

# Music Therapy to Manage Asthma

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## Abstract

This study looked at whether a programme of teaching didgeridoo playing and singing to Aboriginal people would be effective in helping to manage their asthma. Whilst there were difficulties with retention of some participants the overall results were positive and participants enjoyed the programme.

## Background

Asthma prevalence in Australia is high by international standards<sup>1</sup>. It was made a National Health Priority Area in Australia in 1999<sup>1</sup> and is the leading contributor to burden of disease among children, affecting between 14% and 16% of 0 to 14 year olds<sup>2</sup>. Boys have a higher rate of asthma than girls<sup>1</sup> and the disease is more common among Indigenous than non-Indigenous Australians<sup>3</sup>. Rates of hospitalisation are higher among people living in more remote areas, the Indigenous and those living in socioeconomically disadvantaged areas<sup>2</sup>.

People with current asthma rate their health lower than people without current asthma<sup>4</sup>. They also have more days away from work or study than people without asthma and more days of reduced activity<sup>4</sup>. In 2000–01 direct health expenditure on asthma was \$693 million, which represented 1.4% of total allocated health expenditure<sup>1</sup>. The proportion of health expenditure attributed to asthma care was highest among children; particularly boys aged 5 to 14 years<sup>1</sup>.

Singing, breathing exercises and playing of wind instruments have been advocated for asthma management. In 1897 Elsdon wrote "There is no more perfect system of light gymnastics in existence than the practice of singing properly conducted. Nasal breathing, a great adjunct to health, is acquired, the diaphragm and other important muscles which too often lie dormant are brought into action, the throat is strengthened, and every part of the torso is benefited"...<sup>5</sup>.

Stacey et al cite research demonstrating the benefits of singing on health, noting the release of endorphins on mood and increased air flow and oxygenation of the blood associated with head, neck and trunk exercises<sup>6</sup>. A Cochrane review assessed the evidence from seven studies for the efficacy of breathing retraining in the treatment of patients with asthma<sup>7</sup>. As studies varied in design, terminology, treatment and interventions the review's authors were cautious in their conclusions, however they did note that the trend for improvement, notably in quality of life was encouraging.

Wind instruments are similar to singing in the sense that both need similar physiological mechanisms to control breathing and train the abdominal muscles to assist the diaphragm in breathing. Research on the value of using musical instruments to treat asthma was advocated in 1974<sup>8</sup>. However there is only one study that has reported on the use of wind instruments in asthmatic children<sup>9</sup>. Eight teenage asthmatic wind instrument players were compared to ten asthmatic non-wind instrument players and found to exhibit fewer symptoms, have an improved sense of wellbeing and be less prone to emotional swings than the non-wind instrument players.

The perceived benefits of music on health prompted the

opening in 2005 of the Louis Armstrong Center for Music and Medicine in New York to provide music therapy care to complement medical treatment of asthma and chronic obstructive pulmonary disease<sup>10</sup>. To date no research papers from that centre have been published.

It was in recognition of the need to support Indigenous asthmatics and with the background data on breathing and music on asthma that this project was developed. Its aim was to contribute to the improvement of health of asthmatics within the local Indigenous community by using music therapy. Supplementary objectives were to increase the participants' knowledge of asthma and to expose participants to their traditional musical culture.

## Objectives

The overall goal of this project was to contribute to the improvement of health of asthmatics within the local Aboriginal community. The key objective was to determine whether a novel methodology would support that goal. Supplementary objectives were to increase the participants' knowledge of asthma and to expose participants to their traditional musical culture.

## Methods

The project used the intervention of music to engage participants and, in so doing, support their asthma management. Music lessons were held weekly for six months and participants were encouraged to practice the associated breathing exercises and their music between formal lessons. Male participants were taught the didgeridoo and females had singing lessons. Participation was targeted at junior school children, senior school children and adults. The intervention of the juniors and seniors took place at their schools and the adult lessons were held at the premises of the local Aboriginal medical service. On three occasions during the study the respiratory health of the participants and their quality of life was determined through clinical assessment and validated questionnaires<sup>11-13</sup>. Peak expiratory flows were recorded twice daily by the participants using a peak flow metre.

