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Evaluation of the Sydney “Quit. For Life” anti-smoking campaign*  
Part 2. Changes in smoking prevalence

ABSTRACT  
Between June and November 1983, the “Quit. For Life” media campaign was conducted in Sydney to reduce the prevalence of smoking. Surveys on a cross-sectional sample of the Sydney population were conducted before and after the campaign, and similar measures were undertaken in the rest of Australia for comparison. The sample sizes for both the Sydney and control areas comprised more than 4000 subjects. In addition, a cohort of 949 residents of Sydney and Melbourne were followed for changes in the prevalence of smoking during the year of the campaign. The cross-sectional survey results for 1984 and 1983 demonstrated decreases in the prevalence of smoking of approximately 1% for both men and women in Sydney compared with the rest of Australia. In the cohort study there was a 3.4% decrease in smoking prevalence in Sydney compared with a 0.8% increase in Melbourne. The pooled estimate of the difference in smoking prevalence attributable to the campaign was 2.8% (95% confidence interval, 0.5%–5.1%).

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The “Quit. For Life” campaign in Sydney was initiated because of the positive outcome of the North Coast project. However, the programmes discussed above had been conducted in rural or semi-rural settings, whereas the “Quit. For Life” campaign targeted the entire population of the greater Sydney metropolitan area (3.25 million people).

This paper reports the changes in smoking prevalence and cigarette consumption which could be attributed to the campaign.

Methods

The change in smoking prevalence was assessed primarily by comparing the results of a pre-campaign survey in May–June 1983, and a post-campaign survey in the same months in 1984. This is demonstrated graphically in Figure 1. For comparison, the same measurements were conducted on a sample drawn from the rest of Australia.

The 1983 pre-campaign survey was based on 932 subjects aged 14 years and over; 5376 of these from Sydney and 5154 from the rest of Australia. In 1984, 8396 subjects were interviewed, 4051 of whom were in Sydney, and 4345 in the rest of Australia.

The primary comparison is with the “rest of Australia”, as this is statistically the most powerful comparison. However, a separate comparison was made with Melbourne, because this city is more like Sydney in terms of its urban and demographic characteristics.

Subjects were selected and interviews were conducted by the Ray Morgan Research Company, a

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*The project was managed by the following Steering Committee: A. Crisp (Chairperson), J. Canon, C. Frape, B. Higham, T. Carroll and S. Chapman (all of the NSW Department of Health); T. Dwyer and J. Pierce (School of Public Health and Tropical Medicine); D. Gazzard (Hospital Foundation of Australia); E. Henry and C. Sarfady (NSW State Cancer Council); B. Herriot (Australian Medical Association); J. Mulberry (Sydney University); and J. Shaw and S. Walker (National Heart Foundation of Australia). S. Lodge (The University of Newcastle) acted as auditor to the project.

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References


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commercial survey organization, by means of the following procedure. A list of all electoral subdivisions within Australia was compiled, and from this a sample of subdivisions was selected at random each week. A starting address within each subdivision was then selected at random from the electoral rolls. The interviewer who was assigned to that area used this address as a starting point and proceeded from this point in a clockwise direction around the residential block. The interviewer was instructed to obtain 10 interviews from this location on Saturdays and Sundays; an incentive was given to obtain interviews from the first 10 homes. If people were out, the interviewer was instructed to call back at least once.

Interviewers were given standard training by the Roy Morgan Research Company on how to approach prospective subjects, and on how to administer the questionnaire. The format of the questions was specified strictly. The question on smoking status was one that had been used previously by the Victorian Anti-Cancer Council. Information was also obtained on the age, sex, marital status, education, income and occupation of the respondent.

The sampling procedure yielded an Australia-wide response rate of approximately 60%. This is less than optimal for an epidemiological survey of this kind, although it is comparable with the figures obtained in other recent large Australian surveys. This procedure, with similar response rates, proves to be fairly accurate in predicting the results of elections, which suggests that the sample that is obtained may be relatively unbiased. To assess further whether there was any evidence of bias, a survey of non-respondents from the 1983 survey was conducted in Sydney and Melbourne in 1984. A comparison of non-respondents with respondents from the same areas in Sydney and Melbourne in 1983 is made in Table 1.

The 1981 census as compiled by the Australian Bureau of Statistics (ABS) was used to calculate the potential demographic parameters of the study sample if it were a representative sample from the suburbs that had been selected from the electoral roll.

