

## Education of adult patients at an "asthma school": effects on quality of life, knowledge and need for nursing

K. C. Ringsberg, I. Wiklund, L. Wilhelmsen

*Education of adult patients at an "asthma school": effects on quality of life, knowledge and need for nursing. K. C. Ringsberg, I. Wiklund, L. Wilhelmsen.*

**ABSTRACT:** The effect of education of adult asthma patients at a special "asthma school" was studied with regard to knowledge of the disease and its treatment and quality of life measured by leisure activities, social interaction and psychological well being. We also studied if there were any differences in number of days in hospital and emergency visits before and one year after the asthma-school. Patients were randomised to an intervention group (7 men and 13 women) and a control group (7 men and 11 women). The age-range was 22-66 yrs. Both groups answered the same standardized and quantified questionnaires on three occasions, before the start of the asthma school, after five months and after twelve months. Both groups increased their knowledge of the disease and how to treat it, with slightly better results in the intervention group. The self-assessments all showed that patients in the intervention group felt better than those in the control group. The number of days in hospital as well as acute visits to out patients clinics were reduced significantly after the asthma school. The intervention did not influence spirometric variables.

*Eur Respir J., 1990, 3, 33-37.*

Correspondence: Lars Wilhelmsen, Chief, Department of Medicine, Östra Hospital, S-416 85 Göteborg, Sweden

Keywords: Asthma school; bronchial asthma; education; quality of life

Received: October 1988; accepted after revision 18th July 1989

There are a lot of films, pamphlets and information material written for asthma patients. However, according to our experience, and that of others, many patients still know too little about their disease. The information is often given during the first consultation for the disease or during an acute episode at hospital - occasions when the patients may have difficulties in assimilating information. Questions often come when patients have returned home. Therefore "asthma schools" have become common in many hospitals in Sweden. Out-patients are educated once or twice for 8-10 weeks by a physiotherapist, a physician, a nurse, a social worker, and a psychologist. In smaller hospitals, education is usually managed by a physiotherapist and a physician.

The information given includes elementary anatomy and physiology, and how to prevent asthma attacks by avoiding certain flowers, drugs, smoking, pets etc. Self-treatment is trained as breathing control, relaxation, relaxed sitting, physical exercise, inhalation technique and early drug treatment. Patients are given the opportunity to talk about social and psychological problems. The information is repeated according to need. Both the theoretical and practical knowledge is checked by the teachers.

Another aim of the school is to give the patients the opportunity to meet other patients who are suffering from the same disease. They often have a great need to discuss

problems relating to the disease. They can often help each other (sometimes with some help from the teachers) to solve problems.

At the "asthma school" at Östra Hospital, Gothenburg, Sweden, a physiotherapist has had the main responsibility for the programme, and physicians and chairman of the local Asthma Association have been assisting. After some years of experience, it was felt important to evaluate the effect of the "asthma school" in a randomised controlled fashion. The aim of the study was to measure the effect of the asthma school regarding knowledge of the disease, self-treatment, and quality of life defined as self-assessed leisure activities, social interaction, physical activities and emotional adjustment. The aim was also to study if there were any differences in number of days in hospital and acute visits before and one year after attending the "asthma school".

### Patients and methods

#### Patients

Eighty patients were randomly selected from 121 patients who had been treated in the hospital on 1-3 occasions in 1985. Among them there were 10 patients who did not wish to participate. Among the accepting 70, 27 had already attended an "asthma school",

had moved away, were foreigners or had died. Further 5 patients declined to participate. The remaining 38 patients were randomly allocated to two groups: an intervention group including 7 men and 13 women and a control group including 7 men and 11 women. All patients who agreed to participate and joined the project also completed it.

