Jing Sun* and Nicholas Jan Buys

Improving Aboriginal and Torres Strait Islander Australians' well-being using participatory community singing approach

Abstract: There is increasing international interest in the idea that well-being and health are related to resilience. Participative community singing is beneficial for well-being not only in people who are free from health problems, but especially for those whose physical and mental health is compromised. This study examined the development of five Aboriginal and Torres Strait Islander singing groups and the benefits relating to promoting resilience and ultimately preventing chronic disease in this population. Mixed methods, including both quantitative and qualitative approaches, were used. Questionnaires were administered to collect data on chronic life stresses, resilience, social support and social connectedness. Focus group interviews were conducted to obtain data on the participants' and stakeholders' perceptions of the impact of the singing groups. Multivariate analysis of variance was used to test the effectiveness of the intervention program on improving resilience at both the individual and the community levels. Structural equation modelling was used to analyse the pathways from the benefits gained from the singing program to the prevention of chronic disease. The results suggested that the singing groups served multiple functions, which are underpinned by social ecological resilience mechanisms to promote self-esteem, learning and education and confidence at the individual level, as well as community connectedness, reduction of loneliness and promoting social support from family, community and the social context such as support from community-controlled health services, and ultimately preventing chronic disease.

Keywords: Aboriginal and Torres Strait Islander people; participatory community singing; primary health service; resilience; social equality.

*Corresponding author: Jing Sun, School of Public Health and Griffith Health Institute, Griffith University, University Drive Parkland, Brisbane, Queensland 4222, Australia, Phone: +617 55527875, Fax: +617 55528799, E-mail: j.sun@griffith.edu.au
Nicholas Jan Buys: School of Human Services and Social Work and Griffith Health Institute, Griffith University, Brisbane, Queensland, Australia

Introduction

There is increasing international interest in the idea that well-being and health are related to resilience [1, 2]. In a recent meta-analysis, Bartley and colleagues [3] found that individuals with high levels of resilience are more likely to have positive well-being related to better mental and physical health, as well as higher levels of educational attainment and employment. Resilience factors such as self-esteem, self-efficacy, readiness to learn and a positive social identity are protective assets, influencing a wide range of health and social outcomes [2]. Such assets provide a 'buffer' for disease risk exposure and are linked to a positive quality of life and well-being [4]. Improving resilience can bring significant benefits for mental and physical health and quality of life for individuals and for communities. These benefits are not necessarily simply the result of the absence of mental and/or physical illness, but are due to aspects of positive mental health [3] and community social capital and social support [5, 6].

An emerging literature on resilience and capability is centrally concerned with positive adaptation, protective factors and 'assets' that moderate the impact of risk factors [4]. From a socio-ecological perspective [7], resilience is the interaction of individual characteristics and the social context [8]. This perspective implies that well-being is substantially affected by the social contexts in which people are embedded and is a function of the quality of relationships among the individual, the family and social systems.

Individual characteristics are those that shape an individual's ability and competence to cope and face challenges and changes. They include factors such as self-esteem, self-efficacy, confidence and purposefulness, all of which have been significantly related to health outcomes. Social factors include both family-level and community-level support. Characteristics of social context, both proximal, including family and friends, and distal, such as community, culture and social environment, are important to health outcomes. Werner and Smith [9] argue that social contextual variables act as

protective factors by modifying, ameliorating or altering a person's response to the negative effects of risk. It is possible that they may also contribute to resilience processes (e.g., adaptation), outcomes (mental and physical health) and practices (e.g., development or sustainability of social networks) or policy [10] as a response to adversity [4].

Family factors are those that shape the family's ability to endure in the face of adversity and risk, and their key characteristics include warmth, affection, cohesion, commitment and emotional support for one another [11]. These factors have also been found to be associated with mental health [12]. Family factors include family coherence and how the family functions as a unit to cope with the stresses of life. Family coherence pertains mainly to the elements of coping, problem solving, support, communication and understanding [11]. Healthy families normally are able to access and obtain support from friends, community and kinship networks.

A number of social factors related to access to social support and availability of health services have also been found to be positively related to patients' self-management skills and strategies to cope with chronic-disease-related stresses [13]. Such variables may have a decisive impact on an individual's ability to cope with stress or challenges and are crucial in determining the extent to which a chronic disease will deteriorate or, instead, lead to adjustment and positive outcomes. Thus, the presence of these protective factors in a social context may determine an individual's ability to adjust and cope with adversity in their community. Social factors of importance in the health service context include the provision of health and social services, their accessibility to community members, and opportunities for improved health outcomes [13]. At a community level, numerous studies have indicated that social support has the ability to moderate the effects of chronic disease [14]. For example, Sun et al. [14] found that social support buffered the negative impact of life stressors on depression. Similarly, Brissette and colleagues [15] reported that people who were more optimistic experienced greater community social support, which in turn led to decreased depression.

Arts-based interventions and resilience

In recent years there has been interest in culture-based interventions as a means of promoting resilience [16]. Community singing, for example, has been found to be an effective means of promoting resilience at both the individual and the community levels [16]. At the individual level, participation in a singing group promotes

competence and a sense of achievement through education and the learning of songs and singing [17]. Singing has a positive impact on self-esteem because it increases participants' sense of acceptance and self-worth. It also helps participants to develop a sense of self-efficacy and the willingness and capacity to change or modify adverse life events. At a community level, singing groups can be an effective source of social support during stressful and challenging events and times by providing a safe environment in which people can connect with their community.

