

Perspectives

Culture X: addressing barriers to physical activity in Samoa

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Summary

There is an urgent need to address the epidemic rates of non-communicable diseases globally, and the Pacific Island region is of particular concern. Increasing physical activity participation plays an important role in reducing some of the key risk factors for non-communicable diseases including obesity and being overweight. In order to address low levels of physical activity, it is essential to understand the key barriers and facilitating factors experienced by specific population groups. The purpose of this study is to investigate key facilitating factors for participation in a dance aerobic initiative, Culture X, developed in the Pacific Island country, Samoa. The study further aims to understand ways in which the programme assists participants in addressing barriers to physical activity. Face-to-face interviews running from 10 to 20 min were conducted with 28 Culture X participants in order to gain a deep understanding of participants' personal perspectives with regard to barriers and facilitating factors to physical activity. Findings suggest the inclusion of key cultural components (including, traditional dance moves and music, prayer, community orientation and family inclusiveness) were integral for supporting ongoing participation in Culture X. These components further assisted participants in addressing important personal and social barriers to physical activity (including lack of motivation and enjoyment, lack of confidence, time management, family and social commitments and lack of support). This study highlights creative ways that health promotion in the Pacific Island region can encourage physical activity and informs health promotion literature regarding the importance of placing local culture at the heart of behaviour change initiatives.

Key words: physical activities, community-based interventions, obesity, developing countries

INTRODUCTION

Over the past several decades, non-communicable diseases (NCD) have become a focus of primary health care and health promotion globally (Beaglehole *et al.*, 2011). The World Health Organization has advocated for international action to address the NCD 'epidemic' (World Health Organization, 2005; Zimmet and Alberti, 2006). The health and economic benefits of addressing NCDs

(which include diabetes mellitus, chronic respiratory disease, cardiovascular disease and some forms of cancer) and their risk factors are well documented and it has been suggested that achieving global goals for NCD prevention could save millions of lives and have major economic benefits (Strong *et al.*, 2005; Beaglehole *et al.*, 2008, 2011). To this effect, the World Health Organization has set voluntary global targets for non-communicable disease

prevention including a 10% reduction in insufficient physical activity (World Health Organization, 2014).

The increasing incidence of obesity and being overweight are leading contributors to the global NCD epidemic; it was estimated that in 2008 over 1.4 billion adults (aged 20 years and older) worldwide were overweight and 200 million men and 300 million women were obese (Beaglehole *et al.*, 2011; World Health Organization, 2011a). Obesity causes significant mental and physical stress and is associated with substantial human resource and financial costs (World Health Organization, 2000; Beaglehole *et al.*, 2008). The Pacific Island region is of particular concern as it has some of the highest rates of obesity in the world; over 80% in some countries (World Health Organization for the Western Pacific Region, 2007a,b,c).

Samoa is a Pacific Island country with a total population of 187 820; of this, 36 735 people live in urban areas and 151 085 people live rurally (Samoa Bureau of Statistics, 2011). Samoa has experienced a shift from rural to urban living which has led to an increase in the prevalence of NCDs through decreased physical activity and an increase in the availability of unhealthy foods and tobacco (World Health Organization, 2011b). Research from the Pacific Island region highlights the impact of socio-cultural factors on eating and physical activity habits including role expectations (related to both gender and hierarchy), modes of showing respect and community-based value systems (Mavoa and McCabe, 2008). Such factors have been explored in Samoa with research highlighting cultural modes of eating and the preference for sedentary lifestyles playing a role in high rates of NCDs and associated risk factors across both urban and rural populations in Samoa (Hardin, 2014). Hardin found physical inactivity linked to key aspects of Samoan culture including prioritizing community well-being over individual health and associations between physical inactivity and high status (Hardin, 2014).

Samoa has an obesity rate of 57%; while obesity rates are higher for adults in older age groups and is more common in urban areas, rural communities also report high rates of obesity at over 40% (females: 69.3% urban and 65.9% rural; males: 53.1% urban and 48% rural) (World Health Organization, 2011b). The most concerning population group is women between the ages of 25 and 64, living in Samoa's capital city, Apia, with an obesity rate of 69.3% (World Health Organization, 2011b).

