CSIRO PUBLISHING

Australian Journal of Primary Health, 2014, **20**, 379–383
http://dx.doi.org/10.1071/PY14041

Research

Deadly Choices™ community health events: a health promotion initiative for urban Aboriginal and Torres Strait Islander people

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Abstract. The present study was an evaluation of the effectiveness of Deadly Choices™ community events for improving participants' short-term knowledge of chronic disease and risk factors, and increasing community engagement with local health services. Surveys were completed directly before and after participating in health education activities (pre and post surveys, respectively) assessing knowledge of chronic diseases and risk factors at three Deadly Choices community events and four National Aboriginal and Islander Day Observance Committee (NAIDOC) events in south-east Queensland where Deadly Choices health education activities took place. An audit trail was conducted at two Deadly Choices community events in Brisbane to identify the proportion of participants who undertook a health screen at the event who then followed up for a Medicare-funded health check (MBS item 715) or other appointment at an Aboriginal and Torres Strait Islander clinic in the local area within 2 months. Results were compared with a sample of participants who attended one Deadly Choices community event but did not complete a health screen. There were 472 community members who completed a pre and post survey. All knowledge scores significantly improved between baseline and follow up. Although based on a small sample, the audit trail results suggest individuals who participated in a health screen at the community day were approximately twice as likely to go back to a clinic to receive a full health check or have an alternative appointment compared with attendees who did not participate in a screen. Community events that include opportunities for health education and health screening are an effective strategy to improve chronic disease health literacy skills and appear to have the potential to increase community engagement with local Aboriginal and Torres Strait Islander health services.

Received 1 March 2014, accepted 14 July 2014, published online 29 September 2014

Introduction

Chronic diseases, such as cardiovascular disease, diabetes, mental disorders and respiratory disease, explain 70% of the health gap between Aboriginal and Torre Strait Islander people and the broader Australian population (Vos *et al.* 2009). Deaths from cardiovascular disease and diabetes are threefold higher for Aboriginal and Torres Strait Islander people compared with other Australians (Aspin *et al.* 2012). It is well understood that poor nutrition, inadequate physical activity, tobacco use, alcohol and a high body mass index are major risk factors for chronic disease (Alwan 2011).

There are numerous social, environmental and historical factors associated with these high rates of chronic diseases for Aboriginal and Torres Strait Islander people. Health literacy has been defined as the wide range of skills and competencies that people develop to seek out, comprehend, evaluate and use health information and concepts to make informed choices, reduce health risks and increase quality of life (Zarcadoolas Pleasant and Greer 2005), and it has been recognised as an important social determinant of health (Keleher and Hagger 2007). Health literacy is crucial to individual and community empowerment through increasing an individual's capacity to access and use health information (Nutbeam 2000). Available health literacy studies that focus on Aboriginal and Torres Strait Islander people suggest that poor health literacy is a likely contributor to adverse health conditions, including poor glycaemic control and harmful oral health behaviours (Parker and Jamieson 2010; Taylor and McDermott 2010).

Poor access to primary health care services, including the uptake of the Aboriginal and Torres Strait Islander health assessment (Medicare item number 715), contribute to the chronic disease burden for Aboriginal and Torres Strait Islander people (Kelaher *et al.* 2005; Hayman 2010; Aspin *et al.* 2012). Health assessments, like item 715, comprise comprehensive

What is known about the topic?

- Low health literacy and poor access to primary health care services including the uptake of health assessments contributes to the chronic disease burden for Aboriginal and Torres Strait Islander people.

What does this paper add?

- Community events run by and for Aboriginal and Torres Strait Islander people offer potential to improve chronic disease prevention and management by improving community access to health education and services.

screening of health conditions and chronic disease risk factors and can increase the early diagnosis and treatment of disease, as well as improve the treatment of existing disease (Kehoe and Lovett 2008). Research suggests the low uptake of health assessments in Indigenous and non-Indigenous health services can be attributed to a range of system, patient and provider barriers (Kehoe and Lovett 2008; Jennings *et al.* 2014).

Introducing enabling processes to assist in improving primary health care access, including the uptake of health assessments and increasing health literacy skills, should be considered an important component of community-based health promotion initiatives targeting reductions in chronic disease for Aboriginal and Torres Strait Islander people. Health screening events have proven to be successful in facilitating the uptake of health assessments, detecting and treating conditions and identifying and managing risky behaviour for Aboriginal and Torres Strait Islander people in both rural and urban areas (Digiacomo *et al.* 2010; Isaacs and Lampitt 2014). However, there is a lack of research in urban areas focusing on the impact of broader community health events that provide opportunities for health screening, health education and other health awareness activities. The aim of the present study was to evaluate the effectiveness of Deadly Choices™ community events in improving participants' short-term knowledge of chronic disease and related risk factors, and increasing community engagement with local health services.