Singing has also been shown to enhance resilience [16] through physical activity associated with breathing techniques, and spiritual development through the meditative aspects of singing [18]. Benefits for individual mental health that are associated with singing in groups include increased levels of social connectedness, increased sense of belonging, physical and emotional benefits and reduced personal stress [19]. Furthermore, it is argued that group-forming activities such as community-based singing can facilitate the development of social capital that in itself positively impacts on physical and psychological well-being at individual, relational and community levels. For example, singing is associated with increased levels of civic engagement, community cohesiveness and tolerance for diversity [20, 21].

A number of studies [22, 23] indicate that arts-based interventions such as singing may assist in healing trauma or stresses in general. By placing emphasis on the process of expression, the arts allow individuals to explore and express human feelings, emotions and thoughts through involving physiological and psychological processes [22, 23]. Limb and Braun [24] argue that the creative processes associated with art tap into the prefrontal lobe of the brain, which were accompanied by activation of sensorimotor perception, and in doing so activate systems that facilitate social, emotional and cognitive processes that enable individuals to improve higher-level abilities, e.g., creative abilities and planning abilities. Through art therapy, a person who has experienced traumatic or stressful events is able to express the trauma through non-verbal means. Most of the studies focused on martial arts, writing, music, dancing and musical instruments [23]; there is limited research on singing-related study in examining its healing effect.

Aboriginal and Torres Strait Islander Australians, chronic disease and the arts

Aboriginal and Torres Strait Islander Australians experience high rates of disadvantage, trauma and distress,

resulting in high rates of unemployment, job loss, financial difficulties, family disruption, incarceration, chronic physical illness, bereavement and social and emotional health difficulties. There is a high prevalence of chronic disease in Aboriginal and Torres Strait Islander communities, with cardiovascular disease being the leading cause of death among this population over the last century, and an increasing incidence of diabetes. Chronic disease is primarily responsible for the life expectancy gap of 17 years between indigenous and non-indigenous Australians and accounts for two-thirds of the premature deaths among Aboriginal and Torres Strait Islander Australians [25]. These diseases are associated with psychosocial difficulties such as depression and chronic stress, which contribute to negative cardiovascular outcomes [26]. As a marginalised group in Australian society, Aboriginal and Torres Strait Islander individuals often feel socially isolated; this is compounded by the experience of physical and mental illness [14].

There is limited research on the relationship between the effects of arts-based interventions and the prevention of chronic disease in Aboriginal and Torres Strait Islander Australians. The arts may be used in a variety of ways to build resilience [16] and consequently heal emotional injuries [23], increase understanding of oneself and others, develop a capacity for self-reflection and reduce symptoms [27]. Engagement with creative activities has the potential to contribute towards building resilience, reducing stress and depression and alleviating the burden of chronic disease in this population. Given the importance of creative expression for Aboriginal and Torres Strait Islander communities, the extent to which psychological, physiological and social effects of participation in arts are sustainably health-enhancing should be viewed as an important area for health promotion investigation. In this study, we therefore investigated the impact of one area of the arts, community singing, in terms of its effectiveness in promoting resilience among Australian Aboriginal and Torres Strait Islander people in order to improve their physical health and reduce chronic disease.

Methods

From 2010 to 2011, the Voices United for Harmony (VUFH) program, a participative community singing intervention, was offered to 291 Aboriginal and Torres Strait Islanders aged 18 years and older in five communities in Queensland, Australia. Participating communities included two urban, two regional and one rural location. Pre- and post-intervention assessments were conducted in the communities to measure the impact of the intervention. Written informed consent was obtained from each participant prior to pre-intervention

screening, and ethical approval was obtained through the Research Ethics Committee at the Griffith University of Australia (GU Ref No. PBH/13/10/HREC).

Our research was participatory in nature, with local Aboriginal community leaders playing important central roles in the design and implementation of the study. The design was non-randomised in nature. Participants were recruited through Aboriginal Community-Controlled Health Services (CCHSs) when they attended health check consultation. CCHSs conducted and coordinated the intervention programs, organising intervention activities, weekly rehearsals, testing and singing performances. Individuals included in this investigation were those 18 years or older who consented to participate in the intervention program and were able to complete both assessment and intervention components. Ninety percent of participants had chronic conditions such as heart disease, diabetes, hypertension, stroke, depression and schizophrenia. Individuals presenting with severe medical conditions were referred for medical examination prior to commencing singing intervention activities.

The project's aim was to create five mixed-age singing groups, which, through a series of singing performances, would promote the social and emotional well-being and promote resilience of the participants and their communities. Recruitment began in June 2009 via CCHS 'taster sessions'. This proved more successful than expected. After 1 month, five groups had been established, consisting of adults aged 18–78 years. There were 114 participants at the baseline stage, and 56 participants stayed in the intervention group until 12 months of intervention activity was completed. There were 127 participants in the control group in the baseline assessment time, and 54 participants remained in the control group until 12 months of intervention was finished. Each group met weekly under the direction of musicians employed by Griffith University, and transport was supported by each community's CCHS. Griffith University and Queensland Aboriginal and Islander Health Council (QAIHC) tried to involve each local CCHS in contacting participants, collecting participants for rehearsals and performances and helping out at rehearsals. The singing programs were 12 months in duration, from June 2010 to June 2011, and included weekly group rehearsal sessions for 2 h per week with a 15-min break for social interaction, as well as individual rehearsal at home. Each group-singing activity session was organised by a CCHS Aboriginal community member who had attended leader training sessions prior to the program implementation, and the sessions were led by professional musicians. Participants were able to complete the program within the limits of their physical abilities.

