BMJ Open

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Journal:	*BMJ Open*
Manuscript ID	bmjopen-2016-012521
Article Type:	Research
Date Submitted by the Author:	04-May-2016
Complete List of Authors:	McNaughton, Amanda; Capital and Coast District Health Board, Respiratory Medicine; Medical Research Institute of New Zealand, Respiratory Medicine Aldington, Sarah; Capital and Coast District Health Board, Emergency Medicine Williams, Gayle; Capital and Coast District Health Board, Community Health Services Levack, William; University of Otago, Medicine
Primary Subject Heading:	Respiratory medicine
Secondary Subject Heading:	Qualitative research, Rehabilitation medicine
Keywords:	COPD, Singing, social participation, rehabilitation

Title page

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Sing Your Lungs Out: A qualitative study of a community singing group for people with Chronic Obstructive Pulmonary Disease (COPD).

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Key words: Chronic obstructive pulmonary disease, singing, social participation, rehabilitation

Word count: 4032

Abstract:

Objective: To explore the ways in which participation in a community singing group contributed to the health and wellbeing of patients with COPD.

Design: Qualitative description, based on transcripts from individual interviews and a focus group meeting with people with COPD participating in the singing group, regarding their experience.

Setting: Urban community, Wellington, New Zealand.

Participants: 23 people (13 women, 10 men), 51 to 91 years with COPD

Results: The weekly singing group was a well-attended activity, with self-reported benefits to health and well-being. Four key themes were identified: being in the 'right space', connection, purpose and growth, and participation in a meaningful physical activity.

Conclusion: This study helps us to better understand how participation in a community singing group can benefit the health and well-being of patients with COPD.

Strengths and Limitations of this study:

- This study looks at the effects of a feasible, community based intervention.
- The singing group was well attended for over one year and most participants (21/23) were interviewed either individually or as part of a focus group.
- The participants comprised a real-world group with heterogeneous COPD and came from a wide range of sociocultural backgrounds.
- Although the interviewers were involved in the establishment and running of the singing group, the interviews were open ended, and the data compelling and surprising.

Sing Your Lungs Out: A qualitative study of a community singing group for people with COPD

Introduction:

Chronic obstructive pulmonary disease (COPD) is a common disease characterized by persistent airflow limitation that is usually progressive. Common symptoms include progressive breathlessness, cough and sputum production as well as anxiety and depression.(1, 2) The chronic breathlessness of COPD and other chronic lung diseases is physically limiting and socially isolating, adding further to depression and anxiety.(2–4) Globally, COPD is in the top ten causes of death(5) and the fifth leading cause of total years lived with disability.(6) COPD has a substantial impact on the health of New Zealanders, affecting up to 15% of the adult population over the age of 40 years.(7) The burden of COPD is expected to increase globally for years to come.(8)

Currently available medications for COPD have not been shown conclusively to modify the long-term decline in lung function.(1,3) Evidence based non-pharmacologic treatment for COPD includes smoking cessation, influenza vaccine and pulmonary rehabilitation.(9,10) Pulmonary rehabilitation is a multidisciplinary program including exercise training, education and psychosocial support, generally delivered in an outpatient setting. Pulmonary rehabilitation is one of the most effective therapies for COPD, improving quality of life, exercise tolerance and breathlessness(11) as well as reducing mortality and re-hospitalisation.(11,12) Furthermore, alongside smoking cessation and influenza immunisation, it is considered one of the most cost-effective treatments for COPD.(13) Pulmonary rehabilitation also reduces healthcare resource utilisation.(14) All respiratory medicine professional bodies (American Thoracic Society, European Respiratory Society, British Thoracic Society and Thoracic Society Australia & New Zealand) recommend pulmonary rehabilitation for symptomatic patients.(15–17)

The overall uptake of pulmonary rehabilitation is low. In our health district, 2% of the population estimated to have COPD, are referred for pulmonary rehabilitation each year,(18) and less than 1% in New Zealand nationally.(19) This reflects similarly poor access to pulmonary rehabilitation internationally.(20) The measurable benefits of pulmonary rehabilitation diminish over time, but in many studies are apparent even at 1 year after enrolment.(21) Although various interventions to prolong the beneficial effects of pulmonary rehabilitation have been studied, many are not practical or financially feasible, and none have unequivocally been shown to be effective.(15) Increasing uptake of pulmonary rehabilitation as well as augmenting and sustaining the benefits of pulmonary rehabilitation are currently very important topics of research.(22,23)

We were interested in whether participation in a singing group could maintain benefits of pulmonary rehabilitation in the community, in a cost effective, feasible and sustainable way. We chose singing as an intervention as recent studies have demonstrated safety, acceptability and health benefits for patients with COPD (24–32).

We conducted a mixed methods feasibility study to evaluate the health benefits of participating in a community singing group for one year, for patients with COPD and people with other chronic lung disease who had previously completed a pulmonary rehabilitation programme. This qualitative study aimed to investigate, examine and describe the ways in which the community singing group contributed to the health and wellbeing of patients with COPD, in conjunction with a quantitative study which will be reported separately.

Method

Research design

This study employed qualitative description to investigate the perceptions and experiences of people with COPD in a community singing group, with particular attention to its possible impact on their health and wellbeing. Data collection involved individual

interviews and a focus group meeting with people in the programme. The Wellington Hospital Research Governance group approved the study, and all patients provided written informed consent. The trial was prospectively registered at www.anzctr.org.au, registry number ACTRN12615000736549.

Participant recruitment

We recruited participants to a new community singing group for the purposes of this study. Patients were eligible for the study if they had COPD or other chronic lung disease, if they had completed an 8-week, hospital-based pulmonary rehabilitation programme, and if they were attending a weekly maintenance community pulmonary rehabilitation exercise class. We placed no restrictions on the age, severity of disease, cognitive impairments, or co-morbidities of participants.

Singing group intervention

The singing group (Sing Your Lungs Out) met once a week for one hour in a community hall. An amateur musician led the group and a trained pulmonary rehabilitation nurse attended all sessions. Each rehearsal started and ended with a five minute warm up session. The musician and the group chose the singing repertoire together, with attention to the group's voice range and capacity for phrase lengths. The musician also discussed breathing for singing techniques as the year progressed and as the group gained confidence. No music reading ability was required. We made CD recordings of songs to allow practice at home. The group began collaborating with a local boy's high school. Over the year, the participants delivered six public performances, supported by the senior chorale from the local school on four occasions.

