancer and weight message and those who indicated they had seen it after being prompted were asked to describe the ad. Respondents who correctly described the ad were asked whether it prompted them to measure their waist size and whether they recalled the specific waist measurements associated with increased cancer risk.

To measure their cognitive responses to the ad, respondents were asked whether it provided them with new information, was relevant to them and to someone close to them. To measure affective
responses, they were asked whether it made them concerned about their waist size and their risk of cancer and that of someone close to them.

**Follow-up interview**
In addition to again being asked the pre-exposure questions, respondents were asked whether they measured their waist size.

**Data analyses**
Multiple logistic regression analyses using a random-effects model for cases with non-independent outcomes [47] were used to compare the exposed versus unexposed groups across the study phases on awareness, intentions, and behaviours with respect to weight and cancer. For the main analyses, the confirmed exposure group comprised respondents

<table>
<thead>
<tr>
<th>Construct</th>
<th>Question</th>
<th>Response options</th>
<th>Pre-exposure</th>
<th>Post-exposure</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness of obesity and cancer link</td>
<td><strong>What do you think is the most important lifestyle factor, other than smoking, that increases your own risk of cancer? What is the next most important lifestyle factor that increases your own risk of cancer? And, finally, what is the third most important lifestyle factor?</strong></td>
<td>Open ended (overweight, obesity, weight, waist size). Related lifestyle factors: diet and exercise, also measured.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Awareness of own weight status</td>
<td><strong>Which of the following accurately describes your weight? Would that be underweight, a healthy weight, overweight or obese?</strong></td>
<td>Underweight, a healthy weight, overweight or obese.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Perceived personal risk</td>
<td><strong>Thinking about your current lifestyle, on a scale of 1 to 5, where 1 is certain not to happen and 5 is certain to happen, what is your chance of developing cancer one day?</strong></td>
<td>1 = certain not to happen to 5 = certain to happen.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Short-term weight loss</td>
<td><strong>Are there any [other] lifestyle factors that you intend to change in the next two weeks, to reduce your risk of cancer? IF YES: And what factors do you intend to change in the next two weeks?</strong></td>
<td>Open ended (increase exercise, change diet &amp;/or lose weight in general).</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Weight loss behaviour</td>
<td><strong>In the last two weeks, have you changed any lifestyle factors with the aim of reducing your risk of cancer? IF YES: And what factors have you changed in the last two weeks?</strong></td>
<td>Open ended (increase exercise, change diet &amp;/or lose weight in general).</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
who recalled the advertisement at post-exposure and viewed it again at follow-up \((n = 101)\). Those who did not recall the advertisement comprised the comparison (unexposed) group \((n = 81)\). Dichotomous dependent variables were created for the five logistic regression models reported. Awareness of the link between cancer and obesity was coded as yes/no and the same for diet and exercise. Weight loss intentions were coded as intention to increase exercise, change diet and/or lose weight or no such intentions and the same for actual weight loss behaviour. All multivariate analyses controlled for age, sex, BMI, location, parental status, daily TV hours, education, work status, income and IRSAD. Tables present results of multivariate analyses relevant to the experimental hypotheses.

### Results

#### Respondent characteristics

Table II summarizes the demographic profile of the sample by study phase and group. Compared with the general population, the sample was skewed towards higher socio-economic status (SES), with 36.5% being in the highest IRSAD quartile and 39.0% having completed tertiary education (compared with 28.3% for the general population) [48], but were otherwise similar. Compared with the unexposed group, the exposed group comprised a greater proportion of females, those less likely to be employed in full-time work, and who watched more hours of commercial television per day.

#### Exposure to the Piece of String advertisement

Of the 519 respondents who agreed to watch one of the television programmes during which the *Piece of String* advertisement aired, 283 (54.5%) watched such a programme and the advertising breaks to some degree. Of these, 10.6% \((n = 30)\) had seen an advertisement during the programme with a health or illness message and described the weight and cancer message (unprompted recall). Another 54.4% \((n = 154)\) recalled seeing the ad after a description was read out to them (prompted recall). Overall, 65.0% \((n = 184)\) of those who watched at least some of the ad breaks recalled the advertisement either unprompted or prompted. Of the 457 respondents who completed an interview at post-exposure, 358 were recontacted 2 weeks later. Of those who had watched television over the intervening period (328), 76.5% \((251)\) recalled the advertisement.