## Results

Recruitment and retention varied both among and within groups. Senior school students enthusiastically engaged and had excellent retention. Contributing to the success within that group was the support from the school. Initial interest from adults within the community was good following an awareness campaign. Between sign-on to the programme and start of lessons there was a large drop out. Several of the adults were unable to attend regularly because of ill health. Junior school boys and girls had 100% and 0% retention, respectively. Respiratory function improved significantly in the boys. The senior boys also reported a noticeable improvement in their health. Similar but non-statistically significant improvement was seen in the high school girls however like the boys they too perceived an improvement in their asthma symptoms.

## Discussion

Although wind instruments were advocated over 30 years ago in the management of asthma<sup>8</sup> we could find only one study exploring this avenue of asthma management<sup>9</sup>. To our knowledge our study is the first study of the use of wind instruments where data were collected prior to the intervention. Furthermore it is the first study using the didgeridoo and the first study involving Indigenous Australians.

The project was successful in determining if the programme could be utilised to support the management of asthma in local Aboriginal community. Furthermore it was successful in demonstrating benefits to their health. There is no reason that the intervention could not be transferred to other groups.

The senior school students clearly benefited from the programme and in the boys this was demonstrated by both their own assessments and their respiratory function. The latter was not as clearly demonstrated in the females. It is not known if the amount of practice outside of school influenced this result. The boys were completely uninhibited and had no reservations about playing their didgeridoos at school or, according to them, at home. However the girls were inhibited especially at the beginning and were reluctant to sing even in the environment of friends and class mates. This may well have extended to home practice.

Asthma adversely affects quality of life<sup>13, 14</sup>. In our study a significant increase was seen in respiratory function and a trend for increases in quality of life of our male participants. A previous Australian study using Buteyko breathing also reported a trend for increase in quality of life although without objective changes in airway calibre for subjects<sup>15</sup>. Other studies advocating breathing exercises have shown various degrees of success<sup>7</sup>.

It is suggested that the deep and circular breathing required for playing the didgeridoo was a factor in increasing respiratory function. Such extremes of breathing may not have been required of the females in their singing although they too noted improved health. To prove the effects of the didgeridoo on breathing function further research would be required with matched controls.

Asthma management programmes require compliance and we suggest that breathing exercise per se may not promote this. We believe that enjoyment is likely to be critical and it was obvious to all involved with this study that the participants enjoyed the programme, something that was confirmed by their comments. The males' enjoyment of the didgeridoo could have been in part a response to the novelty factor and the cultural association. None of the students had possessed a didgeridoo before and apart from "having a go" none had played the instrument previously. Owning a didgeridoo, having the instrument at school and playing it appeared to raise their status.

Playing the didgeridoo is not culturally acceptable for most Aboriginal females. Singing was the chosen alternative to didgeridoo playing and was a good choice in terms of enjoyment. It can be very low cost, easy to manage, and can be undertaken anywhere with minimum support. Ideally someone who is knowledgeable with breathing exercises can lead. Consideration could be made to alternative wind instruments however it would be important to determine if the fun of group singing may be replaced by the chore of music lessons.

Adult females always enjoyed doing the breathing exercises and did these in preference to the singing. They recognised that it was the exercises and not the singing per se that was

most beneficial. In future a little book of breathing exercises would be very beneficial. The booklet would need to be diagram based, with very clear pictures.

The project made a small but significant improvement in increasing access to the Aboriginal Medical Service (AMS) for Aboriginal students in the schools and has increased awareness and participation of the AMS for adults.

Overall the project has been demonstrated to be successful and could be transferred to other communities.

## Conclusion

The project clearly demonstrated that the intervention has great potential for supporting asthma especially in adolescents. Furthermore, cultural awareness was increased by those playing the didgeridoo and social skills were noticeably improved in the girls.

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