Data collection

After six to nine months of singing, we invited 12 participants to contribute to interviews about their experiences of being part of the group. We used purposeful sampling to choose people representing a range of ages, perspectives on the group, experiences and cultures. Three researchers (AM female respiratory physician, SA female emergency medicine physician, GW female pulmonary rehabilitation nurse) conducted these one-on-one interviews after training in interview technique provided by an experienced qualitative researcher (WL). After analysing data from the individual interviews, we invited the remaining 11 group members to participate in a focus group meeting about their experiences, facilitated and chaired by two researchers (WL, AM). Nine members of the group attended the focus group, and two could not attend due to other commitments. We used this focus group to further explore and challenge ideas emerging from the individual interviews.

The individual interviews each lasted 30-40 minutes, and occurred in the community hall where the group met for practice. The focus group meeting ran for an hour. For both the interviews and the focus group, we used open ended questions, guided by three topics of interest: 1) the participants' experiences of participation in the singing group, 2) what effects or consequence, if any, had occurred for the participants as a result of being in the group, and 3) how the singing group was similar or different to other community support groups or singing groups they had been involved in. We recorded and transcribed all interviews verbatim. We returned the transcripts to participants for comment. We also collected data on attendance rates at singing sessions each week and demographic information on the study participants.

Data analysis

Data collection and analysis occurred concurrently. Two researchers (AM, WL) read and coded all transcripts independently, before comparing findings. We used QDA Miner Lite software to manage the data coding.(33) We used constant comparative techniques, based on grounded theory methods,(34) during the analysis to examine relationships between transcripts and between concepts, themes and ideas emerging from the data. We discussed the emerging concepts and themes after the third, eighth, and thirteenth interview, and used the ideas arising from these discussions to influence subsequent interview and focus group questions. We present extracts from these transcripts alongside the results below to illustrate key points arising from our analysis.

Results

Participant characteristics

Twenty-three people (13 female, 10 male, aged 51-91 years) with chronic lung disease participated in the singing group (see table 1). The participants presented with a wide range of disease severity, different comorbidities, and came from widely varying socioeconomic backgrounds. Twenty-six per cent of the group were Māori despite Māori being only 6% of the total population over 50 years – reflecting the higher prevalence of COPD for Māori in New Zealand.(35) One participant had a lung transplant during the year but continued to sing with the group.

Table 1: Participant characteristics (n=23)

Sex	13 female; 10 male
Age	Mean 69 years (SD 9.5); range 51-91 years
Ethnicity	16 New Zealand European; 6 Māori; 1 Asian
Diagnosis	22 COPD (3 bronchiectasis); 1 interstitial lung disease

FEV1(L) at baseline	Mean 1.4L (SD 0.57; range 0.6L to 2.75L)
FEV1% predicted	Mean 62% (SD 21.6; range 14.5% to 110%)
Smoking history	19 ex-smokers; 1 smoker; 3 never smoked
Number on domiciliary oxygen	2

FEV1: the forced expiratory volume in one second; L=litres; SD= standard deviation

Overview of findings

Overall, the singing group was a highly positive experience for all people involved. Attendance rates were high with a mean weekly attendance over 12 months of 85% (range 50-100%). The participants reported experiencing health benefits from participation in the group, and no adverse events. These health benefits included improvements in breathing, sputum clearance and exercise tolerance, as well as a general sense of improved wellbeing. The key themes from the interviews and focus groups provided an explanation for the possible social mechanisms which contributed to the high attendance rates and self-reported health improvements. We identified four key themes: 1) being in the 'right space'; 2) developing a sense of connection with others; 3) experiencing shared purpose and growth; and 4) participation in meaningful physical activity. Figure 1 provides a visual representation of the relationship between these key themes.

[Insert Figure 1 here.]

1. Being in the 'right space'

Many participants commented on the nature of the social space in which the singing group occurred. Despite a number of people having expressed initial anxiety about joining a choir, the participants described the group environment as being a safe place in which they could relax and enjoy themselves. The singing group became a space over which the participants felt they had shared ownership.

> *I actually feel a sense of kind of relief but also knowing that I am in the right space… so when I went in I thought – I knew I was in the right space… well it's like a space to go that's me and I think that is really important for people to have a space that's theirs. (Participant 1, interview)*

The participants described feeling at ease in the singing group, partly because they were with a group of people who shared similar experiences. In this space they did not have to feel embarrassed about being short of breath or having to cough or wheeze.

> *You don't feel different, you don't feel... I don't feel self-conscious as if I got to pretend there's nothing wrong with me. I'm the same as everyone else. (Participant 17, focus group)*

The participants drew direct comparisons between this sense of ease and the stigma associated with chronic lung disease that many experienced in other social settings. This stigma had created barriers to engagement in community activities in other contexts.

> *I'd walked in [to another community music group] and I was a bit chesty and I started coughing and a lady next door to me stood up and said, I'm not sitting next to you! You know, like I had something contagious and I felt terrible. (Participant 15, focus group)*

Another element of being in the 'right' space was the sense of being cared for. While our original intention was to set up a singing group that would eventually become self-governing (one that people with COPD led without hospital involvement) the participants described the

value they placed on how little effort was required from them to attend the group and therefore how easy it was to join in.

> *So coming here is like going to heaven. It's like I don't have to be anyone but me. No demands. (Participant 1, interview)*

In fact, some participants described this as a point of difference with other COPD support groups that they had attended. This was of course not a characteristic of singing as an activity, but rather a reflection on the way the group had been set up.

> *For me in the COPD [support group] there was a workload, I was on the committee so I fund raised and I felt like a little bit of obligation. (Participant 6, interview)*

One other clear reason for the success of this group was the character of the staff involved: the respiratory nurse, the choir director and an energetic volunteer. The participants commonly reported feeling warmly welcomed, pampered, and cared for. They reported on the critical role of the choir director in particular, who needed to be skilled at engaging with people at all levels of ability, creating appropriately stimulating and challenging singing sessions. All participants were appreciative of the choir director's kind leadership, humour, and people skills.