<table>
<thead>
<tr>
<th>Sociodemographic characteristics</th>
<th>Exposed(^a) (n (%))</th>
<th>Unexposed(^b) (n (%))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>44 (43.6)</td>
<td>55 (67.9)**</td>
</tr>
<tr>
<td>Female</td>
<td>57 (56.4)</td>
<td>26 (32.1)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30–49</td>
<td>51 (50.5)</td>
<td>42 (51.9)</td>
</tr>
<tr>
<td>50–69</td>
<td>50 (49.5)</td>
<td>39 (48.1)</td>
</tr>
<tr>
<td>BMI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight (25–29)</td>
<td>50 (49.5)</td>
<td>43 (53.1)</td>
</tr>
<tr>
<td>Obese (30+)</td>
<td>51 (50.5)</td>
<td>38 (46.9)</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metropolitan</td>
<td>72 (71.3)</td>
<td>56 (69.1)</td>
</tr>
<tr>
<td>Regional</td>
<td>29 (28.7)</td>
<td>25 (30.9)</td>
</tr>
<tr>
<td>Parental status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>46 (45.5)</td>
<td>43 (53.1)</td>
</tr>
<tr>
<td>No</td>
<td>55 (54.5)</td>
<td>38 (46.9)</td>
</tr>
<tr>
<td>Daily TV hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 hours or less</td>
<td>58 (57.4)</td>
<td>73 (90.1)**</td>
</tr>
<tr>
<td>&gt;4 hours</td>
<td>43 (42.6)</td>
<td>8 (9.9)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 12/trade or lower</td>
<td>65 (64.4)</td>
<td>46 (56.8)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>36 (35.6)</td>
<td>35 (43.2)</td>
</tr>
<tr>
<td>Work status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td>37 (36.6)</td>
<td>49 (60.5)**</td>
</tr>
<tr>
<td>Part time</td>
<td>24 (23.8)</td>
<td>9 (11.1)</td>
</tr>
<tr>
<td>Not working</td>
<td>40 (39.6)</td>
<td>23 (28.4)</td>
</tr>
<tr>
<td>Income (Household)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under $34 999</td>
<td>28 (33.7)</td>
<td>17 (22.7)</td>
</tr>
<tr>
<td>$35 000–$79 999</td>
<td>26 (31.3)</td>
<td>25 (33.3)</td>
</tr>
<tr>
<td>$80 000 or over</td>
<td>29 (34.9)</td>
<td>33 (44.0)</td>
</tr>
<tr>
<td>SES (IRSAD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>35 (34.7)</td>
<td>35 (30.9)</td>
</tr>
<tr>
<td>Upper middle</td>
<td>32 (31.7)</td>
<td>31 (38.3)</td>
</tr>
<tr>
<td>Lower middle</td>
<td>16 (15.8)</td>
<td>12 (14.8)</td>
</tr>
<tr>
<td>Low</td>
<td>18 (17.8)</td>
<td>13 (16.0)</td>
</tr>
</tbody>
</table>

\(^a\)Base: total correctly recalled ad at post-exposure and viewed ad at follow-up \((exposed: n = 101)\).

\(^b\)Base: total did not view ad at post-exposure or follow-up \((unexposed: n = 81)\). **\(P < 0.01\), ***\(P < 0.001\).
Recall of the Piece of String advertising messages

Respondents’ descriptions of the ad indicated that close to 30% (28.3%) recalled the primary advertising message, which was the link between weight or waist size and cancer, though just over one-third (36.4%) named weight or waist size alone as the key message of the ad. More than one in three (37.8%) recalled, unprompted, the waist measurements associated with increased risk of cancer for men (100 cm) or women (85 cm) or both. Other respondents recalled a more general message about the impact of weight on health (11.4%) or linked weight with a specific illness other than cancer (8.7%).

