Effect of Educational and Psychological Intervention on the Quality of Life of Asthmatic Patients

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OBJECTIVE: To evaluate the effects of educational and psychological intervention on the quality of life and psychological status of patients with asthma. METHODS: Asthmatic patients were randomized to study ($n = 228$) and control ($n = 146$) groups. Both groups received conventional pharmacotherapy for asthma. The study group also received education and psychological counseling. We assessed quality of life, mood states, and asthma knowledge before and after the educational and psychological interventions. RESULTS: The study group's mean quality-of-life score was higher than that of the control group immediately after the intervention (130.2 ± 25.1 vs 111.6 ± 27.4, $P < .001$) and 3 months after the intervention (144.4 ± 16.9 vs 121.5 ± 25.6, $P < .001$). The study group's mean asthma-knowledge score was higher immediately after the intervention (9.0 ± 1.2 vs 7.5 ± 1.8, $P < .001$) and 3 months after the intervention (9.4 ± 0.8 vs 7.5 ± 1.5, $P < .001$). Two weeks after the intervention the mean increment of the asthma-knowledge score in the study group was greater than that in the control group (1.8 ± 1.6 vs 0.6 ± 1.7, $P = <.01$). The study group's mean Profile of Mood States score was lower than that of the control group immediately after the intervention (12.0 ± 18.5 vs 23.0 ± 22.7, $P < .001$) and 3 months following the intervention (10.2 ± 7.5 vs 22.8 ± 11.4, $P < .001$). CONCLUSIONS: Education and psychological counseling improves the quality of life and alleviates the psychological distress in patients with asthma. These interventions also enhance patient's understanding of this chronic disease. *Key words: asthma; education; counseling; psychology; intervention.* [Respir Care 2010;55(6):725–728. © 2010 Daedalus Enterprises]

Introduction

Asthma is one of the most common chronic diseases worldwide.[1] The pathogenesis of asthma involves the interplay of biological, social, and psychological factors.[2,3] Psychological distress might be a risk factor for asthma-related morbidity and mortality, and is associated with poor asthma control, near-fatal asthma attacks, and asthma mortality.[4,5] Educational and psychological interventions as an auxiliary can help the pharmacologic management of asthma, but these interventions are often considered difficult to implement in day-to-day practice.[6-10] In China, only 5% of the 3 million asthmatic patients received formal education on asthma through the Global Initiative for Asthma (GINA) program.[11] The reasons for this low education rate may be complex, but the misconceptions on the effectiveness of these auxiliary measures by the healthcare workers or patients were believed to have played a major part.[11] Currently there is a paucity of data on the impact of structured education and psychological counseling on the outcomes of asthma management. The primary objective of this study was to investigate the effect of education and psychological counseling on the quality of life, which we assessed with a set of standard questionnaires,[12] and the psychological status of patients with asthma.

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Methods

Patient Selection

This randomized controlled trial was approved by the institutional review board of Weifang Asthma Hospital, Shandong Province, People's Republic of China. Written informed consent was obtained from all participants. Between January 2005 and January 2008, 400 patients were screened for this trial at the clinics of Weifang Asthma Hospital. All patients had an established diagnosis of asthma and were 18 to 70 years old. Patients were excluded if they had one or more of the following conditions: serious psychiatric illnesses (eg, major depressive disorder, psychosis, generalized anxiety disorder); somatic comorbidities (eg, cancer, inflammatory diseases, cardiovascular disease, liver or renal dysfunction); unable or unwilling to give written consent; or unable to adhere to the follow-up schedule. We recruited 374 patients.

Study Design

The randomization was performed by a random-number generator. Institutional approval specified that the allocation proportion for the study group and the control group be 1.6:1. Therefore, of the 374 recruited patients, 228 were assigned to the study group and 146 to the control group.

The investigators who evaluated the education and psychological counseling were unaware of the patients' groupings. However, blinding of the clinicians who were responsible for the delivery of these interventions and other treatment was not possible because of the nature of these interventions. All patients received evidence-based pharmacologic care for asthma, as well as other nonpharmacologic measures, such as physiotherapy.

Educational and Psychological Interventions

For the study group, the educational and psychological interventions were conducted over a 2-week period at the hospital clinics. Asthma education was conducted in a group of 20 (patients and their family members). The education course, which was delivered by nurse educators in four 1-hour sessions, included lectures and supervised group discussions. The education sessions covered the pathophysiology of asthma; monitoring of clinical symptoms and lung function; potential psychological and social impact of the disease; and evidence-based pharmacotherapies. An individualized self-management plan was developed for each patient, and measures to adhere to these plans were also discussed. The correct use of aerosol inhalation devices was demonstrated during these sessions. In addition, modifications of lifestyle (eg, stop smoking) and living environment to prevent asthma recurrence were also discussed. Patients in the control group did not receive the prescribed asthma education. The instructions on aerosol devices and lifestyle modification were given briefly by their doctors as the standard practice during the first consultation at the hospital clinic.