Deadly Choices is a chronic disease prevention and education initiative, funded by the Department of Health and Ageing from July 2010 until June 2014. Deadly Choices aims to empower the 50 000 Aboriginal and Torres Strait Islander people living in south-east Queensland to make healthier lifestyle choices to reduce their risk of chronic disease. In an Indigenous context, a 'Deadly Choice' is a healthy choice. Deadly Choices community events are a core component of the Deadly Choices initiative, which also includes a community-based education program (see Malseed *et al.* 2014) and a social media health education campaign. Deadly Choices programs and events are designed to build community capacity by increasing Aboriginal and Torres Strait Islander peoples' awareness and knowledge of chronic disease and related risk factors. Community events offer opportunities for participation in physical activities (e.g. Zumba, football and rock climbing) and healthy cooking demonstrations, and are designated drug-, alcohol- and smoke-free events. In addition, community members have the opportunity to participate in a range of health education activities delivered orally by Aboriginal and Torres Strait Islander health professionals. The education encourages lifestyle changes, such as reducing soft-drink consumption, increasing physical activity levels and smoking cessation, with appropriate referrals for further intervention and support. The health information delivered via four health education stations is summarised in Table 1. These Deadly Choices health education activities are also run at other community events throughout south-east Queensland, such as sporting and National Aboriginal and Islander Day Observance Committee (NAIDOC) events.

Deadly Choices community events are held approximately every month in south-east Queensland and attendance rates are between 300 and 600 people per event. Community events are run in conjunction with local Aboriginal and Torres Strait Islander Community Controlled Health Services, which provide opportunities for community members to undertake a health screen at events. The free screening includes weight and height

Table 1. Deadly Choices health education activities

Station	Education key points
Chronic disease	Definition of a chronic disease Modifiable and non-modifiable risk factors for chronic disease Common chronic diseases Chronic disease information pamphlets provided to all interested participants
Nutrition	Demonstration of the amount of sugar in drinks (e.g. juice, soft-drink and sports drinks) and cereals (e.g. Nutri-Grain, Coco Pops and Cornflakes) using food models and sugar Demonstration of healthy meal portion sizes using a 'portion plate', a dinner plate model used to visualise correct portion sizes for fruit and vegetables, grains and starchy vegetables and meat and alternatives
Physical activity	Activity to identify types of physical activities (organised and incidental) Physical activity guidelines for adults and children Physical activity pamphlets provided to interested participants
Smoking	Explanation of the major chemicals in a cigarette Effects of smoking on the body Major diseases caused by smoking and the consequences of passive smoking Participants able to determine their carbon monoxide levels using a 'Smokerlyzer', a breath carbon monoxide monitor used to determine nicotine dependence levels

measurements, blood pressure and blood glucose testing, along with assessment of other self-reported information, such as dietary habits and the use of harmful substances. One aim of the health screening is to facilitate community engagement with local health services for follow-up care by providing an opportunity for community members to meet and engage with staff members from health services. Following the event, clinic staff contact community members who participated in a health screen at the event via telephone or letter to encourage a follow-up appointment at the health service, specifically the completion of an Aboriginal and Torres Strait Islander health check (MBS item 715), if eligible.

Methods

Ethics approval for the study was obtained from The University of Queensland Human Research Ethics Committee. Consent was obtained from participants who completed a survey or health screen at the community event for their involvement in the study. For participants under 18 years of age, guardian consent was also sought.

Setting and participants

Data collection took place at three Deadly Choices community events held in Brisbane as part of routine evaluation of the event. Additional survey data were also collected from four NAIDOC community events in the Brisbane and Gold Coast region where Deadly Choices health education activities were run. All events were held from May to September 2013. All community events were widely advertised in Aboriginal and Torres Strait Islander health clinics, through mainstream and social media channels and were open to all interested individuals.

Survey

Individuals who participated in the Deadly Choices health education component as part of community events who were aged 10 years or older were invited to complete a survey directly before (pre) and after (post) participating in the health education activities. The activities took participants approximately 20 min to complete. No potential participant was excluded from completing questionnaires. The survey consisted of four demographic questions and six knowledge questions. The four demographic variables collected were ethnicity (Aboriginal, Torres Strait Islander, Both or Other), age, gender and postcode. The other questions were multiple choice and related to knowledge of: types of chronic disease; chronic disease risk factors; types of physical activities; the sugar content of soft-drink; conditions caused by smoking; and addictive substances in a cigarette. The survey was based on an existing survey developed by healthy lifestyle workers who deliver Deadly Choices health education and aimed to cover the key points from health education activities. Individuals were included in the study if they completed both a pre and post questionnaire. Pre and post questionnaires were matched using an identification number.