Conclusive evidence supports the role of physical activity in the primary and secondary prevention of NCDs and associated risk factors such as obesity (Warburton *et al.*, 2006). Physical inactivity is now considered to be the

fourth leading factor of global mortality, and it has been estimated that 1.3 million lives would be saved annually if physical inactivity was reduced globally by 25% (World Health Organization, 2010; Lee *et al.*, 2012). The Pacific Island region has high rates of physical inactivity with 41–62% of adults in some Pacific Island countries leading completely sedentary lifestyles (World Health Organisation for the Western Pacific Region, 2008). Physical activity initiatives have been implemented in most countries across the Pacific region; however, there has been very limited monitoring and evaluation of these programmes and the region is yet to see clear, tangible improvements in health outcomes (Siefken *et al.*, 2011).

In Samoa, physical inactivity is contributing to high and increasing rates of NCDs; overall, 21% of the Samoan population do very little or no physical activity with rates of physical inactivity being higher in urban areas (28%) and among women (27.3% compared with 14.8% of men) (World Health Organization, 2011b). A recent study suggested the majority of people living in Apia do not engage in sufficient physical activity (68% are not getting 30 min of physical activity per day) (Tuagalu, 2011).

In response to the increasing rates of physical inactivity, international research has investigated a range of factors which may contribute to participation in physical activity, including key personal, social and structural barriers (Trost *et al.*, 2002; Dyck *et al.*, 2014). While barriers to participation in physical activity differ according to the population group such as region, age, socio-economic status, ethnicity and cultural background (Chinn *et al.*, 1999; Trost *et al.*, 2002; Reichert *et al.*, 2007; Scully *et al.*, 2007), there appear to be 10 key barriers which are experienced by adults. These barriers include lack of time, convenience, lack of infrastructure, low motivation, low confidence, lack of enjoyment, boredom, lack of self-management skills, fear of being injured and lack of support (Sallis and Hovell, 1990; Sallis *et al.*, 1992; Trost *et al.*, 2002; Humple *et al.*, 2003; Salmon *et al.*, 2003; Strazdins *et al.*, 2010; Tuagalu, 2011; Chircop *et al.*, 2013; Dyck *et al.*, 2014).

Research investigating factors which contribute to participation in physical activity in the Pacific region is limited; however, it has been suggested that women in the Pacific may experience similar barriers, specially, low motivation and lack of time; in addition, cost and family commitments have been highlighted as possible barriers in the Pacific region (Siefken *et al.*, 2014). Recent studies suggest that cultural barriers, including family and church commitments, social norms and expectations, boredom and discomfort are key barriers for Samoan people engaging in physical activity (Tuagalu, 2011; Hardin, 2014).

Furthermore, safety and infrastructure, including dangerous dogs and a lack of footpaths, are also considerable barriers (Tuagalu, 2011).

The literature strongly suggests that health promotion activities focused on lifestyle change should consider specific population groups' social determinants of health, perceptions of physical activity and barriers to physical activity in order to design programmes which suit the diverse needs of different groups of people (Eyler *et al.*, 1998; Chinn *et al.*, 1999; Kreuter *et al.*, 2003; Belza *et al.*, 2004; Hamlim and Ross, 2005; Siefken *et al.*, 2013). Furthermore, it is now widely understood that initiatives must consider a group's specific cultural and social influences, including values, norms, ways of life, belief systems and spirituality, in order to elicit health-behaviour change (Pasick *et al.*, 1996; Kreuter *et al.*, 2003; Yancey *et al.*, 2006; Siefken *et al.*, 2013).

Research investigating physical activity health promotion initiatives in Samoa and the Pacific region more widely is limited; however, it has been suggested that initiatives aimed at increasing physical activity in the region should consider the cultural, environmental and discomfort barriers (Afele-Fa'amuli *et al.*, 2009; Tuagalu, 2011; Khoo and Morris, 2012; Siefken *et al.*, 2013). Further to this, the need for a community-orientated approach (as opposed an individualist approach, commonly taken in western countries) to health promotion in the Pacific region is essential (Siefken *et al.*, 2013). The need for further research exploring culturally appropriate models for physical activity in Samoa and the Pacific region has been highlighted (Afele-Fa'amuli *et al.*, 2009; Tuagalu, 2011; Khoo and Morris, 2012). This exploratory study aimed to gain an in-depth understanding of participants' experiences of an ongoing community-led physical activity programme, Culture X, currently being conducted in Apia, Samoa. In particular, the study examined facilitating factors that assist with participation in Culture X, barriers to physical activity and potential ways to encourage participation in physical activity.