> *She's really positive, she takes charge. She has a sense of humour and treats people well. (Participant 3, interview)*

2. Connection with others

Despite coming from diverse social backgrounds, the group developed strong connections with one another. As the year progressed, the group began arriving earlier and earlier each week in order to catch up socially before rehearsals. Some group members generated a weekly newsletter, which others eagerly read. Birthdays were marked; illnesses and hospital admissions supported. Friendships developed and the participants started socialising outside of the weekly choir practice. This sense of community, connection, belonging and

commonality were very important to the participants. The participants viewed singing as an activity that transcended usual social and cultural differences. It provided a platform on which people with COPD from different walks of life could come together to share experiences and support one another.

> *I think that the thing that really binds us together really – and the cultural side of it is incidental – is the singing and being together, comradeship. You know companionship. Socialising. That's us. In Māori, to us to support another person is tautoko. You tautoko that person, you be a support to him or her. So that's what it is to us. We support each other, and that's the biggest thing that I can see out of it. (Participant 11, interview)*

The participants attributed part of this connection to the nature of singing as an activity. Singing allowed co-construction of something beautiful with other people. Singing therefore facilitated a connection with others that the participants could then build on.

> *Part of it is the fact that I sit next to [names of two other group members] and their voices are in a similar range to mine. So that merging is very comforting, and the doing it with a group... It's like having a meal with lots of people… almost like a festive occasion each time. (Participant 3, interview)*

All participants appreciated the companionship and comradery that arose from the singing group. The company and developing friendship of others made the participants happy. The participants frequently mentioned how much laughing occurred during rehearsals, though at times the humour was quite black, not uncommonly relating to chronic lung disease and death.

> *I think the fun, I think the laughter here is really good, and I think that the people, most of them, are quite positive. Like, they've all got an illness, we've all got an illness, and they're really positive, and the humour and that feeling of being positive about illness. They're still getting out, still*

exercising. It's actually good; it's encouragement for you to carry on… we encourage one another to keep going. (Participant 6, interview)

3. Experiencing shared purpose and growth

Many of the participants had never sung in a group before or only in the very distant past. They appreciated the opportunity to do something creative that they never thought they would ever have the chance to do. Learning new songs and words off by heart (sometimes in Māori, French and Latin) was a challenging opportunity, and the group were very proud of themselves when they could perform these pieces in public.

I'm also doing something that I would never have thought in my life that I would do. Come here and open my mouth and sing away. But also I know that there is no judgement, I look around and know that most people around here are a lot, lot worse off than you are. (Participant 19, focus group)

Public performances (six per year) were driven by a need to get publicity for funding applications for the group, but also provided a sense of purpose for the weekly practices. Although the logistics of public performances was challenging, these events were well tolerated and enjoyed by the group. Performing to an audience boosted the confidence of both the individuals and the group, and gave them a real sense of achievement. They also appreciated the opportunity to perform as a contribution to their local community as well as wider audiences.

In addition to the enjoyment of the group, the shared purpose engendered a sense of shared responsibility. For many, the weekly singing practice became a key event in their week – something that had priority over other activities; and something that they would strive to get to regardless of the weather or other difficulties. As the year progressed, many members

took on roles of responsibility for the group, e.g. writing the weekly newsletter, carpooling, providing morning tea, and developing T-shirt designs for the group.

> *I always look forward to Wednesdays [rehearsal day]… Yeah, I always come back on time because that's my number one [priority]. Oh yes, if I'm going away I make sure I can get back for the choir (Participant 2, interview)*

4. Participation in meaningful physical activity

Participation in the singing group required active involvement in physical activity. The singing exercises required attention to breathing patterns and the muscles and postures used to control the lungs. The choir director also incorporated physical exercises into each choir session; the participants were encouraged to stand for at least part of each rehearsal, but could sit if uncomfortable in any way. One participant reported that the singing exercises made her breathe out much more than she normally would do, which gave her greater capacity for breathing.

> *You sing the words and then it makes you breath in and you find that you do quite a deep breath and the next lot of words goes out and you actually sort of seem to breath out a little bit further than you probably should but then you get another big breath in and it actually sort of encourages your lungs to do a lot more than they normally do. (Participant 5, interview)*

Furthermore, many participants reported that mood and overall wellbeing had also improved as a result of being in the group. They attributed this to a combination of the psychological and physical effects of being part of the group. The participants reported how singing made them feel good, with one participant noting that singing encouraged her to be in the moment without worrying about other things in her life.

It does something to the mind... when you sing you can't feel sorry for yourself and you don't think of – of something else. For me when I sing it takes me away to a different level. (Participant 4, interview)

All participants reported experiencing physical benefits as a result of their participation in the singing group. Many commented that their breathing was easier the day after singing practice, with singing helping some to clear sputum. The participants reported that either their breathing continued to improve throughout the year or at least did not deteriorate as badly as they were expecting.

I mean I can come here at times out of breath, and then I can go home after the group and I'm feeling great. (Participant 16, focus group)

My exercise is getting a little bit better. Before I couldn't even walk down to the gate without puffing too much, now I can walk down the street. (Participant 11, interview)

For some, these improvements translated into better exercise tolerance. Many were significantly tired after the singing sessions and the following day, but reported being happy with this trade off. One participant was surprised that he had no hospital admissions during the year compared with frequent admissions in previous years. For the participants in this study, involvement in a singing group had resulted in many positive, and at times unexpected, changes in their health and wellbeing.

It's like I got a new lease of life. (Participant 15, focus group).

Discussion

The findings of this study show that the singing group was a positive and popular experience for all participants, confirmed by remarkably high attendance rates at one year. Interestingly, singing was a new activity for most participants. We identified four key themes: being in the right space, connection, purpose and growth, and participation in meaningful physical activity. We suggest that these factors supported, facilitated and enabled the effects on health and wellbeing as depicted in Figure 1. The findings from this study give us a better understanding of how a real-world community singing group can be effective, and may be useful for other groups elsewhere.

Other published studies have reported qualitative and quantitative outcomes of singing for COPD over a relatively short time period (i.e. 8-24 weeks).(24,29,30,36) Our findings support the themes of improved general health, breathing and wellbeing reported in previous studies. However interviews for this study were conducted after six to nine months of attendance at the singing group. This is a large group and almost all participants (21/23) contributed to the study data. This singing group continues to meet at 18 months from start-up. Our findings add to previous studies by providing empirical data on the possible mechanisms by which participation in a singing group contributes to better health outcomes for people with COPD. Although the interviewers in this study were involved with the establishment and running of the singing group, so potentially were inclined to interpret data from a positive perspective, our interviews were open-ended; not looking for judgements, but for personal experiences. The addition of an experienced qualitative researcher in the collection and analysis of the data, who was not otherwise involved in the singing group (WL), added further validity to the research process.