Two survey rounds were conducted at baseline and 12 months, and the questionnaires were completed by participants. Health surveys were conducted within local Aboriginal communities for all pre- and post-intervention assessments. Individual characteristics including age, sex, physical activity levels and personal and/or family medical history of diabetes, cardiovascular disease, hypertension and depression were collected at both pre- and post-intervention sessions. Singing-related quality of life was measured using the Singing Activity Participation Questionnaire [18]. This questionnaire assesses perceived benefits to psychological health, physical health, and spiritual health on a Likert Scale, from 1 being 'never' to 3 being 'all the time'. Each question was then scored and summed to determine the overall score out of 63. Individuals who reported completing at least 120 min of singing activity on 1 day per week in consecutive 3 months were classified as having achieved the recommended level of singing activity. In the resilience questionnaire, we

adopted the six key dimensions of resilience identified by Sun and Stewart [28]:

1. Individual resilience characteristics: self-esteem, ability to cope and bounce back (6 items)
2. Sense of belonging (10 items)
3. Support from family (10 items)
4. Perceptions of neighbourhoods (4 items: liking/disliking, feeling safe, having friends nearby and things to do)
5. Relationships with friends (8 items: perceived quality and quantity of friendship networks)
6. Social connectedness (21 items: sense of connections to the community).

Chronic diseases were diagnosed by doctors according to standardised protocols established by the Australian standard for heart disease, diabetes, hypertension, stroke, depression and schizophrenia [29, 30]. Information was also collected regarding the use of medication and previous chronic disease diagnoses.

Focus groups were conducted with five community singing groups after their rehearsal time and were conducted in their community rehearsal places. There were a total of 17 participants (7 males and 10 females), with an age range from 20 to 75 years. The size of the focus group ranged from 3 to 6 participants. We also conducted one focus group for singing group leaders who were acting as singing group conductors and two focus groups with CCHS health workers.

The focus group interview questions were guided by the current research framework into health benefits of the singing group. The main questions are related to the physical and mental health benefits, prevention of chronic diseases, medication use since participants participated in singing groups, and how singing groups facilitate the participants' access to the CCHSs.

All focus group data were digitally recorded (with participants' permission), transcribed and coded using a grounded theory approach [31]. The researchers explained the purpose and scope of their work during pre-intervention data collection, and information sheets were distributed to participants seeking their written consent to be involved in the research.

Survey data were analysed using SPSS 19.0 and Mplus 2.0 [32]. Descriptive analysis was used to describe the characteristics of participants in the study. Lifetime stresses were estimated from two variables: (a) the total number of stressful events categories endorsed (for example, serious accidents, death of family members, abuse, family member sent to jail, vandalism or malicious damage to property and discriminations/racism) and (b) the number of stresses on the following scale: no stress, one stress, two stresses and three or more stresses. Lifetime stress, resilience, social support and social connectedness were compared between pre- and post-intervention time and interaction with group variable (intervention and control group) using multivariate analysis of variance (MANOVA).

Focus group interview data were analysed using grounded theory procedures [33]. Initial coding was conducted line by line until categories began to emerge. Further data were collected and analysed according to these emerging categories, which were expanded and adapted to accommodate the varied experiences of participants. Axial coding was used to specify the linkages and connections between categories and to develop an initial model detailing participants' experiences. The model was checked against raw transcripts, and specific codes were checked to ensure accuracy of sorting. A data trail showing how codes emerged and developed into categories was monitored by the research team.

Results

Description of the five choirs

Central to the VUFH project's vision was the idea that the singing should be embedded in local communities. Music is a primary means by which Aboriginal and Torres Strait Islander Australians retain their identity and culture. VUFH aimed to build on these longstanding, local cultural practices. South East Queensland indigenous communities have a rich tradition of music, whereby ceremonial performances using song, dance, body decoration, sculpture and painting are part of their culture and customs. This musical tradition, including singing and songs, has been used to express their love of and identification with country, loss of land and attempts to return to one's country. Given this context, it was appropriate that many of the songs were chosen by the participant groups.

The singing intervention took place in South East Queensland, led by a Griffith University project team working with the QAIHC and each CCHS, and this was largely successful. Retention was problematic for only one choir in the Gold Coast area. The other four choirs were still operating by December 2011, having given several successful performances during the intervention period.

Women formed the majority of participants in all five choirs (70%), a statistically significant effect compared to the control group (χ^2 -test, $p=0.0005$). VUFH participants were also more likely than the control group to be involved in other extracurricular activities, namely, painting and knitting (χ^2 -test, $p=0.002$), sports (χ^2 -test, $p=0.004$), social gatherings (χ^2 -test, $p=0.002$) and attending church (χ^2 -test, $p=0.007$). Further analysis (splitting the data set by gender) indicated an interaction between gender and other activities; women were more likely than men to be involved in other arts/music activities and to join VUFH.

Quantitative data

Structural equation modelling was used to test the pathway from stressful events to depression and the mediating effect of resilience on the relationship between stressful events and mental illness. The results showed that the relationship between stressful life events and depression is significant, and this relationship is mediated by resilience at the level of individual characteristics and the social support level (Figure 1).

To test the effectiveness of the community singing program, a comparison was made between the numbers of stressful life events reported pre- and post-intervention.