METHODS

Culture X

Culture X is a community-led dance aerobics programme that uses music and movement entrenched in Samoan and other Pacific Islands' culture. Culture X was developed independently by Samoan aerobics instructors in 2011 who recognized a need within their community for a culturally relevant physical activity programme. Sessions are based on Samoan values and norms, including using Samoan music and dance; creating a community atmosphere through promoting social well-being and focusing on the

collective; including prayer and creating a space which is family-orientated, open and inclusive (Hiroa, 1971; Linkels, 1995; Chapstick *et al.*, 2009; Hardin, 2014).

Classes are offered at various timeslots (morning, mid-day and evening), 6 days a week, at five locations around Apia and run for 1 h. Culture X does not receive external funding and classes cost between three Western Samoan Tala (WST) and \$10 WST (approximately \$1–\$3), depending on location. Instructors are a diverse group of women and men of various ages; some instructors are qualified aerobics instructors while others have been trained specifically for Culture X. Class sizes vary, ranging from ~10 to 50 participants per session. Participants include people from mixed age groups, genders and nationalities, with middle-aged (between 25 and 45 years) Samoan women being the key demographic.

Sample

Research respondents were recruited during Culture X sessions at all five locations and across all three timeslots on both weekdays and Saturdays. Session instructors introduced interviewers at the beginning of the sessions, and all Culture X participants were invited to partake in an interview. All respondents received an information sheet and signed an informed consent form. Interviewers participated in the Culture X session, which assisted in building rapport (Silveman, 2010).

In total, 28 Culture X participants were recruited for this study. Respondents included 25 females and 3 males. The age of respondents ranged from 21 to 64 years with a median age of 35 (inter-quartile range, 27–49). All respondents resided in urban Samoa; 25 were of Samoan nationality, 2 were Australian and 1 was Italian. The 25 Samoan respondents were all working full time (Table 1).

Interviews

A qualitative approach was taken to gain a comprehensive understanding of respondents' perceived barriers to

Table 1. Participant demographics

Demographic		N	%
Gender	Female	25	89.3
	Male	3	10.7
Age	18-29 years	9	32.1
	30-55 years	14	50
	56+ years	5	17.9
Nationality	Samoan	25	89.3
	Other	3	10.7
Residence	Apia	28	100
Working Status	Employed full time	25	89.3
	Unemployed	3	10.7

physical activity and the facilitating factors which assist their participation in Culture X. A semi-structured interview schedule was designed to provide the foundations for a conversation exploring personal perspectives regarding physical activity and Culture X in particular. Interview prompts included questions such as: ‘Tell us about your experiences with Culture X and physical activity in general’, ‘What are some of the things you find help you participate in physical activity?’ and ‘What are some of the barriers you experience?’

Face-to-face interviews were conducted after the Culture X sessions or during arranged timeslots for the convenience of respondents. Interviews ranged from 10 to 20 min and were recorded with the written consent of the respondent. Most (22) interviews were conducted in English; the Samoan interviews (6) were conducted and translated by bilingual research assistants. This project received ethical clearance from the National University of Samoa’s Research and Ethics Committee.

Data analysis

Interviews were transcribed verbatim by the principle researcher. Interviews conducted in Samoan were translated to English by bilingual research assistants and transcripts were reviewed by a bilingual researcher (L.A.) to ensure accuracy.

An inductive approach to thematic data analysis was conducted whereby key themes arising from interview transcripts were highlighted (Silveman, 2010). The transcripts were read and re-read in order to understand responses in detail and draw out key themes. Themes were independently corroborated by two researchers to enhance validity (Dey, 2003). A deductive approach was then undertaken as transcripts were re-read and categorized according to themes previously identified in the literature relating to barriers to physical activity participation. A final set of themes was identified and the transcripts were re-read, with a specific focus on each theme. Interrater reliability was achieved as each researcher independently read the interviews again to ensure consistency (Dey, 2003). Respondents were allocated a letter (A.-Z., A.A. and B.B.) to ensure their anonymity.

FINDINGS

The findings highlight a sustained commitment to Culture X over a significant timeframe from a diverse group of respondents. Respondents identified key aspects of Samoan culture that are integrated into Culture X sessions, which play a key role in supporting their attendance and commitment. Respondents further stated important ways in

which Culture X helps address their personal and social barriers to participating in physical activity.

Sustained attendance

Interviews with Culture X participants highlighted a commitment to the programme over a sustained period of time. All respondents reported attending Culture X weekly, with over half (16) attending two or more sessions per week. Most respondents (19) had attended regularly (at least once a week) for over a year, with half of the respondents (14) attending for over 2 years. Those who had only recently joined Culture X reported a commitment to continuing to attend regularly into the future. Many respondents acknowledged their participation in Culture X as part of their lifestyle and included Culture X in their daily routines:

Participant Z: It’s become part of my routine, it’s become natural. I don’t really need anything to motivate me to come because I have been doing it for so long.