In this study, singing was a unique community participatory experience involving paradoxically passivity and activity. Many of our participants enjoyed the fact that the group was planned for them, that they did not have to make decisions and could be passive. Yet on the other hand, singing is a very engaging activity. Singing is very distracting, singers can forget about other worries or concerns while singing. The socially diverse group in this study formed an amazingly cohesive group; perhaps singing and experience of breathlessness acted as levellers for people who might not otherwise have normally interacted as peers in other situations.

Ryff has suggested that there are six key components of psychological well-being that can be used as indicators of having a healthy life: having purpose, personal growth, positive relationships, environmental mastery, autonomy and self-acceptance.(37,38) Themes identified from this study clearly supported all of these six components, but especially those of purpose, personal growth and positive relationships.

We were surprised at the emergence of the importance of being cared for (which was part of the theme of being in the right space). Our original intention had been to develop an independent, resilient community group that would run autonomously at the end of the study period. However the feeling of being cared for, of not 'having to do anything' other than turn up and participate, was commonly reported as a valued aspect of the programme. The trained respiratory nurse (who had a background in palliative care as well as community nursing), trained community facilitator/choir director and committed helpful volunteer were thought to be responsible for the friendly, caring and safe environment, and were key to the group's success.

The theme of being in the "right space" also encompassed feelings of self-acceptance, non-discrimination, belonging and social cohesion. As an accessible, safe,

community-based space it is effectively a Third Space, as described by Oldenberg.(39) Beneficial interventions like singing groups, in safe, third spaces in the community, can be an important part of the management of chronic medical conditions aiming to improve wellbeing.

Considering how relatively ineffective current pharmacological treatments are for COPD, we should consider safe, sustainable, patient-centred community interventions that might improve wellbeing and sustain the benefits of pulmonary rehabilitation. Interventions such as singing groups can provide more support in a community where otherwise patients with long term conditions like COPD can feel abandoned.(40) Results from this study provide information about singing interventions that can inform future clinical trials. Of particular interest is the possibility of using singing interventions as a way of engaging with people who otherwise decline to participate in traditional pulmonary rehabilitation programmes when it is offered to them.

Conclusions

This qualitative study describes the health and wellbeing benefits of belonging to a community singing group for patients with COPD. Unexpected finding of themes of 'right space' and 'being cared for' appeared to contribute to the positive effects on health and wellbeing. Group singing is an alternative intervention that appears to have potential value for people with COPD and merits further investigation.

Acknowledgements

We are grateful to Ruth Collingham and Jackie McAuliffe for running the *Sing Your Lungs Out* Singing Group, and the support of the staff and students of Wellington College. The authors would also like to thank Joanna Read at MRINZ for transcribing the interviews.

Contributors

AMcN conceived the idea of the study, designed the protocol, collected and analysed data, wrote the first and final drafts of the manuscript, was the senior investigator, and will act as guarantor. SA helped design the study, collected data, and helped write the first and final drafts of the manuscript. GW recruited subjects, collected data and helped write the first and final drafts of the manuscript. WL helped with the design of the study, analysed data, and helped write the first and final drafts of the manuscript.

Funding

This study was supported by the Medical Research Institute of New Zealand. Sing Your Lungs Out is run by the COPD Choir Trust, a volunteer-run registered charity, which received grants in 2015 from the Wellington City Council and Infinity Foundation Community Trust.

Data Sharing

No additional unpublished data.

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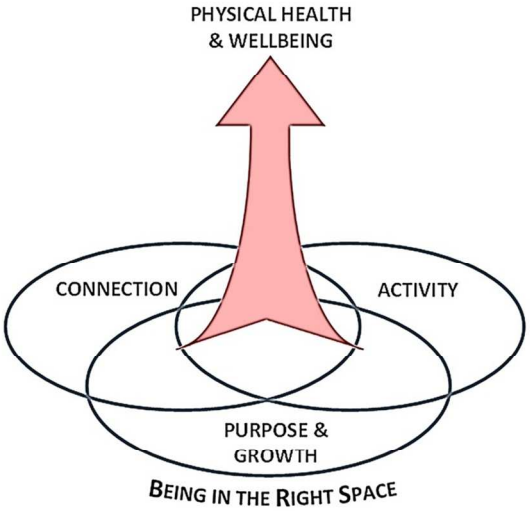

Figure 1: A visual representation of the key elements of singing group participation that contributed to improved wellbeing
[Insert Figure 1 here.]
338x190mm (96 x 96 DPI)

Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from:
Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. Item	Guide questions/description	Reported on Page #
Domain 1: Research team and reflexivity		
Personal Characteristics		
1. Inter viewer/facilitator	Which author/s conducted the inter view or focus group?	Page7
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	Page 7
3. Occupation	What was their occupation at the time of the study?	Page 7
4. Gender	Was the researcher male or female?	7
5. Experience and training	What experience or training did the researcher have?	7
Relationship with participants		
6. Relationship established	Was a relationship established prior to study commencement?	Yes
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	Yes
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	16 And strengths/ limitations paragraph
Domain 2: study design		
Theoretical framework		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	8
Participant selection		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	7
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	Face to face
12. Sample size	How many participants were in the study?	Page 8
13. Non-participation	How many people refused to participate or dropped out? Reasons?	Page 7

Setting		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	7
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	No
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	8,9
Data collection		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	7
18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	N/A
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	7
20. Field notes	Were field notes made during and/or after the inter view or focus group?	N/A
21. Duration	What was the duration of the inter views or focus group?	7
22. Data saturation	Was data saturation discussed?	8
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	7
Domain 3: analysis and findings		
Data analysis		
24. Number of data coders	How many data coders coded the data?	8
25. Description of the coding tree	Did authors provide a description of the coding tree?	N/A
26. Derivation of themes	Were themes identified in advance or derived from the data?	7,8
27. Software	What software, if applicable, was used to manage the data?	Page 8 QDA miner lite
28. Participant checking	Did participants provide feedback on the findings?	Page 7
Reporting		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	10-15
30. Data and findings consistent	Was there consistency between the data presented and the findings?	Yes
31. Clarity of major themes	Were major themes clearly presented in the findings?	16-18
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	16-8

BMJ Open

Sing Your Lungs Out: A qualitative study of a community singing group for people with Chronic Obstructive Pulmonary Disease (COPD).