Figure 1 Relationship between stress and general mental health and emotional well-being mediated by resilience. Fit indices results: $\chi^2=3.1$, CFI=0.90, TLI=0.85, SRMR=0.07. * $p<0.05$. ** $p<0.01$. *** $p<0.001$.

There was no significant difference in the number of stressful life events reported by the intervention and control groups in the pre-intervention phase. However, a significant reduction in the number of stressful life events reported by the intervention participants was apparent compared to those reported by the control group in the post-intervention phase (Table 1). There was a significant increase in the proportion of the intervention group reporting no stressful events at the post-intervention assessment, with 25.0% reporting no stressful life events compared to 16.6% of the control group participants.

Table 2 shows that there was a significant increase in the intervention group participants' feelings of connectedness to their community in the post-intervention phase in comparison with the pre-intervention phase, as well as in comparison to the control group at the post-intervention assessment. Participants in the community singing group reported a statistically significant improvement in quality of life (group $\times$ time interaction; $F=27.24$, $p<0.001$), reported ability to manage social and emotional well-being (group $\times$ time interaction; $F=25.40$, $p<0.001$), and sense of emotional and esteem support from social support (group $\times$ time interaction; $F=3.22$, $p<0.05$).

Table 1 Comparison between pre- and post-intervention and intervention and control groups in stressful life events.

	Pre-intervention		Post-intervention	
	Intervention	control	Intervention	control
Stress				
No stress	9 (17.1%)	7 (12.4%)	14 (25.0%)	9 (16.6%)
1 event	14 (24.8%)	14 (25.6%)	14 (25.0%)	24 (44.4%)
2 events	13 (23.1%)	10 (19.0%)	9 (16.1%)	9 (16.6%)
3 events	20 (35.0%)	23 (43%)	19 (33.9%)	22 (40.7%)
	$\chi^2=2.335$, $p=0.51^a$		$\chi^2=5.56$, $p<0.05^b$	

^{a,b} χ^2 -test was used to compare the difference between intervention and control groups in stressful events.

Table 3 shows that there was a significant increase in access to CCHS medical centre services post-intervention and a non-significant decrease in accessing hospital services. The results for health service utilisation suggest that Aboriginal and Torres Strait Islander people who participated in the community singing program are more likely to access primary health services to have health checks and comply with health professionals' advice for medication and prevention.

Structural equation modelling analysis was used to further test whether the singing program significantly promoted a sense of resilience, feelings of community connectedness and emotional and esteem support from community, hence preventing chronic disease. The results (Figure 2) indicated there is a relationship between the individual- and the community-level responses to chronic disease and a relationship between individual-level characteristics and community-level support from family, friends and community, ultimately leading to reduced levels of chronic conditions. The intervention program strengthened individual-level competence and capacity to manage emotions and well-being, and these individual characteristics interact with community-level support from family, friends and the community. This model showed an overall good fit, with fit indices of $\chi^2=2.0$, CFI=0.98, TLI=0.91, SRMR=0.05. Table 4 shows the statistical significance result for each path.

Qualitative data

Analysis of the focus group data revealed three main themes with a number of subcategories (Table 4). The three themes comprised individual resilience characteristics, social interaction and community support, and access to CCHS. The model that was developed shows the multiple resilience components of the singing group, which individuals

Table 2 Comparison between pre- and post-intervention time in resilience, social connectedness factors, and singing-related quality of life using ANOVA test.

Variables	Pre-intervention		Post-intervention		F		
	Intervention (n=56)	Control (n=54)	Intervention (n=56)	Control (n=54)	Group	Time	Group×time Interaction
1. Connected	34.56 (10.83)	30.19 (12.34)	86.56 (70.67)	60.44 (74.45)	1.24	17.79 ^a	2.45 ^b
2. Isolation	14.68 (9.11)	13.67 (7.29)	14.23 (6.61)	12.93 (4.97)	0.90	0.23	0.01
3. Loneliness	9.81 (6.70)	8.70 (5.02)	10.34 (5.09)	10.37 (5.70)	0.34	1.40	0.37
4. Understood by friends	8.50 (3.34)	7.70 (3.24)	8.21 (2.95)	7.40 (3.04)	2.09	0.28	0.00
5. Resilience	3.25 (1.49)	3.48 (1.43)	3.77 (1.78)	3.65 (1.47)	0.07	3.18 ^b	0.82
6. Emotional support	10.32 (3.74)	11.24 (3.15)	11.82 (2.52)	11.17 (3.18)	0.11	2.66	3.22 ^b
7. Trust	3.75 (1.69)	3.71 (1.82)	3.96 (1.82)	3.77 (1.46)	0.11	0.37	0.27
8. Singing QoL	9.67 (8.16)	2.84 (5.73)	16.94 (2.35)	0.90 (0.02)	167.67 ^a	9.11 ^c	27.24 ^a
9. Singing emotion well-being	22.49 (18.61)	6.89 (13.58)	38.28 (5.42)	2.10 (0.39)	160.97 ^a	7.29 ^c	25.40 ^a

ANOVA was used to analyse the main effect of group and time and group×time interaction. ^ap<0.001. ^bp<0.05. ^cp<0.01. QoL, quality of life.

Table 3 Comparison between pre-intervention time and post-intervention time in access to CCHS as a source of social support among Aboriginal and Torres Strait Islander people in intervention group using Mann-Whitney test.