The mean age of the patients in the intervention group was 49 yrs, range 22–66 yrs, and they had had their asthma for 9 years on average. The mean age of the control patients was 45 yrs, range 22–66 yrs, and they had their asthma for 10 yrs on average. In the intervention group 11 patients had allergic asthma, and in the control group 9. The others had intrinsic asthma. All patients in the intervention group used a bronchodilator every day. In the control group 13 used it daily and 5 occasionally. In each group 13 patients used steroids. There were no significant differences between both groups regarding spirometry. The mean vital capacity (VC) of the intervention group was 80% of predicted before inhalation of bronchodilator and 88% after inhalation. The corresponding values of the control group were 85% and 90%, respectively. The intervention group had forced expiratory volume in one second ( $FEV_1$ ) 68% of predicted value before and 77% after inhalation of bronchodilator. The values of the control group were 69% and 84%, respectively.

### Questionnaires

Self-administered questionnaires were used to assess health information before the patient joined the asthma school, after 5 months and at a 12-month follow-up, respectively.

The first part of the questionnaire dealt with treatment of the disease and information given to the patient, activities at work and during leisure time, and smoking habits [1, 2]. The questions were taken from previously conducted population studies in the city in order to enable comparisons between the present patient series and the general population.

The second part of questionnaire consisted of three previously published groups of questions.

*The Nottingham Health Profile (NHP)* measures the subjective impact of disease [3]. The sections on energy, sleep, emotions and social isolation, totalling 28 questions, were employed. Examples of questions: Energy: I always feel tired. Everything is an effort. Sleep: I use pills to sleep. I wake up early in the morning. Emotion: I feel depressed. I feel tense. Social: I feel lonely. I feel like a burden to other people. The answers to the yes/no questions within each section were weighted. A "weight" in each section totalling 100 indicates the presence of all problems whereas 0 equals no problems at all. Swedish values for weights in health statements have been derived and presented in detail elsewhere [4]. The responses to the NHP can be compared with "normal" or average scores in a population distributed according to age and sex [5].

*The Mood Adjective check list (MACL)* includes 38 adjectives with four-graded response options [6]. The adjectives combine into three dimensions which measure tension/calmness, activation/deactivation and pleasantness/no pleasantness. The higher the score, the more adversely affected is the mood. The adjectives describe positive and negative feelings. Examples: Tension/calmness: I feel tense. I feel calm. Activation/deactivation: I feel interested. I feel tired. Pleasantness/unpleasantness: I feel happy. I feel in a bad mood.

*Quality of life in severe heart failure (QLQ-SHF)*. Part (26 questions) of the QLQ-SHF scale was used, to assess somatic and psychological symptoms and life satisfaction employing visual analogue scales [7]. The higher the value, the more symptoms and distress.

Examples of questions: Life satisfaction: Have you felt content with your life during the last week? Have you felt unsatisfied with your life during the last week? Somatic problems: Have you felt dyspnoea at rest during the last week? Have you had problems with your asthma when doing your daily activities during the last week. Psychological problems: Have you been depressed during the last week? Have you had difficulty in making decisions during the last week?

The third part of the questionnaire dealt with knowledge about the disease as anatomy, physiology and drugs. Questions were also asked about self-treatment; how to inhale bronchodilators or steroids, postural drainage, what to do when an acute attack starts, relaxed sitting, relaxation, physical activity. Patients were asked to describe if they could do anything to prevent an asthma attack for example avoiding smoking, avoid certain flowers, pets, certain drugs.

### Medical care

Information on days spent in hospital and acute visits to the out-patient clinics were obtained from the patient records, which did not contain information on whether the patients were allocated to the asthma school or to the control group.

### Spirometry

Spirometric tests included vital capacity (VC), forced expiratory volume in one second ( $FEV_1$ ), and forced expiratory volume in one second in per cent of vital capacity ( $FEV_1\%$ ). Bernstein's spirometer was used. The best of 3 values before and after use of bronchodilators were recorded. The bronchodilator was given by a modern type inhalator and 5 "puffs" were given. Ten minutes elapsed between the measurement before and after spraying.