Audit trail

At two Deadly Choices community events, an audit trail was implemented to track the impact of the health screening on participants' engagement with local Aboriginal and Torres Strait Islander Health services following the event. At the community event, demographic information, including age, gender, postcode and identity, was provided by participants who undertook a health screen. Immediately after the event, the clinic staff contacted (over the telephone or through a mail out) all community members who had participated in a health screen and were eligible for a comprehensive health check. Participants were eligible if they had not had a health assessment (MBS item 715) in the 9 months prior and identified as Aboriginal or Torres Strait Islander. Two months following the event, the research team used the clinical record system to identify the proportion of participants who followed up at any of three local clinics for an Aboriginal and Torres Strait Islander health check (MBS item 715) or other appointment in this time period. These data were compared with a control group, which consisted of a sample of participants from one of the Deadly Choices community events who did not participate in a health screen. Names and demographic information (age, gender and postcode) for the control group were retrieved from a registration list from one of the community events. A sample comparative in age was developed using the information provided at registration.

Data analysis

Descriptive statistics are reported as the mean ± s.d. for continuous data and frequency (percentage) for categorical data. For the survey, pre–post changes in knowledge scores with continuous outcomes were tested by paired *t*-test, whereas scores with binary outcomes were tested with matched logistic regression. The impact of participation in screening at the Deadly Choices event on engagement with health services was investigated using logistic regression. Statistical analysis was performed using Stata software (StataCorp, College Station, TX, USA).

Results

Survey

There were 472 community members who participated in the health education component of the community events and completed both pre and post questionnaires. Response rates were quite high because participants who completed the survey went into a draw to win Deadly Choices merchandise as an incentive. Approximately 75% of participants who participated in the Deadly Choices activities also completed a survey. The median age of participants who completed a questionnaire was 31 years (range 10–83 years) and 152 (32.2%) were male. Most respondents identified as Aboriginal (65.5%); 2.4% identified as Torres Strait Islander, 7.7% identified as both Aboriginal and Torres Strait Islander and 24.5% identified as Other. Because of the location of the community events, most participants were from Brisbane.

All knowledge scores significantly improved between baseline and follow up across all community events, indicating improved knowledge relating to aspects of chronic disease and associated risk factors, nutrition, physical activity and smoking (Table 2).

Audit trail

Data from one of the community days was collected to see what proportion of individuals went on to have health checks at health

Table 2. Community event knowledge-related questionnaire scores

Surveys were completed directly before and after participating in the health education activities (pre and post, respectively). For questions with multiple responses, scores are reported as mean ± s.d. and differences as mean differences (MD). The maximum scores were as follows: types of chronic disease = 14; risk factors = 12; physical activity = 14; conditions from smoking = 12. For questions with a single correct response, the frequency (percentage) of correct respondents is reported, and differences are reported as odds ratios (OR). The number of respondents for all questions was 472. The asterisks indicate a significant difference (at $P = 0.01$). CI, confidence interval

Knowledge question	Pre	Post	Difference (95% CI)	*P*-value
Types of chronic diseases	10.2 ± 2.3	11.9 ± 2.0	MD = 1.7 (1.5–1.9)	<0.001*
Risk factors	9.3 ± 2.4	10.0 ± 2.0	MD = 0.7 (0.5–0.9)	<0.001*
Types of physical activities	11.6 ± 3.1	12.8 ± 2.3	MD = 1.1 (0.9–1.4)	<0.001*
Conditions from smoking	7.9 ± 1.8	8.8 ± 1.8	MD = 0.9 (0.7–1.0)	<0.001*
Sugar in soft-drink	194 (41%)	450 (95%)	OR = 249.0 (44.3–9874.0)	<0.001*
Addictive substance in a cigarette	340 (72.0%)	376 (79.7%)	OR = 2.0 (1.3–2.9)	<0.001*

services. Fifty-five consecutive individuals who had a health screen at one community event were matched on age and sex with attendees of the same community day who did not have a health screen.

Attendees screened were mostly female (64%) and had a median age of 28 years (range 10–76 years). Overall, of the 22 individuals who received screening at the community day who were eligible to receive a full health check, six (27.3%) later did receive a full health check. In the non-health screen comparison group, three later received health checks. Although we do not know how many non-screened individuals were eligible to receive health checks, and so cannot calculate an estimate of the effect of health check receipt, these results suggest that individuals who were screened at the community day were approximately twice as likely to go back to a clinic to receive a full health check. Of all 55 attendees who received a health screen, 17 (30.9%) went to a clinic for an appointment other than a health check, a higher proportion than the nine (16.4%) non-health screen attendees who visited a clinic (odds ratio 2.63; 95% confidence interval 0.9–5.7; $P = 0.08$).