Variables	Pre-intervention	Post-intervention	Mann-Whitney U	p-Value
	Median (min, max) Mean rank (n=56)	Median (min, max) Mean rank (n=56)		
1. Access to CCHSs	0 (0, 182) 85.43	3 (0, 150) 100.48	3184	0.04
2. Access to medical centre	4 (0, 182) 85.31	5 (0, 240) 96.78	3199	0.15
3. Home visits by doctors	0 (0, 52) 88.84	0 (0, 52) 93.43	3547	0.25
4. Hospital visits	0 (0, 90) 91.79	0 (0, 136) 86.70	3446	0.49

Mann-Whitney test was used to compare the difference between pre- and post-intervention time health service utilisation.

can draw on when experiencing chronic-disease-related stresses (Figure 3). These individual resilience characteristics interact with social interaction and the use of health services (Figure 3). These processes interact with each other,

as individual-level resilience characteristics promote social support and vice versa, whereas health service support enhances community-level social support and individual-level resilience is linked to health service utilisation.

Figure 2 Pathway from resilience to chronic disease prevention mediated by singing activity.

p<0.01. *p<0.001.

Table 4 Themes and subthemes of focus groups.

Themes	Subthemes	Responses of participants
Individual resilience characteristics	Learning	Participants Stake holders Musicians
	Confidence	
	Self-esteem	
	Purpose of life	
Social interaction Social capital	Positive coping	Participants Stake holders Musicians
	Sense of connectedness	
	Collective experience	
	Developing friendship	
	Trust	
Increasing usage of CCHSs	Equality	Participants Stake holders Musicians
	Increasing access to counseling service	
	Increasing undertaking health checks	

The individual resilience theme characteristics were related to the effects of the singing group on an individual's inner psychological state and consisted of four categories: learning, confidence, self-esteem and positive coping. The challenging nature of singing can bring about a sense of achievement through learning, which in turn has a positive effect on self-esteem and confidence. Singing also enhances sense of purpose, increasing the intrinsic motivation and determination that individuals need to continue attending choir in stressful times.

The social interaction theme consisted of five categories: sense of connectedness, collective experiences, building relationships, community trust and equality. Sense of connectedness arises from a singing group environment, which is non-judgemental and accepting, and where individuals feel a sense of belonging and safety. Collective experience refers to feeling part of the singing group and working with others towards developing

mutual understanding and building relationships and close friendships. Individuals socialise with others and are able to work on their social skills in a safe setting. The singing group is a source of support in stressful times and can help to normalise problems and put them into perspective. Trust refers to feeling part of the community and working with other community members towards a common goal. Equality includes feeling respected and having an equal opportunity to determine the choice of repertoire, feeling that people are not judgemental and feeling safe and relaxed when participating in community activities.

The access to health services theme consisted of two categories: access to counselling services and access to health checks. All participants, CCHS health workers and group leaders felt that the singing groups had a substantial impact in terms of increasing the level of utilisation of CCHS. Participants had increased their use of counselling services and reported feeling comfortable when approaching CCHS and health workers. They routinely attended health checks and medical consultations when requested to do so by the CCHS health workers.

Participation promotes individual-level resilience and reduces stressful life events

Participants reported that the community singing program provided an avenue to promote their resilience. Specifically, the benefits of singing for participants included active learning, confidence, self-esteem, meaning in life and enjoyment. Enjoyment and love of singing appeared to be the main reason that participants continued to attend the rehearsals and performance. A number of participants raised the confidence building associated with singing group participation:

That's right, more confidence because it does encourage confidence. Confidence is probably an area that I'm quite lacking so to be able to sit in a group and sing in a group is quite empowering. That people aren't judging you, so it is a confidence activity.

Most participants reported that singing made them feel less stressed and that they felt more inspired and empowered as members of the Aboriginal community. Singing was spoken about as a way of accessing and expressing difficult emotions and was seen as a safe, controlled mode of expression that helped to connect to difficult emotions without feeling overwhelmed. This was especially important for those who found it difficult

Figure 3 Interaction between individual resilience characteristics, social support, and usage of health services.

to express their emotions in their everyday lives. Some spoke of being moved to tears and that group singing had a capacity to calm, relax, excite, thrill and stimulate them in a way that was often not normally accessible. Likewise, being able to identify with the lyrics of the songs was found to be comforting and reassuring. It was also a way of sharing.

It gets you out of yourself, off yourself, off your problems and that's got to help psychologically and the day's stress and strain. It's all in a day's work I suppose. I think it's very good. In what the composer had felt, and allowed some to feel less alone.

Promoting social interaction and utilisation of CCHSs

The community singing program promoted participants' sense of belonging and sense of connectedness to the community. All the singers reported that they enjoyed the social interaction and that singing brought them closer to each other while also helping them to meet new people and connect with old friends more often. From these relationships, participants derive the capacity to share, to be heard and to listen. These activities therefore help individuals to face life's changes and reflect on what is happening to them. The sharing of information and experiences also brings a sense of support:

I really enjoy the coming together and when we first came together, different people were in different pockets and they were feeling a little bit shy and not able to synergise together, and then we slowly got closer and closer and singing sort of brought our hearts closer together.

Benefit of social capital: community trust and social equality

Singing groups bring people with various backgrounds together. They provide a non-judgemental environment where people feel accepted by each other and promote feelings of safety and trust about people and community.

For people it stops loneliness. I know a lot of elderly ladies there and they're on their own and coming and meeting with all of us. Acceptance ... Accepting each other for who we are and embracing our differences.

It's non-judgmental and it's really good. We embrace everybody. They make you feel at home. So, yes, it has beneficial effects for everybody.