*Conduct of the study*

The study started during April and May, 1986 with spirometry for all patients, and thereafter administration of the questionnaires. The intervention group was divided into four small sub-groups in order to achieve the highest possible attendance; these groups were educated in the asthma school four times during the spring, twice in September 1986, and once in January, 1987. All patients had the possibility of coming to the same "class" at a time suitable for them. They met once a week. In September 1986, all patients, including the control group, answered the questionnaire again. In April to May 1987, *i.e.* one year after the first investigation, the patients were re-tested with spirometry and answered the same questionnaires.

*Statistics*

Mean values and standard deviations are given. To test significance of differences, Pitman's nonparametric permutation test for paired observations was used.  $p < 0.05$  was considered significant.

**Results**

Before the start of the asthma school, there was no difference between the two groups in knowledge of the disease and how to handle it. After one year, the intervention group had increased its knowledge of how to prevent acute asthma attacks more than the control group. In the intervention group, all patients (20/20) knew that smoking and certain flowers could cause deterioration of their asthma (increase of 4/20 since before the school began). Before the school 5/20 in the intervention group knew that certain drugs should be avoided and after 13/20. In the intervention group, 4/20 had given their pets away after the asthma school; in the control group one person had bought a new pet! The patients' knowledge of the correct relaxed, sitting position increased from 13/20 to 20/20 in the intervention group. Relaxation techniques had been studied by 7/20 before the school and 12/20 after. Correct spraying technique was used by 8/20 of the patients in the intervention group before the school and 20/20 after the study period. In the control group 7/18 used the correct technique before the school and 9/18 after.

There was a general improvement in quality of life, especially according to the three self-rated tests. Figs 1 and 2 show results from the Nottingham Health Profile. For the intervention group, the differences were significant for sleep between tests I and II ( $p=0.045$ ), and between test I and III ( $p=0.021$ ). The control group showed significant differences for energy between tests I and II ( $p=0.027$ ), and between I and III ( $p=0.023$ ).

In the Mood Adjective Checklist, a difference was seen between the groups in test II for tension favouring the intervention group.

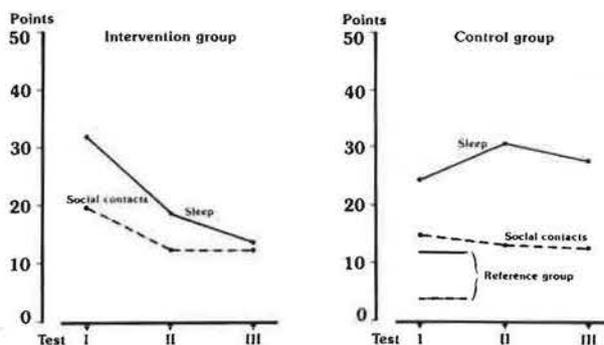


Fig. 1. - Problems relating to sleep and social contacts according to the Nottingham Health Profile in the intervention (n=19) and control (n=18), and in a healthy reference group.

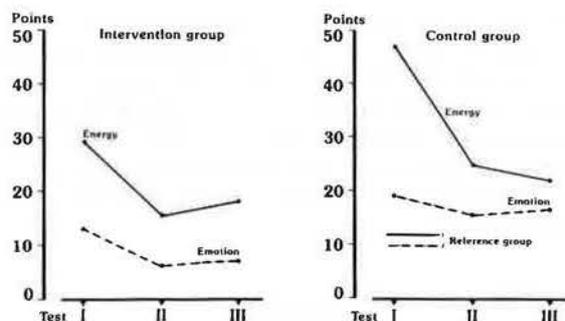


Fig. 2. - Problems relating to energy and emotion according to the Nottingham Health Profile in the intervention (n=19) and control (n=18) groups and in a healthy reference group.

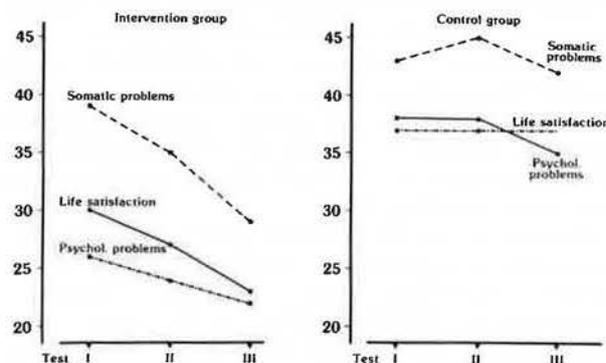


Fig. 3. - Quality of life measurements according to the QLQ-SHF questionnaire in the intervention (n=19) and control groups (n=18).

