Changes in beliefs about cancer in Western Australia, 1964–2001

Robert J Donovan, Owen B J Carter, Geoffrey Jalleh and Sandra C Jones

ABSTRACT

Objective: To assess changes in people's knowledge and beliefs about cancer between 1964 and 2001.

Design: Questions in a 1964 survey of beliefs about cancer (randomly selected households) were replicated in a 2001 telephone survey (random-digit dialling).

Setting: Perth, Western Australia.

Participants: 984 and 491 participants aged 20 years or older in the 1964 and 2001 surveys, respectively (response rates, 86.8% and 47.0%).

Main outcome measures: Changes in knowledge and beliefs about cancer.

Results: Between 1964 and 2001, there were major improvements in knowledge about the causes of cancer, with several myths dispelled. In 1964, the proportion of Perth residents surveyed who believed that cancer is contagious was 20% (95% CI, 18%–22%), compared with 3% (95% CI, 2%–4%) in 2001. Similarly, the proportion who believed cancer is caused by "a knock" was 25% (95% CI, 22%–28%) in 1964, compared with 1% (95% CI, 0–2%) in 2001. Cancer screening participation rates also greatly improved, from 18% (95% CI, 16%–20%) in 1964 to 77% (95% CI, 73%–81%) in 2001. Changes in participants' sources of knowledge about cancer were also evident, with family members and television increasing markedly as sources of information.

Conclusions: Improved education of the public in health matters over the past four decades appears to have had a major and positive impact on knowledge about cancer.

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Despite modern advances in the treatment of cancer, a comparison of standardised death rates between 1973 and 1993 indicated a slight increase in the proportion of Australians dying of cancer (from 173 to 180 deaths per 100 000 population).[1] In 2001, standardised death rates from cancer remained static, with cancer consistently accounting for just over a quarter of deaths in Australia.[2,3] By comparison, the death rate from cardiovascular disease has almost halved since the 1970s.[1] The unchanged death rates from cancer have largely been attributed to the fact that Australians are not dying from other causes of death at earlier ages.[1]

As many cancers at advanced stages remain incurable, preventive measures, such as early screening programs and changes in lifestyle, are the most effective ways to reduce cancer deaths. Knowledge of cancer risk factors and perceptions of the likelihood of surviving various types of cancer have been consistently associated with higher participation rates in cancer screening for breast cancer,[4] cervical cancer[5] and bowel cancer.[6] These higher participation rates justify the extensive resources that Australia has invested in public cancer-awareness campaigns over the past several decades.

During this time there have also been marked changes in health education and practice. For example, 90% of doctors in 1961 had a policy of not revealing a diagnosis of cancer to their patients,[7] but by 1979 over 98% of doctors disclosed a diagnosis of cancer.[8] It is therefore interesting to assess how the general knowledge, beliefs and attitudes of Australians towards cancer have changed over time.

Several studies have examined changes in public cancer-related knowledge over time; for example, one study found that, in NSW from 1989 to 2000, community knowledge about mammography as a screening test for breast cancer improved.[9] However, few studies have explored changes in knowledge over a period of decades. We aimed to replicate an investigation conducted in 1964 of Perth residents' beliefs about cancer to determine what changes may have resulted from several decades of health education.

METHODS

1964 and 2001 surveys

In 1964, a study conducted by the University of Western Australia on behalf of the Cancer Council of Western Australia surveyed individuals in the Perth metropolitan area on their beliefs and attitudes towards cancer.[10] Interviewers visited 1134 randomly selected households to administer the questionnaire to adults aged 20 years and over. The final sample consisted of 984 participants (40% male and 60% female), giving a response rate of 86.8%. The demographic characteristics of the sample closely resembled those of the population of metropolitan Perth in the 1961 census.

In 2001, we incorporated nine questions replicated from the 1964 study into the interview schedule of a larger national telephone survey investigating Australians' beliefs about cancer.[11] These nine questions concerned contagiousness, heritability and curability of cancer; whether subjects had ever had a cancer check-up; whether they would have a cancer check-up even if they had no obvious symptoms; and their major sources of information about cancer.

Telephone interview

Professional telephone interviewers made contact with Australian households via random-digit telephone dialling and requested to speak to the adult resident whose birthday would next occur. Three attempts were made to contact households with each of the selected telephone numbers. Of the 9354 telephone numbers randomly selected for the national survey, 3352 were either disconnected, or were business or fax numbers; in 677 no contact was made; in 2824 the resident refused to participate or failed to complete the interview; and in 2501 the resident successfully completed the interview. Thus, the participation rate was 47.0%.