Psychological counseling was conducted by qualified clinical psychologists. The counseling covered the following aspects in six 1-hour sessions: the role of psychosocial factors in the prevention or treatment of asthma; the best coping strategies and how to maintain a positive attitude and a normal life; development of an individualized relaxation and exercise regimen; and group psychological counseling (20 per group), where patients were encouraged to discuss their illness and any emotional distress associated with the disease. Patients in the control group did not receive the prescribed counseling during the 2-week stay at the hospital.

Outcomes Assessment

The effects of the interventions were evaluated before the treatment, immediately after the 2-week intervention, and 3 months after the intervention. The primary outcome variables were quality of life, psychological distress, and the patient's knowledge of asthma. The outcome variables were collected from questionnaires completed by the patients. Quality of life was assessed with the Asthma Quality of Life Assessment scale.[12] Psychological distress was measured with the 37-item short-form Profile of Mood States questionnaire.[13] The patients' understanding of asthma was evaluated with an asthma-knowledge questionnaire.[14]

Statistical Analysis

We used statistics software (SPSS 13.0, SPSS, Chicago, Illinois) for statistical analyses. The data are expressed as mean ± SD. One-way analysis of variance was used to analyze the differences between the study and control groups. Categorical data were analyzed with the chi-square test. All analyses were based on intention-to-treat. $P < .05$ was considered statistically significant.

Results

General Findings

The mean age of the study group was higher than that of the control group (Table 1, $P < .001$). The other sociodemographic characteristics and the baseline quality-of-life scores were similar between the 2 groups (see Table 1). All patients in the study group completed the education and psychological counseling programs. All par-

Table 1. Baseline Characteristics

	Study Group (n = 228)	Control Group (n = 146)	P
Age (mean ± SD y)	42.9 ± 9.2	37.5 ± 11.4	< .001
Male (n, %)	126 (55)	79 (54)	.29
Education (n, %)			.37
Primary school or lower	80 (36)	65 (44)	
High school	60 (27)	34 (23)	
University	52 (23)	30 (21)	
Unspecified	30 (14)	17 (12)	
Occupation (n, %)			.16
Office worker	44 (19)	28 (19)	
Laborer	92 (40)	67 (46)	
Student	26 (12)	8 (6)	
Unemployed	22 (10)	18 (12)	
Retired	22 (10)	14 (10)	
Unspecified	22 (10)	11 (8)	
Marital Status (n, %)			.10
Never married	27 (12)	16 (11)	
Married	171 (75)	114 (78)	
Divorced/separated	9 (4)	2 (1)	
Unspecified	21 (9)	14 (10)	
Years of Asthma (n, %)			.19
< 5 y	86 (38)	65 (44)	
5–10 y	47 (21)	24 (16)	
> 10 y	73 (32)	41 (28)	
Not specified	22 (10)	16 (11.0)	
Quality-of-life score (mean ± SD)	109.4 ± 25.1	107.8 ± 27.2	.44

ticipants in the study and control groups completed the 3-month follow-up.

Outcomes Immediately After the Intervention

The mean quality-of-life scores following the 2-week intervention in the study group are shown in Table 2. The mean scores on physical activity, psychological well-being, self health-caring, and asthma symptom control in the study group were also all significantly higher than in the control group (see Table 2). The increment in the mean scores in the study group was significantly higher than in the control group (20.6 ± 21.5 vs 3.8 ± 10.7, $P < .006$).

As shown in Table 2, the mean scores on negative emotionality, such as depression, tension, confusion, and fatigue, in the study group were lower than in the control group, whereas the scores on self-rated energy levels were higher following the interventions. The mean Profile of Mood States scores of the study group were lower than that of the control group. The reduction of Profile of Mood States scores from the baseline values in the study group was greater than in the control group (9.6 ± 17.1 vs 1.1 ± 12.8, $P < .004$).