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2016-012521.R1
Article Type:	Research
Date Submitted by the Author:	30-Jul-2016
Complete List of Authors:	McNaughton, Amanda; Capital and Coast District Health Board, Respiratory Medicine; Medical Research Institute of New Zealand, Respiratory Medicine Aldington, Sarah; Capital and Coast District Health Board, Emergency Medicine Williams, Gayle; Capital and Coast District Health Board, Community Health Services Levack, William; University of Otago, Medicine
Primary Subject Heading:	Respiratory medicine
Secondary Subject Heading:	Qualitative research, Rehabilitation medicine
Keywords:	COPD, Singing, social participation, rehabilitation

Title page

Title of article:

Sing Your Lungs Out: A qualitative study of a community singing group for people with Chronic Obstructive Pulmonary Disease (COPD).

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Key words: Chronic obstructive pulmonary disease, singing, social participation, rehabilitation

Abstract:

Objective: To explore the ways in which participation in a community singing group contributed to the health and wellbeing of patients with COPD.

Design: Qualitative description, based on transcripts from individual interviews and a focus group meeting with people with COPD participating in the singing group, regarding their experience.

Setting: Urban community, Wellington, New Zealand.

Participants: 23 people (13 women, 10 men), 51 to 91 years with COPD

Results: The weekly singing group was a well-attended activity, with self-reported benefits to health and well-being. Four key themes were identified: being in the 'right space', connection, purpose and growth, and participation in a meaningful physical activity.

Conclusion: This study helps us to better understand how participation in a community singing group can benefit the health and well-being of patients with COPD.

Strengths and Limitations of this study:

- This study looks at the effects of a feasible, community based intervention.
- The singing group was well attended for over one year and most participants (21/23) were interviewed either individually or as part of a focus group.
- The participants comprised a real-world group with heterogeneous COPD and came from a wide range of sociocultural backgrounds.
- Although the interviewers were involved in the establishment and running of the singing group, the interviews were open ended, and the data compelling and surprising.

Sing Your Lungs Out: A qualitative study of a community singing group for people with COPD

Introduction:

Chronic obstructive pulmonary disease (COPD) is a common disease characterized by persistent airflow limitation that is usually progressive. Common symptoms include progressive breathlessness, cough and sputum production as well as anxiety and depression.[1,2] The chronic breathlessness of COPD and other chronic lung diseases is physically limiting and socially isolating, adding further to depression and anxiety.[2–4] Globally, COPD is in the top ten causes of death[5] and the fifth leading cause of total years lived with disability.[6] COPD has a substantial impact on the health of New Zealanders, affecting up to 15% of the adult population over the age of 40 years.[7] The burden of COPD is expected to increase globally for years to come.[8]

Currently available medications for COPD have not been shown conclusively to modify the long-term decline in lung function.[9,3] Evidence based non-pharmacologic treatment for COPD includes smoking cessation, influenza vaccine and pulmonary rehabilitation.[10,11] Pulmonary rehabilitation is a multidisciplinary program including exercise training, education and psychosocial support, generally delivered in an outpatient setting. Pulmonary rehabilitation is one of the most effective therapies for COPD, improving quality of life, exercise tolerance and breathlessness[12] as well as reducing mortality and re-hospitalisation.[12,13] Furthermore, alongside smoking cessation and influenza immunisation, it is considered one of the most cost-effective treatments for COPD.[14] Pulmonary rehabilitation also reduces healthcare resource utilisation.[15] All respiratory medicine professional bodies (American Thoracic Society, European Respiratory Society, British Thoracic Society and Thoracic Society Australia & New Zealand) recommend pulmonary rehabilitation for symptomatic patients.[16–18]

In New Zealand, the overall uptake of pulmonary rehabilitation is low. In our health district, 2% of the population estimated to have COPD, are referred for pulmonary rehabilitation each year,[19] and less than 1% in New Zealand nationally.[20] This reflects similarly poor access to pulmonary rehabilitation internationally.[21] The measurable benefits of pulmonary rehabilitation diminish over time, but in many studies are apparent even at 1 year after enrolment.[22] Although various interventions to prolong the beneficial effects of pulmonary rehabilitation have been studied, many are not practical or financially feasible, and none have unequivocally been shown to be effective.[16] Increasing uptake of pulmonary rehabilitation as well as augmenting and sustaining the benefits of pulmonary rehabilitation are currently very important topics of research.[23,24]

We were interested in whether participation in a singing group could maintain benefits of pulmonary rehabilitation in the community, in a cost effective, feasible and sustainable way. We chose singing as an intervention as recent studies have demonstrated safety, acceptability and health benefits for patients with COPD.[25–32]

We conducted a mixed methods feasibility study to evaluate the health benefits of participating in a community singing group for one year, for patients with COPD and people with other chronic lung disease who had previously completed a pulmonary rehabilitation programme. This qualitative study aimed to investigate, examine and describe the ways in which the community singing group contributed to the health and wellbeing of patients with COPD, in conjunction with a quantitative study which will be reported separately.

Method

Research design

This study employed qualitative description based on grounded theory to investigate the perceptions and experiences of people with COPD in a community singing group, with particular attention to its possible impact on their health and wellbeing. Data collection

involved individual interviews and a focus group meeting with people in the programme. The Wellington Hospital Research Governance group approved the study, and all patients provided written informed consent. The trial was prospectively registered at www.anzctr.org.au, registry number ACTRN12615000736549.

Participant recruitment

Participants were recruited by a pulmonary rehabilitation nurse to a new community singing group for the purposes of this study. Patients were eligible for the study if they had COPD or other chronic lung disease, if they had completed an 8-week, hospital-based pulmonary rehabilitation programme, and if they were attending a weekly maintenance community pulmonary rehabilitation exercise class. We placed no restrictions on the age, severity of disease, cognitive impairments, or co-morbidities of participants.