Participant A: I want this to be lifestyle, not just a 3 month or 2 month thing but I want it to be a part of my life.

Diversity of participants

Respondents ranged in age, size and body shape, level of fitness and held diverse motivations for attending:

Participant M: It’s not only for skinny people but also for fat people and old people, not like other kinds of physical activity. It’s good for everyone.

Participant F: Culture X is good, nice. It’s fun to meet people and find new friends, especially because I don’t go out a lot.

Respondents were a mix of people who live sedentary lifestyles and others who are active. Many respondents reported spending most of their time sitting down, with Culture X being their only form of physical activity, while others participate in a range of other physical activities:

Participant N: I work on a computer all day at work . . . When I go home I don’t do any physical activity.

Participant C: I don’t ever sit down; I still do running minimum 3 times a week.

Role of cultural components

Respondents highlighted the inclusion of cultural components as essential for their ongoing commitment to Culture X, including: the mode of dance, the community atmosphere, the inclusion of prayer and family-orientation

(Hiroa, 1971; Linkels, 1995; Chapstick *et al.*, 2009; Hardin, 2014):

Participant T: really enjoy dancing and socialising so it's like a fun activity.

Participant S: Here we are like a family, they start off with a prayer and end with a prayer. There are a lot of things I have learnt from coming here.

Addressing barriers to physical activity

Respondents highlighted certain aspects of Culture X which addressed the common barriers to physical activity including: time and convenience, low motivation, lack of enjoyment and boredom, lack of confidence, fear of injury, lack of self-management skills, support and infrastructure and safety.

Time and convenience

Many respondents listed time as a key barrier to their participation in physical activity. The wide availability of Culture X classes offered at various times was a key facilitating factor for people's participation:

Participant T: It's about convenience, most people work so if they can fit it in their lunch break they will come.

Participant X: We used to play tennis a lot but we found that tennis was taking more time . . . and we couldn't afford that waste of time. I enjoy Culture X because we just come in, 1 hour full exercise, then go home . . . because I have a mother who I look after at home.

Other respondents suggested that it was possible to make time for exercise by drawing on community support:

Participant Y: I find that living in Samoa there is time for exercise because there are always people around you, in most homes, you have your family with you so you can always find time to go and do some exercise . . . I do try to make a lot of time to come.

Respondents further highlighted their motivation and commitment to Culture X helped them to address time as a barrier:

Participant S: I always had the excuse, 'Oh no, I have no time because of work' but right now it's like I can make myself available. I have learnt to say, 'stop working and go and spend an hour and sweat it off'.

Participant L: My job requires me to work from 8 to 8 at night. I come to Culture X and then I go back to work again.

Finally, respondents suggested that the diversity of venues played a role in ensuring it was convenient for people to attend:

Participant B: There are about 5 different venues now, so I come to this particular one for convenience, I could go to [another venue] but it's further for me so this is convenient.

Motivation

Motivation was highlighted as a barrier by some respondents; however, it was suggested that the group atmosphere created at Culture X, encouragement from instructors and support from family and friends were central in addressing motivation as a barrier:

Participant BB: I like the spirit of motivation in the crowd . . . If I try to go by myself I am not motivated to go because I am tired but if I come to Culture X there is a lot of people to encourage me.

Participant B: [The instructors'] energy transfers to the group and it's the group that you draw your energy from . . . I think it goes back to [the instructors], because of their enthusiasm.

Participant AA: My husband is my partner because we motivate each other; we rarely miss it because we always come together.

Enjoyment and boredom

All respondents commented on the fun atmosphere created at Culture X and how the classes were enjoyable:

Participant H: It's just fun, I love the dancing and combining the exercise . . . I guess [Culture X] makes [exercise] more enjoyable.

Participant W: The music is fast and it feels like you are at [a night club] dancing away. You imagine yourself in a bar but not drunk.

Respondents highlighted that Culture X addressed barriers of boredom that are experienced during other forms of physical activity:

Participant T: There are a lot of classes out there but these classes I prefer because it is fun and it doesn't really feel like you are doing exercise.

Confidence

Respondents suggested that confidence was addressed by the inclusive and supportive approach taken by the instructors and other participants:

Participant S: At first I was scared . . . but it's like you don't even have to know what you are doing. You can

just do your own thing and shake whatever you feel like shaking . . . If this old man can shake his bootie, why can't I?