Fig. 3 gives data regarding quality of life according to the QLQ-SHF. A tendency to a significant difference between the groups for "psyche" ( $p=0.058$ ) and "soma" ( $p=0.057$ ) was seen in test III.

There were no differences between the groups regarding leisure time activities, social interaction and physical activities.

The number of days in hospital decreased relatively more in the intervention group (83%) compared with the control group (74%). The decrease was significant for the intervention group ( $p=0.0001$ ). The number of acute visits to the hospital decreased 34 by 44% in the intervention group and by 15% in the control group, (fig. 4).

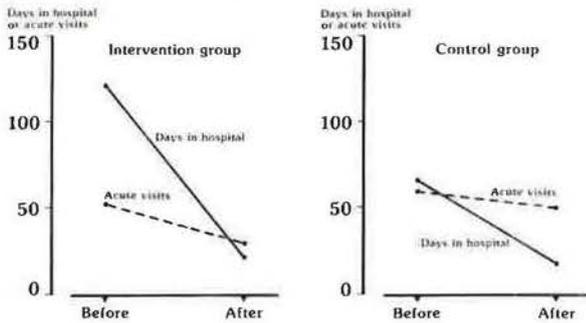


Fig. 4. - Days of stay in hospital and acute visits to the hospital's emergency department during one year in the intervention (n=18) and Control (n=19) groups.

The initial spirometric tests showed that FEV<sub>1</sub> was lower than predicted normal for both groups, and that remained true after bronchodilation. The values of FEV<sub>1</sub> before bronchodilation increased somewhat after one year in both groups: from 2.1 l to 2.3 l in the intervention and from 2.2 l to 2.5 l in the control group, respectively. The improvement was significant only for the control group (p=0.013).

### Discussion

Many patients with asthma receive insufficient information, or have often been given the information while they are acutely ill or in an early phase of the disease, occasions when the information may not be easily comprehended. It is also well documented that many patients do not use a correct spraying technique [8-10].

The importance of better patient education appeared especially during the last decade. The possibilities of preventing acute severe attacks by early self-treatment have been increased [11-13].

Patients in the intervention group increased their knowledge in these regards through the special "asthma school". The repeated questioning about knowledge apparently also had some effect in the control group. Many patients in the intervention group felt safer because they knew how to handle with their disease. This is also documented by the reduction of days in hospital and acute visits to the out-patient clinic. Similar results were also reported from Malmö, Sweden, but without control group [14].

No significant differences were found between the groups concerning leisure activities and social activities. However, several patients in the intervention group reported more help from relatives and said that they felt more able to take part in social activities after the asthma school than before.

Forty-seven percent of the patients were interested in joining various groups doing gymnastics especially designed for people with asthma. It is possible that many patients in general could find suitable gymnastics or sports if they had the opportunity to check their limits under safe conditions.

Studies concerning the effects of physical training on patients with chronic obstructive lung disease have shown limited improvements of lung volumes and ventilatory capacity, but the patient's subjective feeling of well-being and physical capacity has improved substantially [15-19]. As for several other variables, it is probable that our patients would have to be studied over much longer periods in order to detect differences in progression of the disease between intervention and control groups. In the present study, the marginal improvement of the FEV<sub>1</sub> among the control subjects could be attributed to a training effect on spirometric performance.

Interestingly, there were improvements of variables measuring quality of life which could be detected with these standardised and quantified methods. These changes are definitely of great importance to the patients.

*Acknowledgements:* We sincerely thank the Gothenburg Hospital Board, and Glaxo Ltd, Sweden, for economic support.