Singing group intervention

The singing group (Sing Your Lungs Out) met once a week for one hour in a community hall. An amateur singer led the group and a pulmonary rehabilitation nurse attended all sessions as an observer. Each rehearsal started and ended with a five minute warm up session. The musician and the group chose the singing repertoire together, including a wide mix of genres (eg pop, musicals, traditional Maori songs, folk songs, rounds) with attention to the group's voice range and capacity for phrase lengths. The musician also discussed breathing for singing techniques as the year progressed and as the group gained confidence. No music reading ability was required. We made CD recordings of songs to allow practice at home. Collaboration with a local boys' high school developed from student piano accompaniment to working with the senior boys' chorale including some joint performances. Over the year, the participants delivered six public performances, supported by the senior chorale from the local school on four occasions.

Data collection

After six to nine months of singing, we invited 12 participants to contribute to interviews about their experiences of being part of the group. We used purposeful sampling to choose people representing a range of ages, ethnicity, and socio-economic status. Three researchers (AM female respiratory physician, SA female emergency medicine physician, GW female pulmonary rehabilitation nurse) conducted these one-on-one interviews after training in semi-structured interview technique provided by an experienced qualitative researcher (WL). After analysing data from the individual interviews, we invited the remaining 11 group members to participate in a focus group meeting about their experiences, facilitated and chaired by two researchers (WL, AM). Nine members of the group attended the focus group, and two could not attend due to other commitments. We used this focus group to further explore and challenge ideas emerging from the individual interviews.

The individual interviews each lasted 30-40 minutes, and occurred in the community hall where the group met for practice. The focus group meeting ran for an hour. For both the interviews and the focus group, we used open ended questions, guided by three topics of interest: 1) the participants' experiences of participation in the singing group, 2) what perceived effects or consequence, if any, had occurred for the participants as a result of being in the group, and 3) how the singing group was similar or different to other community support groups or singing groups they had been involved in. We recorded and transcribed all interviews verbatim. Participants were given the opportunity to review their interview transcript. This did not result in any changes to the data. We also collected data on attendance rates at singing sessions each week and demographic information on the study participants, who also had full lung function, anxiety and depression and respiratory symptom scores, at baseline, four and 12 months, reported separately.

Data analysis

Data collection and analysis occurred concurrently. Two researchers (AM, WL) read and coded all transcripts independently, before comparing findings. We used QDA Miner Lite software to manage the data coding.[33] We used constant comparative techniques, based on grounded theory methods,[34] during the analysis to examine relationships between transcripts and between concepts, themes and ideas emerging from the data. After independently coding and identifying emerging concepts and themes, we discussed these after the third, eighth, and twelfth interview, and used the ideas arising from these discussions to influence subsequent interview and focus group questions. The focus group transcript was analysed in the same way as the interviews. We present extracts from these transcripts alongside the results below to illustrate key points arising from our analysis.

Results

Participant characteristics

Twenty-eight patients were enrolled in the singing group: five patients withdrew within 1 month of enrolment (disinterest, or joining another therapeutic trial). Thus twenty-three people (13 female, 10 male, aged 51-91 years) with chronic lung disease participated in the current mixed methods study (see table 1), of whom 21 participated in the qualitative study. The participants presented with a wide range of disease severity, different comorbidities, and came from widely varying socioeconomic backgrounds. Twenty-six per cent of the group were Māori despite Māori being only 6% of the total population over 50 years – reflecting the higher prevalence of COPD for Māori in New Zealand.[35] One participant had a lung transplant during the year but continued to sing with the group.

Table 1: Participant characteristics (N=23)

Sex	13 female; 10 male
Age	Mean 69 years (SD 9.5); range 51-91 years
Ethnicity	16 New Zealand European; 6 Māori; 1 Asian
Diagnosis	22 COPD (3 bronchiectasis); 1 interstitial lung disease
FEV1(L) at baseline	Mean 1.4L (SD 0.57; range 0.6L to 2.75L)
FEV1% predicted	Mean 62% (SD 21.6; range 14.5% to 110%)
Smoking history	19 ex-smokers; 1 smoker; 3 never smoked
Number on domiciliary oxygen	2

FEV1: the forced expiratory volume in one second; L=litres; SD= standard deviation

Overview of findings

Overall, the singing group was a highly positive experience for all people involved. Attendance rates were high with a mean weekly attendance over 12 months of 85% (range 50-100%). The participants reported perceived health benefits from participation in the group, and no adverse events. These health benefits included improvements in breathing, sputum clearance and exercise tolerance, as well as a general sense of improved wellbeing. The key themes from the interviews and focus groups provided an explanation for the possible social mechanisms which contributed to the high attendance rates and self-reported health improvements. We identified four key themes: 1) being in the 'right space'; 2) developing a sense of connection with others; 3) experiencing shared purpose and growth; and 4) participation in meaningful physical activity.

1. Being in the 'right space'

Many participants commented on the nature of the social space in which the singing group occurred. Despite a number of people having expressed initial anxiety about joining a choir, the participants described the group environment as being a safe place in which they could relax and enjoy themselves. The singing group became a space over which the participants felt they had shared ownership.

> *I actually feel a sense of kind of relief but also knowing that I am in the right space… so when I went in I thought – I knew I was in the right space… well it's like a space to go that's me and I think that is really important for people to have a space that's theirs. (Participant 1, interview)*

The participants described feeling at ease in the singing group, partly because they were with a group of people who shared similar experiences. In this space they did not have to feel embarrassed about being short of breath or having to cough or wheeze.

> *You don't feel different, you don't feel... I don't feel self-conscious as if I got to pretend there's nothing wrong with me. I'm the same as everyone else. (Participant 17, focus group)*

The participants drew direct comparisons between this sense of ease and the stigma associated with chronic lung disease that many experienced in other social settings. This stigma had created barriers to engagement in community activities in other contexts.

> *I'd walked in [to another community music group] and I was a bit chesty and I started coughing and a lady next door to me stood up and said, I'm not sitting next to you! You know, like I had something contagious and I felt terrible. (Participant 15, focus group)*

Another element of being in the 'right' space was the sense of being cared for. While our original intention was to set up a singing group that would eventually become self-governing (one that people with COPD led without hospital involvement) the participants described the

value they placed on how little effort was required from them to attend the group and therefore how easy it was to join in.

> *So coming here is like going to heaven. It's like I don't have to be anyone but me. No demands. (Participant 1, interview)*

In fact, some participants described this as a point of difference with other COPD support groups that they had attended. This was of course not a characteristic of singing as an activity, but rather a reflection on the way the group had been set up.