Participant W: [Culture X is] about you and how you feel about yourself. It brings out that shyness and you don't care if people are looking at you, it's all about you . . . it's up to the person, how they move because everyone is different . . . It's also made me feel good about myself, that I can do something.

Other respondents found the diversity of participants' body shapes and fitness levels important for addressing their own self-confidence:

Participant L: Here there are many people my size, there are not many skinny people here so I feel confident and it encourages me to come. Not like other gyms where there are many skinny people so I get shy.

Participant M: [The instructors] don't judge people and they encourage you to do what you can, depending on your strength and what you can do.

Many respondents discussed how they were confident participating in Culture X because dancing had always been part of their life and was not new to them:

Participant C: When I was young I use to dance a lot, so now we have Culture X.

Fear of injury

Three respondents reported fear of injury as a barrier to physical activity; they further highlighted how they felt safe attending Culture X:

Participant Y: Now that I am older, I find [Culture X] more suited to my age and the moves are not as difficult and also there are no sudden moves where I'll injure myself.

Other respondents stated that they felt comfortable participating in Culture X as they were not pressured to do activities outside their ability:

Participant BB: If it's hard [the instructors] change it to something fun. They encourage you to do something on different fitness levels but they don't force you to do something too hard.

One participant highlighted a concern of injury during Culture X and suggested having a qualified medical practitioner on site or training instructors in first aid and exercise safety would be helpful.

Lack of self-management skills

Many respondents reported their attendance at Culture X encouraged self-management skills in terms of time

management, organization, prioritizing healthy lifestyle activities and managing family and work commitments:

Participant Q: I find that I need to target my time at work, to get things done so that I can make sure I have time to come after work . . . I am trying to get things done at work by 5 o'clock.

Participant X: I come straight here so no excuses, the minute you go home you are going to get lazy. No matter how tired I am, I always try to make it and once the music starts then that is it.

Participant O: Since joining Culture X . . . when I am in the office working, I can move around more, I do some stretching, also at home I'm starting to work my body.

Support

Many respondents stated family commitments as a barrier to participating in physical activity and almost all respondents highlighted that support from family and friends was integral for their ongoing participation in Culture X:

Participant T: When your friends and family, people you know are doing it, it makes it a lot easier.

Further to this, respondents highlighted the family-orientated environment, reporting attendance with their children and grandchildren. This helped address family and childcare commitments:

Participant U: Whenever I have the opportunity I take my kids. My kids love it . . . even my son.

Respondents also highlighted the role of Culture X instructors in addressing barriers related to lack of support:

Participant C: The instructors are really welcoming and they come down to your level and want to interact with you a lot.

Infrastructure and safety

Culture X sessions are held in various locations (including gyms, community halls and open, grassy ovals) and require little infrastructure or equipment, only a large space and a PA system or stereo. No respondents commented on infrastructure as a barrier; this could indicate that Culture X addresses this barrier by providing safe and accessible space for exercise.

DISCUSSION

The findings indicate that Culture X provides an opportunity for Samoans, particularly women living Apia (a group experiencing high rates of obesity) (World Health Organization, 2011b), to participate in physical activity

over a sustained (2 years and beyond) period of time. This ongoing commitment is essential for addressing obesity and NCD prevention and management (Kumanyika *et al.*, 2008). The inclusion of cultural components in health promotion is widely understood as essential for developing meaningful and relevant initiatives (Kreuter *et al.*, 2003; Thomas *et al.*, 2004; Netto *et al.*, 2010; Betancourt *et al.*, 2013). Respondents highlighted that cultural components were integral to their sustained participation in Culture X and discussed ways in which Culture X assisted in addressing key personal and social barriers to participating in physical activity.

Dance is a strong component of Samoan culture and continues to play a role in many people's lives (Hiroa, 1971; Linkels, 1995). Respondents reported that common barriers including, lack of motivation and lack of enjoyment (Trost *et al.*, 2002; Salmon *et al.*, 2003; Tuagalu, 2011; Dyck *et al.*, 2014; Siefken *et al.*, 2014) were addressed by the use of local dance and music, making exercise into a fun activity. The use of traditional dance also addressed barriers relating to lack of confidence (Salmon *et al.*, 2003; Dyck *et al.*, 2014) as respondents stated they were confident and comfortable with the medium of dance which had been a part of their culture for generations. Addressing these factors helped respondents tackle other perceived barriers including time and self-management skills (Sallis and Hovell, 1990; Sallis *et al.*, 1992; Trost *et al.*, 2002) as they were encouraged to make necessary lifestyle changes needed to participate in an activity they enjoyed.