CCHS stakeholders from five communities reported that the intervention enabled health workers in each centre to interact more with community members on health issues. The CCHSs reported that more clients were having health checks and that the singing groups were a better means to promote positive health orientation than a focus on disease. The singing program improved health staff and client relationships and increased interaction between participants and health workers. Health services staff also participated in the singing groups and were therefore able to relate to their clients on a more personal level. Trust in the health workers was enhanced, and the participants felt more respected by them:

I guess one of the benefits about the capacity building in each of the community health services that are involved in this project and what I mean by that is that it allows for people who need to see a counsellor or anything like that, it opens up that capacity for that person to actually go and see some professionally and actually get some professional counselling if they are required.

Promoting resilience through physical activity to prevent chronic disease

Focus group data also supported the finding that singing groups promoted physical health and prevented chronic disease. Most participants reported that they were motivated to become physically active through participating in the singing program; they went into the community more often, took a bus to rehearsals, and went out to meet with friends. They also found information about other activities and participated in these extra activities via the community singing program. The chronic disease symptoms that participants experienced, such as high blood pressure, overweight and cardiac conditions significantly improved. Some participants had reduced their medication use due the improvement in their health status.

Well, the significant change that is made and that matters is hey I'm well. I'm active and well. My diabetes and my blood pressure are all under control and I lost 8 kg in weight – so that's really good.

Discussion

The findings of this study indicate that community singing is an effective way of promoting resilience, increasing social interaction and developing social capital within Aboriginal and Torres Strait Islander individuals and their communities.

Singing promotes individual-level resilience characteristics

It was apparent that singing promotes resilience at the individual level in two ways. The first related to cognitive benefits from activities such as learning to sing. The second effect is related to benefits that singing groups assisted with decreased stress, increased confidence and self-esteem, and positive changes in attitude and mood. Many participants explained that that enjoyment of singing is connected with cognitive and emotional health benefits. Feeling 'high' or 'happy' were very important aspects of singing activities amongst all five of the singing groups. This is consistent with previous studies in England and Australia [17, 21]. The qualitative research results from group leaders and CCHS health workers also revealed that the participants had benefited from the program, particularly in terms of promoting their sense of self-esteem, confidence, learning, purpose in life and capacity to cope with stressful life events. Singing appears to have helped them to be confident in performance, and this has positively impacted other areas of their lives. It also assisted them in their recovery from stressful and adverse events and enabled them to cope with challenging life situations. The quantitative research results confirm that this significantly enhanced the participants' confidence, self-esteem and positive adaptation to stressful life events and reduced stress levels. Our results also support findings from previous studies that group-based singing activity has a positive effect on coping with stressful events [16, 21].

Singing promotes social interaction and social capital within the community

The social benefits reported by participants included increased friendships, empowerment, greater appreciation for diversity and connection to broader community and their own history. Through singing, participants made active choices to establish friendships and social relationships with others both within the singing group and in their communities, including with CCHS workers and local

musicians. They used these relationships to shape their own experiences through joint rehearsals, workshops, performances and events. This is exemplified by the ways in which many participants sought new friendships and established friendships with others who could help make their singing experiences more enjoyable and fulfilling. This phenomenon suggests that singing groups are a powerful means through which Aboriginal and Torres Strait Islander people can become active agents in making social changes in relation to their identity and community life, which in turn leads to their seeking and receiving family- and community-level support. Participation in singing groups also led to their participation in other civil or community activities, e.g., extra arts and social events, such as additional performances and meeting with friends to join other exercise activities. As one participant explained – when you join a singing group you get a sense that 'you are part of the community'.

Our findings found social health benefits of group singing that it can generate among Aboriginal and Torres Strait Islander people who participated in the singing groups. This supports previous research that the benefits of group singing included both intrapersonal level [16] and social capital level [20]. For example, Lob et al. [16] found a positive association between singing group participation and increased level of social interaction. Further, Putnam [20] found a positive association between the vigour of voluntary organisations, particularly choral societies and choirs, and the level of civic engagement. Our study provided additional evidence into the literature that sense of community connectedness and social capital can be generated by such singing groups in Aboriginal and Torres Strait Islander communities. Participants noted that singing groups had brought people together regardless of their age, literacy level and geographical locations. Most focus group participants commented that singing groups benefited their social interaction and social trust. Quantitative results further strengthened that singing groups assisted with reducing isolation and promoted sense of social and community connectedness. The rural and remote Aboriginal and Torres Strait Islander singing group was most vocal about how their singing group 'gets us out there in the community', supporting Riley and Gridley's [21] claims that arts participation may help those who are at risk of social exclusion such as those who live in isolation, older people and those from lower socioeconomic categories.

Increasing the use of primary health services

From a socio-ecological perspective, health services are also an important social support to people with

health problems. In reality, the availability and quality of such services, and the ability or willingness of individuals to access them, are important determinants of health and health inequalities in all societies. This is particularly true in Aboriginal and Torres Strait Islander communities, where people feel 'shame' to access the non-indigenous health services, as they see them as an alienating culture. The VUFH project has changed participants' perceptions of the CCHS, as they see this service as culturally appropriate and felt comfortable to access it, and felt that they had been treated as equals by the CCHS staff. Access to the CCHS was significantly increased at the post-intervention assessment, whereas the use of hospital services had decreased. Thus, Aboriginal and Torres Strait Islander people are making better use of the medical services that they have traditionally refused to access. Primary prevention is recognised and accepted by the Aboriginal and Torres Strait Islander participants in the VUFH project.