> *For me in the COPD [support group] there was a workload, I was on the committee so I fund raised and I felt like a little bit of obligation. (Participant 6, interview)*

One other clear reason for the success of this group was the character of the staff involved: the respiratory nurse, the choir director and an energetic volunteer. The participants commonly reported feeling warmly welcomed, pampered, and cared for. They reported on the critical role of the choir director in particular, who needed to be skilled at engaging with people at all levels of ability, creating appropriately stimulating and challenging singing sessions. All participants were appreciative of the choir director's kind leadership, humour, and people skills.

> *She's really positive, she takes charge. She has a sense of humour and treats people well. (Participant 3, interview)*

2. Connection with others

Despite coming from diverse social backgrounds, the group developed strong connections with one another. As the year progressed, the group began arriving earlier and earlier each week in order to catch up socially before rehearsals. Some group members generated a weekly newsletter, which others eagerly read. Birthdays were marked; illnesses and hospital admissions supported. Friendships developed and the participants started socialising outside of the weekly choir practice. This sense of community, connection, belonging and

commonality were very important to the participants. The participants viewed singing as an activity that transcended usual social and cultural differences. It provided a platform on which people with COPD from different walks of life could come together to share experiences and support one another.

> *I think that the thing that really binds us together really – and the cultural side of it is incidental – is the singing and being together, comradeship. You know companionship. Socialising. That's us. In Māori, to us to support another person is tautoko. You tautoko that person, you be a support to him or her. So that's what it is to us. We support each other, and that's the biggest thing that I can see out of it. (Participant 11, interview)*

The participants attributed part of this connection to the nature of singing as an activity. Singing allowed co-construction of something beautiful with other people. Singing therefore facilitated a connection with others that the participants could then build on.

> *Part of it is the fact that I sit next to [names of two other group members] and their voices are in a similar range to mine. So that merging is very comforting, and the doing it with a group... It's like having a meal with lots of people… almost like a festive occasion each time. (Participant 3, interview)*

All participants appreciated the companionship and comradery that arose from the singing group. The company and developing friendship of others made the participants happy. The participants frequently mentioned how much laughing occurred during rehearsals, though at times the humour was quite black, not uncommonly relating to chronic lung disease and death.

> *I think the fun, I think the laughter here is really good, and I think that the people, most of them, are quite positive. Like, they've all got an illness, we've all got an illness, and they're really positive, and the humour and that feeling of being positive about illness. They're still getting out, still*

exercising. It's actually good; it's encouragement for you to carry on… we encourage one another to keep going. (Participant 6, interview)

3. Experiencing shared purpose and growth

Many of the participants had never sung in a group before or only in the very distant past. They appreciated the opportunity to do something creative that they never thought they would ever have the chance to do. Learning new songs and words off by heart (sometimes in Māori, French and Latin) was a challenging opportunity, and the group were very proud of themselves when they could perform these pieces in public.

I'm also doing something that I would never have thought in my life that I would do. Come here and open my mouth and sing away. But also I know that there is no judgement, I look around and know that most people around here are a lot, lot worse off than you are. (Participant 19, focus group)

Mindful of the benefits and potential harms of public performances for these vulnerable individuals,[36] public performances (six per year) were arranged to get publicity for funding applications for the group, and also provided a sense of purpose for the weekly practices. Although the logistics of public performances was challenging, these events were well tolerated and enjoyed by the group. Performing to an audience boosted the confidence of both the individuals and the group, and gave them a real sense of achievement. They also appreciated the opportunity to perform as a contribution to their local community as well as wider audiences.

In addition to the enjoyment of the group, the shared purpose engendered a sense of shared responsibility. For many, the weekly singing practice became a key event in their week – something that had priority over other activities; and something that they would strive to get to regardless of the weather or other difficulties. As the year progressed, many members

contributed to the group 'community', e.g. writing the weekly newsletter, carpooling, providing morning tea, and developing T-shirt designs for the group.

> *I always look forward to Wednesdays [rehearsal day]… Yeah, I always come back on time because that's my number one [priority]. Oh yes, if I'm going away I make sure I can get back for the choir (Participant 2, interview)*

4. Participation in meaningful physical activity

Participation in the singing group required active involvement in physical activity. The singing exercises required attention to breathing patterns and the muscles and postures used to control the lungs. The choir director also incorporated physical exercises into each choir session; the participants were encouraged to stand for at least part of each rehearsal, but could sit if uncomfortable in any way. One participant reported that the singing exercises made her breathe out much more than she normally would do, which gave her greater capacity for breathing.

> *You sing the words and then it makes you breath in and you find that you do quite a deep breath and the next lot of words goes out and you actually sort of seem to breath out a little bit further than you probably should but then you get another big breath in and it actually sort of encourages your lungs to do a lot more than they normally do. (Participant 5, interview)*

Furthermore, many participants reported that mood and overall wellbeing had also improved as a result of being in the group. They attributed this to a combination of the psychological and physical effects of being part of the group. The participants reported how singing made them feel good, with one participant noting that singing encouraged her to be in the moment without worrying about other things in her life.

It does something to the mind... when you sing you can't feel sorry for yourself and you don't think of – of something else. For me when I sing it takes me away to a different level. (Participant 4, interview)

All participants reported perceived physical benefits as a result of their participation in the singing group. Many commented that their breathing felt easier the day after singing practice, with singing helping some to clear sputum. The participants reported that either their breathing continued to improve throughout the year or at least did not deteriorate as badly as they were expecting.

I mean I can come here at times out of breath, and then I can go home after the group and I'm feeling great. (Participant 16, focus group)

My exercise is getting a little bit better. Before I couldn't even walk down to the gate without puffing too much, now I can walk down the street. (Participant 11, interview)

For some, these improvements translated into better exercise tolerance. Many were significantly tired after the singing sessions and the following day, but reported being happy with this trade off. One participant was surprised that he had no hospital admissions during the year compared with frequent admissions in previous years. For the participants in this study, involvement in a singing group had resulted in many positive, and at times unexpected, changes in their health and wellbeing.

It's like I got a new lease of life. (Participant 15, focus group).

Discussion

The findings of this study show that the singing group was a positive and popular experience for all participants, confirmed by remarkably high attendance rates at one year. Interestingly, singing was a new activity for most participants. We identified four key themes: being in the right space, connection, purpose and growth, and participation in meaningful physical activity. We suggest that these factors supported, facilitated and enabled the effects on health and wellbeing. The findings from this study give us a better understanding of how a real-world community singing group can be effective, and may be useful for other groups elsewhere.