Health and well-being in Samoa is understood as a holistic combination of physical, mental and spiritual well-being with social priorities often taking precedence over individual health (Hardin, 2014). Furthermore, Samoan culture is largely focused on sharing amongst extended families and fulfilment is derived from belonging to a group (Linkels, 1995). Respondents suggested that the community atmosphere and family-orientated environment created at Culture X helped address barriers relating to family commitments and social support as Culture X was seen as an acceptable social activity, inclusive of the wider family and community. This atmosphere further enhanced respondents' comfort and confidence as they felt part of a group. Spirituality is also a core concept which guides the Samoan way of life (Linkels, 1995). Findings indicate that the integration of prayer at Culture X promotes the Samoan concept of holistic health as respondents highlighted that sessions supported their spiritual well-being, as well as social and physical health.

Culture X provides a unique example of a strengths-based approach to physical activity and health promotion, utilizing Samoan culture as the foundation of the

programme. Culture X highlights how health promotion initiatives which are community-led can negate common challenges for implementing health promotion interventions in the region, such as funding, expertise and ownership. Findings support the current, albeit limited, research from the Pacific region which indicates culturally based approaches can enhance relevance and acceptance of programmes (Siefken *et al.*, 2013). Community-led programmes ensure familiarity and authenticity of the cultural components which break down barriers to participation in physical activity.

Culture X provides an example of how culture can be used as the foundation for health promotion initiatives across the Pacific Island region. The study highlights how initiatives like Culture X show promise in addressing NCDs across Pacific Island countries through a strengths-based approach to health promotion founded on local culture. Health promotion initiatives aimed at addressing physical activity (and other healthy lifestyle activities) in other regions could also be enhanced by using this approach. By empowering communities to develop localized initiatives founded on their specific cultural needs and identities, health promotion can address barriers to healthy lifestyle activities in practical and meaningful ways.

While this study provides an important exploration of facilitating factors for addressing barriers to physical activity for people in Samoa, findings must be considered in the context of a number of limitations. The relatively small sample size narrows the parameters of the findings; however, due to the sample size the researchers were able to explore key concepts and perceptions in depth using the limited time and resources available for this study. While the demographics of the sample (mainly middle-aged Samoan women) reflect the Culture X participants, it will be important for further research to investigate barriers to physical activity for other key population groups, including youth and men living in urban areas. Future research should focus on population groups who are physically inactive in order to gain a more comprehensive understanding of the key facilitating factors and barriers to physical activity for people in the Pacific Island region.

CONCLUSION

Addressing NCDs and associated risk factors in the Pacific Island region, and throughout the world, requires immediate and creative action. Culture X provides one important example of ways communities can use the strengths of their local culture to address barriers to healthy lifestyle activities and engage in healthy behaviour change over a sustained period of time. Finding from this study suggest that small, community-based initiatives like Culture X

can play an important role in addressing the NCD epidemic within the region. Health promotion initiatives which achieve cultural authenticity by putting local culture and ways of life at the centre of development and implementation are essential for addressing key barriers to healthy lifestyle activities.

CONFLICT OF INTEREST

B.A.C. has previously worked as a Culture X instructor and continues to be affiliated with Culture X. Her primary contribution to this research consisted of liaising with Culture X management to gain organisation support of the research and providing some technical support for the project as she has experience with health promotion and research in Samoa. B.A.C. was not a part of the data collection or data analysis processes and thus her involvement did not compromise the validity of the outcomes of the research. Her time was voluntary and unpaid.

