



Patients Breathing exercises potential role with controlled mild to moderate asthma

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Introduction

Controlling for complex interventions is methodologically difficult but it is necessary to provide a comparable control procedure that is credible and acceptable to patients as, without an adequate control process, it cannot safely be assumed that resulting clinical benefits relate to specific factors in the intervention rather than to spontaneous improvements, the effects of trial involvement or non-specific placebo-like effects resulting from attention from a healthcare professional [1]. A recent study investigating a similar breathing modification programme against a comparison control group receiving usual care reported improved asthma-related health status, symptoms and mood in adult patients with asthma undergoing Breathing Training, with little change in the control group. However, it is well established that professional attention of itself can result in beneficial non-specific placebo-like effects, and it has previously been suggested that breathing exercises are in effect an elaborate placebo [2]. The present study therefore aimed to provide a neutral control by giving the subjects randomised to the control arm equal time with a healthcare professional in a similar environment [3]. The nurse provided generic non-personalised asthma information without changing medication or providing personalised self-management advice but, in the context of this study, the control group was associated with improvements from baseline in all patient-centred outcomes and, indeed, a small but statistically significant reduction in Fraction of exhaled nitric oxide concentrations implying a possible reduction in airways inflammation. The provision of a personalised asthma action plan including asthma education has been shown to improve outcomes, although little effect has previously been reported from limited information provision alone. In view of the improvement in health status from baseline in this group and the lack of any suggestion that educational initiatives may result in a deterioration in health status, it is very unlikely that the between-group difference noted was a result of a negative effect in the control arm, indeed, it is possible that the effects of Breathing Training are underestimated because of a beneficial effect of the educational programme [4]. Future studies should investigate whether benefits from education and breathing exercises may be additional and synergistic. The high number of subjects dropping out of the study before the interventions may have diluted the between-group differences, and as per protocol analyses the between-group difference at few months. In parallel with the persistence in improvements in the overall Asthma Quality of Life Questionnaire scores, consistent improvements were seen in the Breathing Training group compared with the control group at few month assessment but not at a month assessments in three of the four subdomains of the health status instrument and in other outcomes measuring the patients' personal experience of their condition, including anxiety and depression scores. Similarly, symptomatic asthma control improved initially in both groups but showed better persistence in the Breathing Training group [5]. Breathing exercises were not associated with significant changes in airways inflammation or hyper-responsiveness so, although associated with beneficial effects on the patients' experience of their illness, they are unlikely to modify the pathophysiology of asthma. Asthma-related health status was selected as the primary end point in this study as this parameter best measures patients' experience of asthma and the

effect of the condition on their daily lives [6]. Asthma is a complex and multifaceted condition, and dissociations have been described between health status and other asthma control parameters, with asthma quality of life being shown to be an independent measure of control that does not correlate closely with other control measures. In this study we measured a range of outcome parameters and found that breathing exercises were consistently associated with improvement in patient-centred measures such as health status, symptoms and psychological measures, but not with changes in physiological or biomarker parameters of asthma control [7]. Breathing exercises were associated with a non-significant increase in Resting end tidal carbon dioxide concentration and a significant reduction in Resting minute volume, implying that hypoventilation was to some extent achieved. However, a reduction in Resting minute volume also occurred in the control group, without significant differences between groups, suggesting that this was a non-specific finding. These data do not strongly support the hypothesis that reducing hyperventilation is the primary mechanism by which improvements in health status are achieved with breathing retraining [8]. This study did not address the regularity of breathing or the pattern of respiratory excursion. Previous studies have reported that hyperinflation, respiratory instability, upper chest and asynchronous breathing patterns can be associated with symptomatic dysfunctional breathing, and the effects of Breathing Training on these measures warrants attention. The effects of breathing exercises were similar in those with positive and negative screening scores on the Nijmegen hyperventilation questionnaire, so this instrument does not identify those who potentially benefit from the intervention; similarly, no correlation was seen between baseline Resting end tidal carbon dioxide concentration or Resting minute volume readings and the response to breathing exercises, or between changes in these parameters and changes in outcome measures, implying that the effects of breathing exercises were not mediated through reductions in hypocapnia or hyperventilation [9]. Improvements in anxiety and depression scores were greater in the breathing group at few month assessments, so part of the effect may have arisen through improvements in psychological well-being. Subjects with mild to moderate symptomatic asthma were recruited from primary care settings using deliberately broad entry criteria [10]. In any intervention study it cannot be assumed that the population studied is typical of the at-risk population, but we feel this study is likely to have recruited subjects representative of the wider population with mild to moderate asthma so the results are likely to be generalizable, which is not always true of asthma clinical trials,

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although it remains possible that subjects responding to the study invitation were in some way more sympathetic and susceptible to such approaches..

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Conflict of Interest

None

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