There were no statistically significant differences in either Sydney or Melbourne between the demographic characteristics of the respondents and the calculation from the ABS data of the likely appearance of the representative sample. Further, there were no significant differences between study participants and the non-respondents who were located and surveyed 1 year later.

In comparison to the before-and-after surveys, a cohort of 900 subjects in Sydney and 600 in Melbourne who were interviewed in the 1983 survey were selected for follow-up in April–June 1984, by means of the same broad methods of measurement that have been described for the cross-sectional surveys. At follow-up, 909 persons agreed to participate. A decision was made not to follow anyone who had changed their place of residence during the year and, excluding these subjects, the response rate was 76% in Sydney and 73% in Melbourne.

On two weekends of the May 1983 and May 1984 surveys, at the completion of the interview, all the respondents were asked to provide a sample of their saliva “for a study of environmental pollution”. Coticine is a direct product of nicotine break down, and the saliva cotinine concentration provides an estimate of the validity of self-reported smoking status. Of the 172 people who were approached, 975 or 83.2% provided a satisfactory sample. The small differences in characteristics between participants and non-participants in the cotinine analysis were considered unlikely to bias the results.

Estimates of the change in the prevalence of smoking were obtained from both the cross-sectional and the cohort studies. In order to produce a better assessment of the change due to the campaign, these results were pooled to give an overall estimate of the effects of the campaign.
These data show that, during the campaign period, there was a smaller increase in price in Sydney than the average for the rest of the Australian cities (Table 5). The effect of these different price increases should be reduced to smoking more in the rest of Australia than in Sydney. If this had occurred, we would have some indication of detecting a true campaign effect in Sydney.

**Discussion**

The results from the evaluation suggest that the "Quit for Life" programme did have some impact on the prevalence of smoking. Although the before-and-after cross-sectional surveys failed to reveal a significant difference, a greater decrease was observed in Sydney than in the rest of Australia. This decrease was mirrored by the cohort study, which demonstrated a significant decline in the smoking prevalence in Sydney compared with Melbourne. The conclusion that the campaign had a real effect is also supported by the results observed on the immediate impact of the campaign, and the decline in the mean number of cigarettes smoked in Sydney from 1993 to 1984 in contrast with the small change elsewhere in Australia.

The estimate of change in Sydney compared with the control areas was 2.8% (95% confidence interval, 0.5%–5.1%), a decrease in smoking prevalence greater than that achieved in California by the Stanford Heart Disease Prevention Program, and in Finland by the North Karelia programme. The magnitude of the change was less than the 5% change observed during the North Coast Healthy Lifestyle Project, but this may reflect a number of differences between the two campaigns. In the North Coast study, a major controversy developed between the tobacco companies and the Health Department about anti-smoking campaigns. The towns received considerable attention from the national media as a result. It is possible that this led to a "Hawthorne effect" in the intervention towns, and produced greater decreases in smoking than in other similar projects. The likelihood of bias either in measurement or in the selection of subjects has been discussed, and we have indicated that a substantial effect from either is unlikely. The comparability of self-reported and biochemical measures of smoking status in Sydney supports a lack of measurement bias. However, it is possible that biases in other areas may have influenced the results. Anti-smoking campaigns were operating in South Australia and Western Australia for part of the campaign period. Therefore, these States were not true control areas, and this could have reduced the chances of detecting a positive campaign effect in Sydney. The greater increase in the price of cigarettes in areas other than Sydney could also have masked a positive campaign effect.

Thus, the campaign appears to have led to an extra 2.8% reduction in the current trend in Australians to stop smoking. In Sydney, this estimate means that there were approximately
Bone-marrow transplantation for haematological malignancy in childhood


ABSTRACT

Twenty-three children with haematological malignancies and a poor prognosis underwent bone-marrow transplantation. Thirteen children had acute lymphoblastic leukaemia, eight had acute non-lymphoblastic leukemia, one had chronic myeloid leukemia and one had malignant histiocytosis. One child was in relapse at the time of transplant and 22 were in first or subsequent remission. Before transplantation all patients received cyclophosphamide (60 mg/kg) on two consecutive days followed by total body irradiation given as a single dose of 10 Gy at 0.18 Gy/min (one patient) or 0.07 Gy/min (three patients), or as a fractionated dose of 10–12 Gy at 0.07–0.1 Gy/min (19 patients). One child with malignant histiocytosis also received two doses of etoposide (5 mg/kg). Methotrexate was given after transplantation to prevent or modify graft-versus-host disease (GVHD). One patient who received a transplant in relapse died early from overwhelming bacterial sepsis. Twenty-two patients engrafted, and of these 11 developed acute GVHD; five developed chronic GVHD; seven developed interstitial pneumonitis, with four deaths; and five relapsed between three and 12 months after transplantation, with three deaths. Forty-nine per cent (33/22) of patients who received a transplant during remission remain in continuous complete remission and 69% (15/22) have survived for a median of 18 months (range, four to 73 months). Bone-marrow transplantation that is undertaken during remission of disease offers a prolonged disease-free survival in selected childhood malignancies.