Responses to the Piece of String advertising messages

Of those who had watched a designated television programme, 152 respondents demonstrated complete recall of the Piece of String ad immediately post-exposure (32 respondents were unable to describe the ad in full). Measurement of retention of the information provided by the ad indicated that almost two-thirds (63.4% of males and 64.2% of females) correctly reported the waist sizes associated with an increased risk of cancer for their gender, when prompted to do so. Assessment of cognitive responses to the ad showed it provided 71.1% of respondents with new information, which 62.5% saw as relevant to them and 66.5% saw as relevant to someone close to them. Affective responses showed 56.6% were concerned about their waist size following exposure to the ad, and 60.5% were concerned about that of someone close to them. In addition, 42.1% agreed the ad made them concerned about their risk of cancer and 52.0% that of someone close to them.

Effect of ad exposure on awareness, intentions and behaviours

Of respondents who demonstrated complete recall of the ad at post-exposure, those who also viewed it at follow-up comprised the confirmed exposure group (n = 101) and those who did not recall the ad at either stage comprised the unexposed group (n = 81). An immediate response to the ad was evidenced in the 13.9% of respondents in the exposure group who measured their waist size at post-exposure, increasing to 25.7% 2 weeks later at follow-up.

Awareness of the link between cancer and obesity

At each of the study phases, respondents were asked about the three most important lifestyle factors, other than smoking, that increase their risk of cancer. Table III shows that awareness of the link between cancer and overweight/obesity was more likely among the exposed than the unexposed group [odds ratio (OR) 5.0; 95% confidence interval (CI): 2.1–11.8, P < 0.001], at post-exposure and follow-up. Mentions of diet, a lifestyle factor related to obesity, were also more likely in the exposed group at post-exposure compared with the unexposed group; however, a similar pattern of effects was not found for exercise.

Awareness of weight status and perceived cancer risk

Respondents’ self-classification as underweight, a healthy weight, overweight or obese was compared with their actual BMI category. Respondents misclassified their weight status where they considered themselves a healthy weight or underweight. Overall, 40% of respondents (46% of males and 34% of females) misclassified their weight status at pre-exposure. Multivariate analysis of awareness of weight status showed no difference in likelihood of misclassifying weight status between the groups at post-exposure or follow-up. The mean (standard deviation) perceived risk of cancer was 2.7 (1.1) and multivariate analysis showed no difference between the groups across the study phases.

Reported weight loss intentions and behaviours

At each phase, respondents were asked if they intended to change any lifestyle factors in the next 2 weeks to reduce their risk of cancer (see Table IV). Mentions of weight loss, diet and exercise, all
behaviours associated with weight reduction, were combined. The exposed group was more likely than the unexposed group to mention weight loss intentions following initial exposure (OR 2.2; 95% CI: 1.2–4.2, *P < 0.05). However, these results were not maintained 2 weeks later at follow-up.

Respondents were asked at pre-exposure and follow-up, whether they had changed any lifestyle factors in the last 2 weeks, to reduce their risk of cancer (see Table IV). Multivariate analyses of mentions of weight loss behaviours showed respondents were more likely to change these behaviours at follow-up, compared with pre-exposure. However, there was no difference between the study groups, suggesting that exposure to the ad did not impact on behaviour.

**Discussion**

The Natural Exposure evaluation indicated moderate awareness of the *Piece of String* ad with the majority of overweight or obese adults (65%) recalling it (unprompted or prompted) following initial exposure. Recall rose to 76.5% 2 weeks later, suggesting that the target group was exposed to a meaningful dose of the advertising message over the first 2 weeks of the campaign. Exposure was comparable with that associated with other obesity-focussed campaigns (57–65%) [29, 30] as well as those aimed at influencing antecedent factors among the target group (70–72%) [31, 35] and with reach measured among whole populations (56–57%) [28, 32].