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REFERENCES

- Afele-Fa'amuli S., Katirai W., Digan M. (2009) Effectiveness of a pilot community physical activity and nutrition intervention in American Samoa. *Californian Journal of Health Promotion*, 7, 14–25.
- Beaglehole R., Ebrahim S., Redding S., Voute J. (2008) Prevention of chronic disease: a call to action. *The Lancet*, 370, 2152–2157.
- Beaglehole R., Bonita R., Horton R., Adams C., Alleyne G., Asaria P., et al. (2011) Priority action areas for the non-communicable disease crisis. *The Lancet*, 377, 1438–1447.
- Belza B., Walwick J., Schwartz S., LoGerfo J., Shiu-Thomton S., Taylor M. (2004) Older adult perspectives on physical activity and exercise: voices from multiple cultures. *Preventing Chronic Disease*, 4, A09.
- Betancourt J. R., Green A. R., Carrillo J. E., Ananeh-Firempong O. (2013) Defining cultural competence: a practical framework for addressing racial/ethnic disparities in health and health care. *Public Health Reports*, 118, 293–302.
- Chapstick S., Norris P., Sopoaga F., Tobata W. (2009) Relationships between health and culture in Polynesia: a review. *Social Science & Medicine*, 68, 1341–1348.
- Chinn D. J., White M., Harland J., Drinkwater C., Raybould S. (1999) Barriers to physical activity and socioeconomic position: implicatoinis for health promotion. *Journal of Epidemiol Community Health*, 52, 191–192.
- Chircop A., Shearer C., Pitter R., Sim M., Rehman L., Flannery M., et al. (2013) Privileging physical activity over healthy eating: 'time' to choose? *Health Promotion International*, 30, 418–426.
- Dey I. (2003) *Qualitative Data Analysis: A User Friendly Guide for Social Scientists*. Routledge, London.
- Dyck D. V., Cerin E., Conway T. L., Bourdeaudhuij I. D., Owen N., Kerr J., et al. (2014) Interacting psychosocial and environmental correlates of leisure-time physical activity: a three country study. *Health Psychology*, 33, 699–709.
- Eyler A., Baker E., Cromer L., Kind A., Brownson R., Donatelle R. (1998) Physical activity and minority women: a qualitative study. *Health Education & Behaviour*, 25, 31–37.
- Hamlim M., Ross J. (2005) Barriers to physical activity in young New Zealanders. *Youth Studies Australia*, 24, 31–37.
- Hardin J. (2014) Everyday translation: Health practitioners' perspectives on obesity and metabolic disorders in Samoa. *Critical Public Health*, 25, 125–138.
- Hiroa T. R. (1971) *Samoan Material Culture*. Kraus Reprint Co., New York.
- Humple N., Neville O., Leslie E. (2003) Environmental factors associated with adults' participation in physical activity. *American Journal of Preventative Medicine*, 22, 188–199.
- Khoo S., Morris T. (2012) Physical activity and obesity research in the Asia-Pacific: a review. *Asia-Pacific Journal of Public Health*, 24, 435–449.
- Kreuter M. W., Lukwago S. N., Bucholtz D. C., Clark E. M., Sanders-Thompson V. (2003) Achieving cultural appropriateness in health promotion programs: targeted and tailored approaches. *Health Education Behaviour*, 30, 133–146.
- Kumanyika S. K., Obarzanek E., Stettler N., Bell R., Field A. E., Fortmann S. P., et al. (2008) Population-based prevention of obesity: the need for comprehensive promotion of health eating, physical activity, and energy balance: a scientific statement from American Heart Foundation Association Council on epidemiology and prevention, interdisciplinary committee for prevention (formerly the expert panel on population and prevention science). *Circulation*, 118, 428–464.
- Lee I., Shiroma E. J., Lobelo F., Puska P., Blair S. N., Katzarzyk P. T. (2012) Effects of physical inactivity on major non-communicable diseases worldwide: An analysis of burden of disease and life expectancy. *The Lancet*, 380, 219–229.
- Linkels A. (1995) *Fa'a Samoa: the Samoan way. . . Between Conch Shells and Disco*. Mundo Ethnico Foundation, Tilburg.
- Mavoa H., McCabe M. (2008) Sociocultural factors relating to Tongans' and Indigenous Fijians' patterns of eating, physical activity and body size. *Asia Pacific Journal of Clinical Nutrition*, 17, 375–384.
- Netto G., Bhopal R., Lederle N., Khatoon J., Jackson A. (2010) How can health promotion interventions be adapted for minority ethnic communities? Five principles for guiding the development of behavioural interventions. *Health Promotion International*, 25, 248–257.
- Pasick R., D'Onofrio C., Otero-sabogal R. (1996) Similarities and differences across cultures: questions to inform a third