Bone-marrow transplantation was introduced as therapy for haematological malignancy in Seattle in 1968. Initially it was offered late in the disease and undertaken when the patient was in relapse, often infected and in poor condition. In this setting 15% of patients died from infection and/or bleeding, 67% of patients died from transplantation and only 17% of patients survived in the long term. These results suggested that bone-marrow transplantation should be performed earlier in the disease when the patient was in remission and in better general condition. With this approach, 30% to 60% of patients survived, free of disease, for two years or more.3,5

These results contrast with those obtained when patients received chemotherapy for the treatment of childhood leukaemia in relapse. In acute lymphoblastic leukaemia (ALL) and acute non-lymphoblastic leukaemia (ANLL) the proportion of survivors at two years was less than 20% and 5%, respectively.5,6 Moreover, when ALL was treated initially with chemotherapy the survival was 20% to 30% at two years; in chronic myeloid leukaemia there were virtually no long-term survivors.5,6

Thus, bone-marrow transplantation appeared to have a role in the management of childhood malignancy in patients in whom the prognosis was poor with conventional therapy. This report reviews the first 23 patients who underwent transplantation at our hospital.

Patients and methods

Between May 1, 1975 and December 31, 1984, 23 patients underwent bone-marrow transplantation for childhood haematological malignancy at The Prince of Wales Children's Hospital; these children form the basis for this review. Informed consent was obtained from the parents, as well as from the patient and the donor where age permitted. All patients and donors agreed to and were enthusiastic about the transplant. There were three periods of patient selection. Transplantation was initially offered in late-stage disease, was then offered earlier in the disease but after at least one relapse while receiving therapy, and, more recently, has been undertaken for ANLL in first remission.

Donors were required to be HLA-identical and mixed lymphocyte culture (MLC) non-reactive, to be older than one year of age, and to be in excellent health. Recently, donor selection has been widened to include siblings with one mismatched antigen. Donor marrow was collected under general anaesthesia from posterior and anterior iliac crests. The collected marrow was filtered through wire mesh to remove bone and fat particles and then infused into the recipient via the internal jugular vein or over two to four hours without a filter. A unit of blood for transfusion was collected from the donor a week beforehand and reinfused on the day of the marrow collection.

Before transplantation, conditioning therapy that was aimed both at the eradication of the underlying disease process and immunosuppression to prevent graft rejection was given. All patients received cyclophosphamide (60 mg/kg) on two consecutive days, and in one patient with malignant histiocytosis two doses of etoposide (5 mg/kg) were added. After a two-day rest this was followed by 10–2 Gy of total body irradiation. The first patient received a single dose of 10 Gy which was followed by 18 hours; the next three patients received a single dose of 10 Gy at 0.07 Gy/min; and the remainder received fractionated total body irradiation (10–12 Gy at 0.07 Gy/min) twice a day at 0.07–0.1 Gy/min.

When major ABO blood group incompatibility was present, plasmapheresis of the recipient to an anti-A or anti-B titre of below one in four was undertaken before the transplantation.

Methotrexate was administered after the transplantation to prevent or modify graft-versus-host disease (GVHD). The first 11 patients received 15 mg/m2 of methotrexate on day 0, 10 mg/m2 on days 4, 7 and 12 and then weekly until 103 days after the transplantation. The doses on days 26, 54 and 82 were given by the intrathecal route to decrease the risk of meningeval leukaemia. The next 12 patients received identical doses of methotrexate until day 26, after which methotrexate was only given by the intrathecal route on days 54 and 82. If meningeval leukaemia was known to have been present previously, intrathecal methotrexate was continued for a further 15 months after the transplantation at intervals of eight weeks. GVHD (acute and chronic) was diagnosed and graded for severity according to published criteria.1,8,9