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Physical activity, healthy lifestyle behaviors, neighborhood environment characteristics and social support among Australian Aboriginal and non-Aboriginal adults

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ABSTRACT

Physical inactivity is the third leading cause of the burden of disease for Australian Aboriginal adults. The neighborhood environment and social support are known to influence physical activity (PA) participation. This study examined these factors in relation to achieving PA recommendations in Aboriginal and non-Aboriginal Australians. Cross-sectional data from the 2010 Social, Economic, and Environmental Factor (SEEF) Study in New South Wales, Australia were used to estimate adjusted odds ratios (OR) for Aboriginal versus non-Aboriginal participants for PA-related attributes, including achieving PA recommendations. ORs for achieving PA recommendations were estimated in both groups. Overall, 63.1% of Aboriginal (n = 314) and 65.4% of non-Aboriginal (n = 59,175) participants met PA recommendations. Odds of healthy sleep duration were lower, and receiving GP advice to be active was higher, among Aboriginal versus non-Aboriginal participants. Aboriginal respondents had higher odds of reporting that the crime rate made it unsafe to walk and that local public transport was inaccessible. They had higher odds of disagreeing they have local shops, footpaths or free/low cost recreation facilities. PA correlates were similar in both groups. The factors relating to PA were similar in Aboriginal and non-Aboriginal people. Neighborhood and social features were less PA-favorable for Aboriginal participants suggesting multiple possible avenues for increasing PA in this older population group.

Introduction

Physical inactivity is the third leading cause of the burden of disease for Australian Aboriginal and Torres Strait Islander* adults (Vos et al., 2007). In 2011–2, only 46% of Aboriginal people aged 18 years and over living in non-remote areas achieved the minimum recommendation of 150 min of moderate intensity physical activity per week (Australian Bureau of Statistics (ABS), 2013a); 10% less likely to meet recommendations than their non-Aboriginal counterparts (Australian Bureau of Statistics (ABS), 2014a). Physical activity confers numerous health benefits including reducing the risk of non-communicable diseases such as cardiovascular disease, diabetes, hypertension, obesity and some cancers (World Health Organization, 2009). It can also contribute to the prevention and treatment of many mental health and age-related disorders (Steinmo et al., 2014; Norton et al., 2014).

Australia's Physical Activity & Sedentary Behavior Guidelines for Adults (18–64 years) recommend the accumulation of 150 to 300 min of moderate intensity physical activity or 75 to 150 min of vigorous intensity physical activity, or an equivalent combination of both moderate and vigorous activities, each week (MVPA). They also recommend reducing the amount of time spent sitting and breaking up periods of prolonged sitting. Sitting time has emerged as a risk factor for chronic disease and mortality, independent of physical activity (Chau et al., 2013). Time spent watching television (TV) is often used as a measurement indicator for sedentary behavior (Clark et al., 2009).

In the general population, physical activity levels are lower among older adults, females, disadvantaged populations and rural residents (Australian Bureau of Statistics (ABS), 2013a) (Australian Institute of Health and Welfare, 2008). Aspects of the neighborhood built environment are known to have a strong influence on physical activity participation, particularly walking and cycling (Saelens et al., 2003). Higher street connectivity and the presence of neighborhood destinations (such as shops) are associated with more frequent walking for transport

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(Koohsari et al., 2014). A review identified a positive relationship between parks and recreation settings and physical activity participation (Abercrombie et al., 2008). Fear of crime has also been found to lead to a decrease in time spent walking (Foster et al., 2014).

* *The term 'Aboriginal' will be used to refer to participants of Aboriginal and/or Torres Strait Islander origin, in keeping with advice from the Aboriginal Health and Medical Research Council.*

Identifying the factors associated with physical activity is important in devising strategies to increase levels of physical activity among Aboriginal people. There is little evidence regarding environmental correlates of physical activity among Aboriginal Australians. Internationally, a study of Native American elders found that being closer to interesting places was a facilitator to walking (Sawchuk et al., 2011). However, another Native American study found undesirable aspects of the built environment such as a lack of destinations for walking or public open space as barriers to walking for recreation and transport (Mathews et al., 2010). The majority of Aboriginal Australians live in urban locations (Australian Bureau of Statistics (ABS), 2011). Therefore, these aspects of the neighborhood built environment may serve to influence their levels of physical activity. However, the impact of specific historical factors such as colonisation and displacement may be a determinant of the types and quality of neighborhoods where Aboriginal Australians currently reside. To our knowledge no study has yet examined the evidence of the influence of the neighborhood built environment on physical activity levels among Australian Aboriginal people.