Table 2. Quality of Life and POMS Scores Immediately After the Educational and Psychological Interventions

	Study Group (n = 228)	Control Group (n = 146)	P
Quality of Life (mean ± SD)			
Physical activity	42.9 ± 9.2	37.5 ± 11.4	< .001
Asthma symptom control	30.9 ± 8.4	25.7 ± 7.0	< .001
Psychological well-being	22.8 ± 5.7	19.5 ± 5.9	< .001
Self health-caring	13.0 ± 4.1	10.8 ± 4.4	< .001
Total quality of life score	130.2 ± 25.1	111.6 ± 27.4	< .001
POMS (mean ± SD)			
Tension	3.7 ± 4.2	5.2 ± 4.4	.002
Depression	3.6 ± 4.3	5.1 ± 4.7	< .001
Anger	4.1 ± 4.3	5.7 ± 4.6	< .001
Energy level	10.0 ± 4.5	8.5 ± 4.8	.002
Fatigue	5.0 ± 4.1	6.5 ± 5.3	.002
Confusion	5.7 ± 3.3	6.6 ± 3.6	.01
Total POMS score	12.0 ± 18.5	23.0 ± 22.7	< .001
Asthma-knowledge score	9.0 ± 1.2	7.5 ± 1.8	< .001

POMS = short-form Profile of Mood States questionnaire

In the study group the mean asthma-knowledge score following the 2-week intervention was higher than in the control group ($P < .001$, see Table 2). The mean increment of the asthma-knowledge score from the baseline values in the study group was greater than in the control group (1.8 ± 1.6 vs 0.6 ± 1.7, $P < .01$).

Outcomes 3 Months After the Intervention

Table 3 shows the outcomes 3 months after the interventions. The quality-of-life scores, and scores on other measurements such as asthma symptom control, psychological well-being, and physical activities in the study group were higher than in the control group ($P < .001$). The Profile of Mood States score in the study group remained lower than in the control group ($P < .001$). The asthma-knowledge score in the study group was higher than in the control group ($P < .001$).

Discussion

Asthma is a chronic, recurring disease that has substantial negative impact on quality of life. Previous evaluation of asthma-treatment outcomes has been based mainly on the improvement of clinical symptoms and lung-function tests. However, the improvement of those clinical indicators is not always accompanied by improvement of the patient's overall well-being. Assessment of quality of life and psychological status adds another dimension to the overall management of asthma.

Table 3. Quality of Life and POMS Scores 3 Months After the Educational and Psychological Interventions

	Study Group (n = 228)	Control Group (n = 146)	P
Quality of Life (mean ± SD)			
Physical activity	49.7 ± 5.4	41.5 ± 10.5	< .001
Asthma symptom control	33.0 ± 4.9	27.6 ± 6.6	< .001
Psychological well-being	24.8 ± 4.0	21.1 ± 5.5	< .001
Self health-caring	15.4 ± 3.0	12.5 ± 3.8	< .001
Total quality of life score	144.4 ± 16.9	121.5 ± 25.6	< .001
POMS (mean ± SD)			
Tension	3.1 ± 2.0	5.4 ± 2.6	< .001
Depression	3.2 ± 2.9	5.6 ± 3.5	< .001
Anger	4.1 ± 4.3	5.3 ± 4.4	< .001
Energy level	11.9 ± 3.2	7.6 ± 3.8	< .001
Fatigue	4.6 ± 4.0	6.9 ± 4.3	< .001
Confusion	5.0 ± 3.7	7.4 ± 3.2	< .001
Total POMS score	10.2 ± 7.5	22.8 ± 11.4	< .001
Asthma-knowledge score	9.4 ± 0.8	7.5 ± 1.5	< .001

POMS = short-form Profile of Mood States questionnaire

Emerging evidence suggests that interventions such as asthma education improve patients' functioning, quality of life, and healthcare use, in both adults and in children.[15,16] In the present study, education combined with psychological counseling was administered in addition to the conventional pharmacologic therapies for asthma. These interventions significantly improved the subjects' quality of life, and the improvements were sustained at 3 months following the intervention. The intervention also improved their knowledge of asthma and their emotional status, both of which may help with the short-term and long-term management of asthma.

Limitations

We did not collect certain clinical data, such as lung-function tests and the recurrence of asthma attacks, so we could not compare the study and control groups on those variables. Therefore, the effect of the education and psychological counseling on asthma control is unclear. However, the study group's mean score on the self-rated asthma symptom-control questionnaire was higher than that of the control group, suggesting a better outcome in the study group. The mean age of the study group (42.9 years) patients was greater than of the control group (37.5 years). Whether that age difference in these adult patients impacts the outcomes of asthma education and counseling remains to be seen. Furthermore, patients' educational background and occupation may impact the results of asthma education or psychological interventions. However, this does not appear to be a major issue in this study, since the overall education levels and occupations were comparable between the study and control groups.

Conclusions

Education and psychological counseling seemed to improve the quality of life in this group of asthmatic patients. These measures also alleviated the negative emotions and psychological distress associated with asthma. Whether these interventions could eventually improve the pharmacologic management and prognosis of asthma requires further investigation.

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