Centre for Behavioural Research in Cancer Control, Curtin University of Technology, Bentley, WA.
Robert J Donovan, BPsych(Hons), PhD, Director; **Owen B J Carter**, BPsych, DPsych, Research Fellow; **Geoffrey Jalleh**, BComm, MPH, Associate Director; **Sandra C Jones**, BA, MPH, PhD, Senior Research Fellow.
Reprints will not be available from the authors. Correspondence: Dr Owen B J Carter, Centre for Behavioural Research in Cancer Control, Curtin University of Technology, GPO Box U1987, Bentley, WA 6945. o.carter@curtin.edu.au

1 Comparison of demographic data of survey participants with 2001 census data of Perth residents

	2001 Census data	Survey participants (*n* = 491)
Median age (years)	44.0*	46.0
Australian-born	62.9%†	61.5%
Full- or part-time employed	92.3%‡	92.5%
Married	55.5%*	57.8%
12 or more years of education	44.9%‡	45.2%
University graduate	15.3%‡	24.4%

* Aged 20+ years (*n* = 961 871). † Includes all ages (*n* = 1 339 993). ‡ Aged 15+ years (*n* = 1 064 190).

Survey respondents

The responses of all Perth respondents (*n* = 491; 245 male and 246 female) aged 20 years and over were extracted from the national survey database for comparison with the 1964 study. To enable a faithful comparison with the 1964 survey, responses were weighted to reflect consistent sex ratios (40% male and 60% female).

Ethics approval

Ethics approval for the study was obtained from the Curtin University Ethics Committee.

RESULTS

The demographic characteristics of the 2001 survey sample closely matched those of the Perth adult population in the 2001 census (Box 1),[12] except that there was a higher proportion of university graduates in our sample. As a result, responses were calculated separately for university graduates and non-graduates for each item. The average difference in responses across all nine items was negligible (±2.6%), negating the need to weight the data by education level.

Box 2 compares the responses of the 1964 and 2001 samples of Perth residents. Major improvements were observed in knowledge about the causes of cancer, with several myths dispelled (eg, cancer is contagious or is caused by “a knock”), and there was a marked increase in the proportions of respondents citing lifestyle factors such as smoking, sun exposure and diet as contributing to cancer. Great improvements were noted in participation rates for cancer screening, with a greater than fourfold increase in the proportion of respondents who had ever had a cancer check-up. Participants’ source of knowledge about cancer had also changed, with the proportion indicating television as a source of information increasing markedly, and newspapers no longer being the major source of information. There was a doubling of the proportion of respondents nominating parents and rela-

2 Change in Perth residents’ beliefs, attitudes, behaviours and knowledge about cancer between 1964 and 2001

	1964 (*n* = 981)		2001 (*n* = 491)	
	Number (%)	95% CI	Number (%)	95% CI
Beliefs				
Cancer is inheritable*	265 (27%)	24%–30%	422 (86%)	83%–89%
Cancer is contagious*	196 (20%)	18%–22%	15 (3%)	2%–4%
One month’s treatment delay lessens the chance of cure				
Yes	667 (68%)	65%–71%	313 (64%)	60%–68%
Maybe*	88 (9%)	7%–11%	106 (22%)	18%–26%
No	128 (13%)	11%–15%	54 (11%)	8%–14%
Don’t know*	98 (10%)	8%–12%	18 (4%)	2%–6%
Attitudes/behaviours				
Willing to have a cancer check-up with no symptoms	834 (85%)	83%–87%	432 (88%)	85%–91%
Have ever had a cancer check-up*	177 (18%)	16%–20%	378 (77%)	73%–81%
Knowledge				
Sources of knowledge about cancer				
Newspapers*	471 (48%)	45%–51%	163 (33%)	29%–37%
Friends/neighbours	324 (33%)	30%–36%	185 (38%)	34%–42%
Magazines	235 (24%)	21%–27%	99 (20%)	17%–23%
Parents/relatives*	206 (21%)	18%–24%	205 (42%)	38%–46%
Doctors*	118 (12%)	10%–14%	34 (7%)	5%–9%
Books	69 (7%)	5%–9%	44 (9%)	7%–11%
Television*	59 (6%)	5%–7%	199 (41%)	37%–45%
Main causes of cancer				
Don’t know*	353 (36%)	33%–39%	59 (12%)	9%–15%
”A knock”*	245 (25%)	22%–28%	4 (1%)	0–2%
Smoking*	216 (22%)	19%–25%	211 (43%)	39%–47%
Not known to science*	88 (9%)	7%–11%	4 (1%)	0–2%
Sun exposure*	49 (5%)	4%–6%	79 (16%)	13%–19%
Diet*	39 (4%)	3%–5%	128 (26%)	23%–30%
Genetics*	39 (4%)	3%–5%	93 (19%)	16%–22%
Worry/stress*	29 (3%)	2%–4%	49 (10%)	7 %–13%
Cancer curability				
Completely curable*	255 (26%)	23%–29%	63 (13%)	10%–16%
Sometimes curable*	324 (33%)	30%–36%	404 (82%)	79%–85%
Incurable*	392 (40%)	37%–43%	23 (5%)	3%–7%
Don’t know	29 (3%)	2%–4%	1 (< 1%)	0–2%
*Personal knowledge of a cancer survivor**	363 (37%)	34%–40%	225 (46%)	42%–50%