Promoting social equality

Most participants felt that the singing program represented everyone with their various different backgrounds, including those who were homeless and illiterate, and promoted acceptance of all participants. This experience broke down the barriers and obstacles to communication and interaction between the members in each community and significantly promoted participants' sense of community connectedness, friendship and acceptance. This has further promoted their sense of community support and social trust in their communities, as exemplified in the quantitative results.

VUFH attracted a substantial proportion of male Aboriginal and Torres Strait participants. VUFH members of both genders thought that unstructured activities in general, and singing in particular, appealed to both females and males. As well as being constitutive of social class inequalities, cultural capital is equally towards both males and females. We suggest that the way in which the singing groups were run (relatively informal approaches, outdoor theatres for performance, rehearsals in community settings) and the musical styles adopted by the groups conformed more closely with the norms and expected behaviours of the community members, both male and female, in Aboriginal and Torres Strait Islander communities.

In the current study, resilience is neither a personal attribute nor the teaching of coping skills, but a process of

reflection, learning and community and CCHS actioning focused on overcoming adversity and preventing chronic diseases. Narration in singing processes facilitates reflection and relationships with others, and reconstructing life with illness may enhance the effectiveness of using active coping strategies. Singing groups facilitate the development and sustaining of strong relationships where people can collaborate effectively to identify goals. This collective 'looking and thinking' builds the capacity to solve problems and make decisions, using the group as a virtual community that allows a collaborative sense of achievement and reciprocity that is not accessible to many people with chronic illnesses.

Relationship between community singing, resilience and prevention of chronic disease

Our study confirms the significant association between resilience and prevention of chronic disease in the singing groups. From a social ecological perspective, it is evident that the possession of resilience makes it easier to acquire other resources, competences and social connectedness, and ultimately promote health and prevent chronic disease. Our results support the contention that resilience is an important resource from both the individual and the social perspective in terms of building self-esteem and self-efficacy to cope with stressful life events and improve social and emotional well-being. Most participants in our study reduced their medication use due to their improved health status. Singing programs act as a leisure and health-promotion activity, empowering Aboriginal and Torres Strait Islander people to take action at both the individual and the community level to improve their health, and this has significantly facilitated community-level access to primary health services for the purposes of preventing chronic disease and promoting health.

The findings from this study confirm the socio-ecological perspective that individual-level resilience factors such as self-esteem, confidence, friends and community support are important factors influencing health outcomes [14]. The community singing program promoted these protective factors, which significantly modified or mediated the deterioration of the chronic diseases present in the study population. The mechanism underpinning this effect may relate to the fact that community singing not only addressed behavioural issues at the individual level but also social factors, such as family, kinship and community health service

social and health supports, and facilitated access to other primary prevention health services within a culturally appropriate context. These factors interact and work in unison and have significantly promoted the participants' health or at least maintained their health status.

Limitations

The study has two limitations. The first is that the allocation of participants to the intervention and control groups was not random. The control group was chosen from people who were not able to attend the intervention group. The second limitation is that standard measures of depression, for example, Beck's Depression Scale, were not used, and this may have limited the generalisability of the study results to other populations. Further research is needed to ensure that randomisation is used to allocate participants to intervention and control groups to strengthen the methodology and evidence of the current study. In addition, standard measures are needed for the next step in this study so that the results can be compared with previously published literature and be generalised to wider population groups.

Conclusions

Despite the importance of the family and community factors, there has been a lack of research on the effects of social-ecological factors on the mental health of Aboriginal and Torres Strait Islander people in Australia. The

present study is the first attempt to use a mixed method to explore the effectiveness of community singing programs on promoting resilience at individual and community level to prevent chronic disease in Aboriginal and Torres Strait Islander Australians. The findings of the study confirmed that there is a significant association between singing program participation, resilience, community social support, and increased utilisation of CCHSs and hence prevention of chronic disease in Aboriginal and Torres Strait Islander communities located in different regions (urban, rural and remote).

Acknowledgments: The authors received financial support from Griffith Health Institute of Griffith University, Queensland Aboriginal and Islander Health Council in Australia, and Queensland Centre for Social Science Innovation in Queensland, Australia. The authors also wish to acknowledge the support of the following Aboriginal Community Controlled Health Services: Kambu Medical Services Inc., Kalwun Health Service, Brisbane Aboriginal and Torres Strait Islander Community Health Service Brisbane Ltd., Goolburri Health Advancement Corporation, and Warwick Total Health and Education Foundation. The authors also wish to thank all the participants from five Aboriginal and Torres Strait Islander communities. The authors also want to thank Lindsay Johnson's assistance with data collection and work.

Conflict of interest statement

Authors' conflict of interest disclosure: Authors declare there are no conflict of interests.