Social support of family and friends has been identified as a positive correlate of physical activity across various population groups, including ethnic minorities and women (Harvey and Alexander, 2012; Wilcox et al., 2009), and specifically Native American women (Henderson and Ainsworth, 2003). However, cultural traditions of Aboriginal Australians such as kinship place great importance on family and community values. Family engagement and group activities have been found to be strong motivators of physical activity participation among Aboriginal Australians (Hunt et al., 2008). We hypothesize that social support would be associated with physical activity among Aboriginal adults.

The aim of this study was to investigate the sociodemographic factors, attributes of the neighborhood built environment and social support associated with achieving the national physical activity recommendations among Aboriginal and non-Aboriginal participants of a large Australian cohort study.

Methods

Participant recruitment

The Sax Institute's 45 and Up Study is a large-scale population-based cohort study of men and women aged 45 years and older residing in New South Wales (NSW), Australia (Collaborators, 2008). Participants were randomly sampled through the Medicare database, with oversampling in rural areas and among older adults (Collaborators, 2008). Baseline self-administered postal questionnaires were distributed between 1 January 2006 and 31 December 2008. Joining the study involved completing the baseline questionnaire and providing written consent. The Social, Economic, and Environmental Factor (SEEF) study is a subsequent sub-study of the 45 and Up Study which aims to identify how social, economic and environmental factors influence the health and wellbeing of middle aged and older Australians. In 2010 the SEEF questionnaire was distributed by mail to the first 100,000 participants to join the 45 and Up Study. A total of 60,404 participants returned a completed questionnaire and a signed consent form (response rate = 60.4%).

The 45 and Up Study was granted ethical approval by the University of New South Wales Human Research Ethics Committee (Reference 050,035). The SEEF Study was granted ethical approval by the University of Sydney Human Research Ethics Committee (Ref no.: 10–2009/12,187). Ethical approval for the current study was also granted by the Aboriginal Health and Medical Research Council of New South Wales (reference 912/13).

Measures

Pilot testing of the SEEF questionnaire (n = 128) resulted in overall acceptable test–retest reliability intra-class coefficients (ICC) ranging from 0.33 to 0.84 and Cronbach's alpha coefficients ranging from 0.23 to 0.96. Aboriginal status was self-identified in the 45 and Up Study with the following question: 'Are you of Aboriginal or Torres Strait Islander Origin? and response options of: 1) No — non-Aboriginal; 2) Yes — Aboriginal; and 3) Yes — Torres Strait Islander. Participants were able to identify as both Aboriginal and Torres Strait Islander. Very few participants indicated they were exclusively of Torres Strait Islander origin (n = 19) and for the purposes of these analyses this variable was dichotomised into non-Aboriginal and Aboriginal and/or Torres Strait Islander, with the latter category referred to as 'Aboriginal'.

Physical activity

The main outcome variable, achieving the national physical activity recommendations, was calculated based on the Active Australia Survey (AIHW, 2003) which measures minutes of walking and other moderate and vigorous leisure-time physical activity in the past week, and has acceptable reliability (Brown et al., 2004a) and validity (Timperio et al., 2003). The SEEF questionnaire included questions about the frequency and duration of their time spent doing walking, moderate and vigorous activities in the past week. Two different thresholds of at least 150 min per week and at least 300 min per week of MVPA were used, based on the upper and lower thresholds of the range advised in the national guidelines (Australian Government Department of Health, 2013).

Socio-demographic variables

Sociodemographic variables (age, sex and annual household income) were derived from the SEEF questionnaire. Educational qualifications were derived from the baseline 45 & Up Study questionnaire and dichotomised as (None/school/intermediate/High School Certificate (HSC); trade/apprenticeship/certificate/diploma/university). The Accessibility Remoteness Index of Australia Plus (ARIA+) score (AIHW, 2004) and the measure of Socio-Economic Indices for Areas (SEIFA), the Index of Relative Socio-economic Disadvantage (IRSD) (Australian Bureau of Statistics (ABS), 2013b) were derived for each participant's postcode of residence at the time of recruitment to the 45 and Up Study, as recorded by Medicare Australia. These variables were dichotomised as: ARIA (Major City/Inner/Outer Regional; Remote/Very Remote) and SEIFA (Most disadvantaged quintiles 1, 2; Least disadvantaged quintiles 3, 4, 5). Other socio-economic variables were also dichotomised: sex (male; female); age (45–59 years; ≥60 years); income (<$39,999; ≥$40,000).

Neighborhood built environment and social support variables

The SEEF questionnaire included six neighborhood built environment questions adapted from the Physical Activity Neighborhood Environment Survey (PANES) (Sallis et al., 2010). These questions asked about access to shops/services, public transit and recreation facilities, presence of sidewalks and personal safety from crime (day and night). Responses option were dichotomised as: disagree (strongly disagree and somewhat disagree) and agree (strongly agree and somewhat agree). The two questions related to levels of crime were reverse scored. Cronbach's alpha coefficients and test-rests reliability ICCs were 0.64