* 95% confidence intervals do not overlap.

tives as a source of knowledge about cancer. Very few respondents believed that cancer was incurable.

DISCUSSION

Major changes occurred in Perth residents' beliefs, attitudes and knowledge about cancer between 1964 and 2001. The marked increase in the proportion of respondents citing lifestyle factors as contributing to cancer may be due to greater publicity about cancer and to education of the public in health matters over the past four decades, but there is still room for improvement. The increased proportion of respondents who have ever had a cancer check-up reflects a vastly improved cancer screening rate. However, given that the proportion of respondents willing to participate in cancer screening without obvious symptoms has remained unchanged, the improved cancer screening rate appears to reflect greater opportunities to participate in cancer screening, rather than greater motivation to participate *per se*.

Parents and relatives as a major source of knowledge about cancer may be related to the greatly improved disclosure rates for cancer diagnoses compared with the 1960s, or the greater cancer awareness in the community. That television superseded newspapers as the most commonly cited media source is not surprising, as in 1964 only two television channels had recently started broadcasting in Perth (one started in 1959 and a second in 1961), and TV was not widely nominated as a source of information at the time.

The near-eradication of the belief that cancer is *incurable* perhaps reflects greater confidence in modern cancer treatments, and that most participants had personal knowledge of someone successfully treated for cancer. However, the halving in the proportion of respondents who believe that cancer is *completely curable*, and the substantial increase in the proportion who hold the view that cancer is *sometimes curable*, may reflect a more sophisticated awareness of the variety of situational factors that can contribute to the success or failure of cancer treatments (eg, cancer stage and location).

Most Perth respondents, in both 1964 and 2001, believed that a 1-month delay in seeking treatment for cancer lessens the chance of successful treatment. However, over twice as many Perth residents in the 2001 sample thought that a 1-month delay *may* lessen the chance of a cure. Again, this is likely to be a reflection of a more sophisticated appreciation of situation factors affecting cancer treatments.

Although the 1964 survey was conducted face-to-face and the 2001 survey was conducted via telephone interviews, previous studies have demonstrated that subjects' responses to each survey method are very similar.[13,14] Thus, it is reasonable to infer that differences observed between the 1964 and 2001 samples do not reflect the different methods used. The 2001 survey suffered from a relatively low participation rate compared with the 1964 survey. However, given that the demographic characteristics of the 2001 survey sample closely match those of 2001 census data, it is reasonable to assume that the results can be generalised to the broader Perth population. Compared with the 1964 survey,[10] the small difference caused by education level suggests that the disparity in cancer-related knowledge between the least and most educated in Perth has narrowed substantially in the past several decades.

While some misconceptions remain, Perth residents in 2001 appear to be generally better informed about cancer than in 1964: they are better informed about the causes of cancer, have greater awareness of the role of lifestyle factors in cancer development, and more of them have participated in cancer screening. Our data complement those of previous published reports suggesting that increased knowledge is associated with greater participation rates in cancer-screening activities.[4-6] Confidence in cancer treatments has increased, but expectations about curability appear more realistic. Overall, the data convincingly suggest that, while death rates from cancer remain stable, improved education of the public in health matters in the intervening four decades has had a major and positive impact on public knowledge about cancer and has dispelled many misconceptions.

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COMPETING INTERESTS

None identified.

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