While the message about weight or waist size was the most salient for respondents, over one in four recalled the key message regarding the link between obesity and cancer. The impact of the ad was also tested by comparing unprompted awareness of the message before and after exposure and among those who did and did not recall the ad. In line with previous research, baseline unprompted awareness was extremely low [18]. Respondents exposed to the ad were five times as likely to be aware of the link between obesity and cancer as the
unexposed group. These results were maintained 2 weeks later at follow-up. This indicates that exposure to the ad was associated with increased awareness of the link between obesity and cancer and therefore suggests the campaign achieved its primary objective.

Further evidence of the immediate impact of the ad is indicated by a change in behavioural intentions with respect to weight and cancer, immediately following exposure. Those exposed to the ad were more than twice as likely as those unexposed to report weight loss-related intentions to reduce their risk of cancer. However, this increase was not maintained at follow-up, suggesting additional cueing or reinforcement may be required in order to move respondents from intention to longer term behavioural change [32].

The other primary objective of the campaign was to encourage viewers to identify whether they are at increased risk of cancer due to their weight. Among all those who recalled the ad at post-exposure, almost two-thirds acquired knowledge of the specific waist measurements associated with increased risk of cancer. Further, immediately following exposure, 13.9% of respondents who recalled the ad measured their waist to determine whether they were at increased risk of cancer. This figure increased to one-quarter (25.7%) when respondents were given an additional 2 weeks following initial exposure. The provision of objective waist measures was aimed at increasing awareness of self-classification as overweight or obese and therefore of increased risk of obesity-related cancers. In line with previous Australian research [2], 40% of respondents misclassified their weight at baseline. The ad did not influence respondents’ assessment of their weight status immediately post-exposure, and no re-evaluation of their weight assessment was made after subsequent exposure to the advertising.

There was also a lack of increase in perceived personal risk of cancer following exposure to the ad, suggesting the ad did not impact on respondents’ risk self-assessment for developing cancer. Overall, these results suggest that the ad did not have a significant impact on self-awareness of weight status and therefore perceived risk of obesity-related cancer. This conclusion is further supported by the greater proportion of respondents reporting the ad was relevant to someone close to them compared with themselves, and similarly concern about the waist size and cancer risk of someone close to them. Further, the proportion who saw the ad as relevant to them was comparatively lower than that found among smokers for anti-smoking

<table>
<thead>
<tr>
<th>Intended behaviour change</th>
<th>Phase</th>
<th>Exposed (%)</th>
<th>Unexposed (%)</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight loss, diet and/or exercise</td>
<td>Pre-exposure</td>
<td>17.8</td>
<td>19.8</td>
<td>Group: 2.2 (1.2–4.2)*</td>
</tr>
<tr>
<td></td>
<td>Post-exposure</td>
<td>35.6</td>
<td>12.3</td>
<td>Phase I: 1.3 (0.8–2.1)</td>
</tr>
<tr>
<td></td>
<td>Follow-up</td>
<td>25.7</td>
<td>17.3</td>
<td>Group × Phase I: 1.5 (2.0–14.7)**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behaviour change</th>
<th>Phase</th>
<th>Exposed (%)</th>
<th>Unexposed (%)</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight loss, diet and/or exercise</td>
<td>Pre-exposure</td>
<td>12.9</td>
<td>19.8</td>
<td>Group: 0.9 (0.5–1.9)</td>
</tr>
<tr>
<td></td>
<td>Follow-up</td>
<td>29.7</td>
<td>27.2</td>
<td>Phase II: 2.0 (1.3–3.2)**</td>
</tr>
</tbody>
</table>

Group: study group effect; Phase I: post-exposure study phase effect; Phase II: follow-up study phase effect; Group × Phase I: group by post-exposure study phase interaction; Group × Phase II: group by follow-up study phase interaction.