Received June 24, 2012; accepted September 23, 2012; previously published online November 8, 2012

References

1. Olsson CA, Bonda L, Burns JM, Vella-Brodrick DA, Sawyer SM. Adolescent resilience: a concept analysis. *J Adolesc* 2003;26:1–11.
2. Ong AD, Bergeman CS, Bisconti TL, Wallace KA. Psychological resilience, positive emotions, and successful adaptation to stress in later life. *J Pers Soc Psychol* 2006;91:730–49.
3. Bartley M, Schoon I, Mitchell R, Blane D. Resilience as an asset for healthy development. In: Ziglio E, Morgan A, editors. *Health assets and the social determinants of health*. Venice: WHO European Office for Investment for Health and Development, 2012:1–22.
4. Bartley M, Schoon I, Mitchell R, Blane D. Resilience as an asset for healthy development. In: Morgan A, Davies M, Ziglio E, editors. *Healthy assets in a global context: theory, methods, action*. New York: Springer, 2010:101–6.
5. Masten AS. Resilience in individual development: successful adaptation despite risk and adversity. In: Wang MC, Gordon EW, editors. *Educational resilience in inner-city America: challenges and prospects*. Hillsdale, NJ: Lawrence Erlbaum, 1994:141–9.
6. Sun J, Buys N. Effectiveness of participatory community singing and mental health promotion in Aboriginal and Torres Strait Islander people. In: Victor O, editor. *Essential notes in psychiatry*. Online publication: InTech, 2012.
7. Bronfenbrenner U. Ecological systems theory. *Ann Child Dev* 1989;6:187–249.
8. Sun J, Stewart D. Development of population based resiliency measures in the primary school setting in Australia using

- exploratory and confirmatory factor analysis. *Health Educ* 2007;45:575–99.
9. Werner EE, Smith RS. Journeys from childhood to midlife: risk, resilience, and recovery. Introduction to the Special Issue on Resilience. *Subst Use Misuse* 2001;39:657–70.
 10. WHO. Mental health, resilience and inequalities. Copenhagen: World Health Organization, 2010.
 11. McCubbin MA, McCubbin HI, Thompson AI. Family hardiness index. In: McCubbin HI, Thompson AI, McCubbin MA, editors. *Family assessment: resiliency, coping and adaptation*. Madison, WI: University of Wisconsin Publishers, 1987:839.
 12. Smith G. Resilience concept and findings: implications for family therapy. *J Fam Ther* 1999;21:154–8.
 13. Sorensen G, Stoddard AM, Dubowitz T, Barbeau EM, Bigby JA, Karen M, et al. The influence of social context on changes in fruit and vegetable consumption: results of the Healthy Directions Studies. *Am J Public Health* 2007;97:1216–27.
 14. Sun J, Buys N, Tatow D, Johnson L. Ongoing health inequality in Aboriginal and Torres Strait Islander population in Australia: stressful event, resilience, and mental health and emotional well-being difficulties. *Int J Psychol Behav Sci* 2012;2: 38–45.
 15. Brissette I, Scheier MF, Carver CS. The role of optimism in social network development, coping, and psychological adjustment during a life transition. *J Pers Soc Psychol* 2002;82:102–11.
 16. Lob GV, Camic P, Clift S. The use of singing in a group as a response to adverse life events. *Int J Ment Health Promot* 2011;12:45–53.
 17. Clift S, Hancox G, Morrison I, Hess B, Kreutz G, Stewart D. Choral singing and psychological wellbeing: quantitative and qualitative findings from English choirs in a cross-national survey. *J Appl Arts Health* 2010;1:19–34.
 18. Clift S, Morrison I. Group singing fosters mental health and wellbeing: findings from the East Kent “singing for health” network project. *Ment Health Soc Inclusion* 2011;15:88–97.
 19. Bailey B, Davidson J. Effects of group singing and performance for marginalized and middle-class singers. *Psychol Music* 2005;33:269–303.
 20. Putnam R. *Making democracy work: civic traditions in modern Italy*. Princeton, NJ: Princeton University Press, 1993.
 21. Riley KL, Gridley H. Harmony in the community: group perspectives on the health benefits of singing. UNESCO Observatory, Faculty of Architecture, Building and Planning, The University of Melbourne Referred E-Journal 2010:2.
 22. Klorer GP. Expressive therapy with severely maltreated children: neuroscience contributions. *J Am Ther Asso* 2005;22: 213–20.
 23. Stuckey HL, Nobel J. The connection between art, healing, and public health: a review of current literature. *Am J Public Health* 2010;100:254–63.
 24. Limb CJ, Braun AR. Neural substrates of spontaneous musical performance: an fMRI study of jazz improvisation. *PLoS One* 2012;3:e1679.
 25. Australian Bureau of Statistics. Australian social trends 2007: selected chronic conditions among Aboriginal and Torres Strait Islander peoples. Canberra 2007. Report No. 4102.0.
 26. Kubzansky LD. Key 2010 publications in behavioral medicine. *Cleveland Clin J Med* 2010;78 (Suppl 1):s65–8.
 27. Cohen GD, Perlstein S, Chapline J, Kelly J, Firth KM, Simmens S. The impact of professionally conducted culturally programs on the physical health, mental health and social functioning of older people – 2 year results. *J Aging Human Arts* 2007; 1:5–22.
 28. Sun J, Stewart D. Development of population based resilience measures in the primary school setting. *Health Educ* 2007;107:575–99.
 29. National Heart Foundation of Australia. Quick guide to management of hypertension. 2010.
 30. McGorry P, Killackey E, Elkins K, Lambert M, Lambert T. The RANZCP Clinical Practice Guideline Team for the Treatment of Schizophrenia. Summary Australian and New Zealand clinical practice guideline for the treatment of schizophrenia (2003). *Aust Psych* 2003;11:136–47.
 31. Charmaz K. *Constructing grounded theory. A practical guide through qualitative analysis*. London: Sage, 2006.
 32. Muthen LK, Muthen BO. *Mplus user's guide*. Los Angeles, CA: Muthen & Muthen, 1998–2010.
 33. Corbin JM, Strauss A. *Grounded theory research: procedures, canons, and evaluative criteria*. *Qual Sociol* 1990;13:3–21.