- generation of health promotion research. *Health Education Quarterly*, **23**, s142–s161.
- Reichert F. F., Barros A. J., Domingues M. R., Hallal P. C. (2007) The role of perceived personal barriers to engagement in leisure-time physical activity. *American Journal of Public Health*, **97**, 515–519.
- Sallis J. F., Hovell M. F. (1990) Determinants of exercise behaviour. *Exercise & Sport Science Reviews*, **18**, 307–330.
- Sallis J. F., Hovell M. F., Hofstetter C. R., Barrington E. (1992) Explanation of vigorous physical activity during two years using social learning variables. *Social Science & Medicine*, **34**, 25–32.
- Salmon J., Owen N., Crawford D., Bauman A., Sallis J. F. (2003) Physical activity and sedentary behaviour: a population-based study of barriers, enjoyment and preference. *Health Psychology*, **22**, 178–188.
- Samoa Bureau of Statistics (2011) *Samoa Bureau of Statistics, Population and Housing Census 2011*. Samoa Bureau of Statistics, Apia.
- Scully M., Dixon H., White V., Beckmann K. (2007) Dietary, physical activity and sedentary behaviour among Australian secondary students. *Health Promotion International*, **22**, 236–245.
- Siefken K., Macniven R., Schofield G., Bauman A., Waqanivalu T. (2011) A Stocktake of physical activity programs in the Pacific Islands. *Health Promotion International*, **27**, 197–207.
- Siefken K., Schofield G., Schulenkorf N. (2013) Inspiring Pacific women for lifestyle change: an attempt to halt chronic disease. In Schulenkorf N., Adair D. (eds), *Global Sport for Development: Critical Perspectives*. Chapter 12. Palgrave Macmillan, Hampshire, UK, pp. 216–243.
- Siefken K., Schofield G., Schulenkorf N. (2014) Laefstael jenses: an investigation of barriers and facilitators for healthy lifestyle of women in an urban Pacific island context. *Journal of Physical Activity and Health*, **11**, 30–37.
- Silveman D. (2010) *Doing Qualitative Research: A Practical Handbook*. Sage, London.
- Strazdins L., Broom D. H., Banwell C., McDonald T., Skeat H. (2010) Time limits? Reflecting and responding to time barriers for healthy, active living in Australia. *Health Promotion International*, **26**, 46–54.
- Strong K., Mathers C., Leeder S., Beaglehole R. (2005) Preventing chronic diseases: how many lives can we save? *The Lancet*, **366**, 1578–1582.
- Thomas S. B., Fine M. J., Ibrahim S. A. (2004) Health disparities: the importance of culture and health communication. *American Journal of Public Health*, **94**, 2050.
- Trost S. G., Neville O., Bauman A. E., Sallis J. F., Brown W. (2002) Correlates of adults' participation in physical activity. *Medicine & Science in Sports & Exercise*, **24**, 1996–2001.
- Tuagalu C. (2011) Young people's perceptions and experiences of physical activity in Apia, Samoa. *Pacific Health Dialogue*, **17**, 55–64.
- Warburton D., Nicol C., Bredin S. (2006) Health benefits of physical activity: the evidence. *Canadian Medical Association Journal*, **174**, 801–809.
- World Health Organization (2000) *Obesity: Prevention and Managing the Global Epidemic*. WHO Technical Report Series 894. World Health Organization, Geneva.
- World Health Organization (2005) *Preventing Chronic Disease: A Vital Investment*. World Health Organization, Geneva.
- World Health Organization (2010) *Global Recommendations on Physical Activity for Health*. World Health Organization, Geneva.
- World Health Organization (2011a) *Obesity and Overweight*. Fact sheet 311. World Health Organization, Geneva.
- World Health Organization (2011b) *Samoa Country Profile*. Country health profiles. World Health Organization, Geneva.
- World Health Organization (2014) *Global Status Report on Noncommunicable Diseases 2014*. World Health Organization, Geneva.
- World Health Organization for the Western Pacific Region (2007a) *American Samoa NCD Risk Factors STEPS Report*. STEPS. World Health Organization, Suva.
- World Health Organization for the Western Pacific Region (2007b) *Nauru NCD Risk Factors STEPS Report*. STEPS. World Health Organization, Suva.
- World Health Organization for the Western Pacific Region (2007c) *Tokelau NCD Risk Factors STEPS Report*. STEPS. World Health Organization, Suva.
- World Health Organisation for the Western Pacific Region (2008) *Pacific Physical Activity Guidelines for Adults: Framework for Acceleration the Communication of Physical Activity Guidelines*. World Health Organization, Manila.
- Yancey A. K., Ory M. G., Davis S. M. (2006) Dissemination of physical activity promotion interventions in underserved populations. *American Journal of Preventive Medicine*, **31**, S82–S91.
- Zimmer P. Z., Alberti K. G. (2006) Introduction: globalisation and the non-communicable disease epidemic. *Obesity*, **14**, 1–3.

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