*aBase: total correctly recalled ad at post-exposure and viewed ad at follow-up (exposed: n = 101).
*bBase: total did not view ad at post-exposure or follow-up (unexposed: n = 81).
*cStatistical analyses testing for effects of group and study phase (main effects and interaction) controlled for sociodemographic variables: age, sex, BMI, location, parental status, daily TV hours, education, work status, income, IRSAD. *P < 0.05, **P < 0.01. NB. Multiple responses allowed.
campaigns [49]. There is also the possibility that respondents who recalled the ad did not believe the message about the link between obesity and cancer. Based on theories of health-related behaviour, in particular the Health Belief Model which suggests that decisions about health-related behaviours are made based on an individuals’ attitudes and beliefs [42, 44], if the message of the ad was recalled and accepted (perceived threat), and an accurate appraisal of weight status was made (perceived susceptibility), it might be expected that respondents would increase their perceptions of their own risk of cancer (perceived severity) leading ultimately to behaviour change aimed at risk reduction.

Not surprisingly then, differences were not found for weight loss-related behaviours between those who did and did not recall the ad. Overall, these findings are in line with previous research, particularly in relation to obesity prevention behaviours such as diet and exercise, which has suggested that short-term media campaigns stimulate improvements in knowledge and awareness; however, significant behaviour change is not manifested in the short term [32–34, 38]. It is likely that given the obesity and cancer message provided new information; knowledge acquisition represents the necessary but not sufficient cause of eventual behaviour change aimed at reducing obesity-related cancer risk. In line with theories of individual behaviour change from social psychology [43], evaluation research suggests that media campaigns providing new information may initially produce a change in behavioural intentions which may in the longer term lead to sustained behaviour change [32]. Indeed, as outlined previously, the present study showed an early indication of increased intentions with regard to weight loss behaviour following initial exposure to the ad.

Some limitations must be taken into account in interpreting these results. Firstly, the unexposed group cannot be considered a true control group, since while respondents were unable to recall the ad even after detailed prompting, this does not guarantee they were never exposed to it. Secondly, a response rate of 12% was achieved when 519 of the 4317 potential respondents who met the inclusion criteria agreed to watch a programme. However, the denominator is inflated by the inclusion of respondents who were not regular viewers of one of the programmes and would have been ineligible. Thirdly, there are a number of limitations associated with the follow-up phase of the study. Despite efforts to minimize response bias and cuing to cancer, respondents who recalled the ad may have been primed following the post-exposure interview which focussed on the key messages of the ad, thereby over-reporting effects at follow-up interview. It is notable then that the strongest effects are found immediately post-exposure. In addition, while the study seeks to determine the impact of the ad in a natural setting, it is limited in doing so at follow-up as asking questions about the ad at post-exposure would likely have influenced subsequent responses. Finally, the rate of loss to follow-up of the sample used for statistical comparisons was 44.3% (33.5% of exposed and 55.2% of unexposed respondents), resulting in relatively small numbers of study participants in the main analyses and reduced power to detect differences. However, analyses of baseline characteristics of those retained versus those lost to follow-up indicated the two groups were similar, except for loss of a greater proportion of females than males.

Conclusions

The Piece of String obesity prevention campaign had an impact on its target audience with the majority of overweight and obese adults recalling seeing the ad. An immediate response was evidenced in the one in seven respondents who measured their waist size in the 1–2 days following exposure to the ad with the proportion increasing to one in four, 2 weeks later. Moreover, awareness of the link between obesity and cancer increased following exposure among respondents who recalled the ad, with no corresponding increase among those who did not. However, the proportion that classified their overweight or obese weight status as healthy did not decrease following exposure to the ad.
Similarly, respondents’ perceived risk of cancer did not increase following exposure. The proportion who intended to undertake weight loss-related behaviours increased immediately after exposure to the ad among those who recalled it and not among those who did not; however, this was not maintained at follow-up, and actual behaviour change was not affected by whether the ad was recalled.

Overall, the results suggest the campaign achieved its primary objective of increased awareness of the link between obesity and cancer and the specific waist sizes indicative of risk; however, it did not have an overall effect on self-awareness of weight status or on perceived risk of cancer. Those who recalled the ad took away the key message about the increased risk of cancer associated with obesity but may have exempted themselves from relevance of this message, misclassifying themselves as being a healthy weight and seeing it as more relevant to others, and thereby not achieving a corresponding increase in their perceived personal risk of cancer. Future campaigns will need to address this barrier in order to influence behaviour.

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References


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