To confirm these results, data for 51 attendees of a different community day who received health screening were extracted. Of 21 individuals eligible to receive a full health check, five (23.8%) did. In the same group, 13 (25.5%) went back to a clinic for an alternative appointment, suggesting results from the first community day may be robust.

Discussion

The results show that Deadly Choices health education activities enabled Aboriginal and Torres Strait Islander community members to significantly increase their short-term knowledge regarding chronic diseases and associated risk factors, including nutrition, smoking and physical activity, suggesting that community events are an effective way to disseminate health education to a large number of people within the community.

The improvement in participants' health knowledge in this study reinforces the benefits of health promotion initiatives that aim to increase health literacy and build capacity with Aboriginal and Torres Strait Islander people. Because public health literature describes health literacy as an empowering personal asset to support changes in health behaviours and practices (Nutbeam 2008), improving health literacy is an important strategy to reduce risky health behaviours that contribute to chronic disease. This theory is supported by several studies in the community setting showing an association between improved health literacy and positive changes in smoking, nutrition, alcohol, physical activity and weight (Taggart *et al.* 2012).

Results from the present study also indicate that health screening at Deadly Choices community events may be an effective strategy to increase community engagement with local Aboriginal and Torres Strait Islander health services, including the uptake of health checks. Although the results should be interpreted cautiously because the health-seeking behaviour of those who did, and did not, have a health screen may differ, these positive results are consistent with another urban-based study that found a large number of diagnostic tests, interventions, specialist referrals and medication initiatives were facilitated following a health screening day at an urban Aboriginal Medical Service (Digiacomo *et al.* 2010). A study by Hayman (2010) recognised that informing the Aboriginal and Torres Strait Islander community about services available at an urban health clinic was critical in improving access to services. Community events that offer health screening by local health services are the ideal way to project this information to community members while allowing an opportunity for the community to build relationships and trust with local clinic staff. This is particularly important given recent research, which suggests that trust is an important factor in the decision to use healthcare services for Aboriginal and Torres Strait Islander people (Artuso *et al.* 2013).

Strengths and limitations of the study

This study has the advantage of a large survey sample size and strong representation from urban Aboriginal and Torres Strait Islander participants, which allows for greater generalisation of results to Aboriginal and Torres Strait Islander people in an urban setting. However, there were also several limitations identified. With regard to the survey, one limitation is the time frame of the pre–post evaluation, which was considered minimal in terms of assessing knowledge change. It is possible that later follow up may show a longer-term effect in terms of knowledge change. Another limitation is the primary focus on knowledge change as an outcome of health education. Although we were unable to quantitatively determine whether community members additionally changed their behaviours regarding chronic disease risk factors, such as smoking, nutrition and physical activity, qualitative findings regarding the Deadly Choices community

event (C. Malseed, A. Nelson, I. Lacey, K. Lander, unpubl. obs.) suggest that the health impact of the event was longer lasting.

With regard to the audit trail, numbers were small and therefore generalisability is limited. Another limitation is the 2-month time frame, which could be considered minimal in terms of assessing access to health services. Therefore, these results may not be a true indication of the impact the community events had on patients using health services. It may also be likely that people who attended a screen were more interested in or more motivated to address their health than were members of the control group, and this needs further exploration. Furthermore, we were unable to determine health check eligibility for the control group participants due to an inability to access confidential information, which may have impacted on their engagement with health services following the event. Therefore, the audit trail was based on an assumption that approximately the same proportion of people in the intervention and control groups was eligible to receive health checks. In addition, it is possible that participants from the intervention and control group were already engaged with other mainstream health services and therefore did not find it necessary to access the Aboriginal and Torres Strait Islander health services following the event. However, because evidence suggests that there are significant barriers to accessing mainstream healthcare for Aboriginal and Torres Strait Islander people living in urban areas; this is unlikely. Given the differences seen between the intervention and control groups in the present study in terms of accessing health services following the event, it is important that future events incorporate strategies to engage all community event attendees in health screening.

Conclusion

Community events are an effective strategy to improve knowledge regarding chronic diseases and related risk factors, such as nutrition, smoking and physical activity, and may increase community engagement with local Aboriginal and Torres Strait Islander health services. Initiatives such as Deadly Choices community events have considerable potential to facilitate positive health decisions and offer great potential to decrease the high prevalence of chronic disease in the Aboriginal and Torres Strait Islander population. The offer of health screening at community days may increase subsequent engagement with community health services, and it would be valuable to investigate this aspect of the study further with a more robust randomised trial. It would also be useful to conduct follow up to explore the impact of the events on long-term health literacy. Because few studies have reported on the effectiveness of community health promotion events for urban Aboriginal and Torres Strait Islander people, the present study can be used to guide future community events targeting this population group.

Acknowledgement

This study was supported by a Lowitja Institute Cooperative Research Centre small grant (no. SG011).

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