Other published studies have reported qualitative and quantitative outcomes of singing for COPD over a relatively short time period (i.e. 8-24 weeks)[25,29–31] Our findings support the themes of improved general health, breathing and wellbeing reported in previous studies. However interviews for this study were conducted after six to nine months of attendance at the singing group. This is a large group and almost all participants (21/23) contributed to the study data. This singing group continues to meet at 18 months from start-up. Our findings add to previous studies by providing empirical data on the possible mechanisms by which participation in a singing group contributes to better health outcomes for people with COPD. Although the interviewers in this study were involved with the establishment and running of the singing group, so potentially were inclined to interpret data from a positive perspective, our interviews were open-ended; not looking for judgements, but for personal experiences. The addition of an experienced qualitative researcher in the collection and analysis of the data, who was not otherwise involved in the singing group (WL), added further validity to the research process.

In this study, singing was a unique community participatory experience involving paradoxically passivity and activity. Many of our participants enjoyed the fact that the group was planned for them, that they did not have to make decisions and could be passive. Yet on the other hand, singing is an absorbing activity, especially within a group. It requires singers to focus, allowing them to set aside worries or concerns. The socially diverse group in this study formed an amazingly cohesive group; perhaps singing and experience of breathlessness acted as levellers for people who might not otherwise have normally interacted as peers in other situations.

Ryff has suggested that there are six key components of psychological well-being that can be used as indicators of having a healthy life: having purpose, personal growth, positive relationships, environmental mastery, autonomy and self-acceptance.[37,38] Themes identified from this study clearly supported all of these six components, but especially those of purpose, personal growth and positive relationships. Previous studies have identified an influence of singing on well-being in otherwise healthy people, particularly the sense of belonging and purpose.[39]

We were surprised at the emergence of the importance of being cared for (which was part of the theme of being in the right space). Our original intention had been to develop an independent, resilient community group that would run autonomously at the end of the study period. However, the feeling of being cared for, of not 'having to do anything' other than turn up and participate, was commonly reported as a valued aspect of the programme. The participants attributed the friendly, caring and safe environment to the presence of the respiratory nurse (trained in palliative care and community nursing), singing group facilitator and committed helpful volunteer. Although the character of the staff alone could be the mechanism for perceived benefits, a previous study, comparing singing group to film club showed an additional benefit from singing group.[31]

The theme of being in the "right space" also encompassed feelings of self-acceptance, non-discrimination, belonging and social cohesion. As an accessible, safe, community-based space it is effectively a Third Space, as described by Oldenberg,.[40] These are informal neutral public gathering places, apart from home and work, where people can put aside concerns, enjoy the company of others and build connections. Beneficial interventions like singing groups, in safe, third spaces in the community, can be an important part of the management of chronic medical conditions aiming to improve wellbeing.

Considering how relatively ineffective current pharmacological treatments are for COPD, we should consider safe, sustainable, patient-centred community interventions that might improve wellbeing and sustain the benefits of pulmonary rehabilitation. Interventions such as singing groups can provide more support in a community where otherwise patients with long term conditions like COPD can feel abandoned.[41] Results from this study provide information about singing interventions that can inform future clinical trials. Of particular interest is the possibility of using singing interventions as a way of engaging with people who otherwise decline to participate in traditional pulmonary rehabilitation programmes when it is offered to them.

Conclusions

This qualitative study describes the perceived health and wellbeing benefits of belonging to a community singing group for patients with COPD. Unexpected finding of themes of 'right space' and 'being cared for' appeared to contribute to the positive effects on health and wellbeing. Group singing is an alternative intervention that appears to have potential value for people with COPD and merits further investigation.

Acknowledgements

We are grateful to Ruth Collingham and Jackie McAuliffe for running the *Sing Your Lungs Out* Singing Group, and the support of the staff and students of Wellington College. The authors would also like to thank Joanna Read at MRINZ for transcribing the interviews.

Contributors: AMcN conceived the idea of the study, designed the protocol, collected and analysed data, wrote the first and final drafts of the manuscript, was the senior investigator, and will act as guarantor. SA helped design the study, collected data, and helped write the first and final drafts of the manuscript. GW recruited subjects, collected data and helped write the first and final drafts of the manuscript. WL helped with the design of the study, analysed data, and helped write the first and final drafts of the manuscript.

Funding: This study was supported by the Medical Research Institute of New Zealand. Sing Your Lungs Out is run by the COPD Choir Trust, a volunteer-run registered charity, which received grants in 2015 from the Wellington City Council and Infinity Foundation Community Trust.

Competing interests: None declared

Data sharing statement: No additional data are available

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Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from:
Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. Item	Guide questions/description	Reported on Page #
Domain 1: Research team and reflexivity		
Personal Characteristics		
1. Inter viewer/facilitator	Which author/s conducted the inter view or focus group?	Page7
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	Page 7
3. Occupation	What was their occupation at the time of the study?	Page 7
4. Gender	Was the researcher male or female?	7
5. Experience and training	What experience or training did the researcher have?	7
Relationship with participants		
6. Relationship established	Was a relationship established prior to study commencement?	Yes
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	Yes
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	16 And strengths/ limitations paragraph
Domain 2: study design		
Theoretical framework		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	8
Participant selection		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	7
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	Face to face
12. Sample size	How many participants were in the study?	Page 8
13. Non-participation	How many people refused to participate or dropped out? Reasons?	Page 7

Setting		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	7
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	No
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	8,9
Data collection		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	7
18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	N/A
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	7
20. Field notes	Were field notes made during and/or after the inter view or focus group?	N/A
21. Duration	What was the duration of the inter views or focus group?	7
22. Data saturation	Was data saturation discussed?	8
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	7
Domain 3: analysis and findings		
Data analysis		
24. Number of data coders	How many data coders coded the data?	8
25. Description of the coding tree	Did authors provide a description of the coding tree?	N/A
26. Derivation of themes	Were themes identified in advance or derived from the data?	7,8
27. Software	What software, if applicable, was used to manage the data?	Page 8 QDA miner lite
28. Participant checking	Did participants provide feedback on the findings?	Page 7
Reporting		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	10-15
30. Data and findings consistent	Was there consistency between the data presented and the findings?	Yes
31. Clarity of major themes	Were major themes clearly presented in the findings?	16-18
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	16-8