### References

1. Welin L, Tibblin G, Svärdsudd K, Tibblin B, Ander-Peciva S, Larsson B, Wilhelmsen L. - Prospective study of social influences on mortality. The study of Men Born in 1913 and 1923. *Lancet*, 1985, I, 915-918.
2. Wilhelmsen L, Tibblin G, Werkö L. - A primary preventive study in Gothenburg, Sweden. *Prev Med*, 1972, I, 153-160.
3. Hunt SM, McEwen J. - The development of a subjective health indicator. *Sociology of Health and Illness*, 1980, 2, 231-246.
4. Hunt SM, Wiklund I. - Cross-cultural variation in the weighting of health statements: a comparison of English and Swedish weights. *Health Policy*, 1987, 8, 227-235.
5. Hunt SM, McEwen SP. - Perceived health: age, sex and sex norms in a community. *J Epidemiol Community Health*, 1984, 38, 156-160.
6. Sjöberg L, Svensson E, Persson LO. - Konstruktion av metoder för mätning av stämningssläge. Slutrapport till Arbetarskyddsfonden, Projektnummer 75/141. Psykologiska institutionen, Göteborgs universitet, December 1978. Unpublished.
7. Wiklund I, Lindwall K, Swedberg K. - Self-assessment of quality of life in severe heart failure. *Scand J Psych*, 1987, 28, 220-225.
8. Orehek J, Gayard P, Grimaud Ch, Charpin J. - Patient error in use of bronchodilator metered aerosols. *Br Med J*, 1976, 1, 76.
9. Paterson IC, Crompton GK. - Use of pressurised aerosols by asthmatic patients. *Br Med J*, 1976, 1, 76-77.
10. Langaker OM. - Feilansvendelse av doseaerosol. *Tidskr Nor Laegeforening*, 1976, 96, 767-768.
11. Avery CH, March J, Brook RH. - An assessment of the adequacy of self-care by adult asthmatics. *J Comm Health*, 1980, 5, 167-180.
12. Hindi-Alexander M, Cropp JA. - Community and family programs for children with asthma. *Ann of Allergy*, 1981, 46, 143-148.
13. McSweeney AJ, Grant I, Heaton RK, Adams KM, Timms RM. - Life quality of patients with chronic obstructive pulmonary disease. *Arch Intern Med*, 1982, 142, 473-478.
14. Beckman L, Nyström-Larsson C. - Minskat antal vård dagar för astmatiker efter gruppinformation. *Läkartidningen*, 1982, 79, 1353.

15. Afzelius-Frisk I, Grimby G, Lindholm N. – Physical training in patients with asthma. *Le Poumon et le Coeur*, 1977, 1, 33–37.
16. Brundin A. – Physical training in severe chronic obstructive lung disease. *Scand J Resp Dis*, 1974, 55, 25–36 (1), 37–46 (2).
17. Christie D. – Physical training in severe chronic lung disease. *Br Med J*, 1968, 2, 150–151.
18. Booker HA. – Exercise training and breathing control in patients with chronic airflow limitation. *Physiotherapy*, 1984, 70, 258–260.
19. Tydeman DE, Chandler AR, Graveling BM, Culot A, Harrison BDW. – An investigation into the effects of exercise tolerance training on patients with chronic airways obstruction. *Physiotherapy*, 1984, 70, 261–264.

*Formation de patients adultes à l' école de l' asthme". Effets sur la qualité de vie, la connaissance et les besoins de soins. K. Ringsberg, I. Wiklund, L. Wilhelmsen*

RÉSUMÉ: L' effet de la formation de patients asthmatiques adultes à une "école spéciale de l'asthme" a été étudié en ce

qui concerne la connaissance de la maladie et de son traitement, et la qualité de vie appréciée par les activités de loisirs, l' interaction sociale et le bien être psychologique. L' on a étudié également s' il existait des différences dans le nombre de jours d' hospitalisation et dans les visites en consultation avant et un an après l' école de l' asthme. Les patients ont été répartis par randomisation en un groupe d' intervention (7 hommes et 13 femmes) et un groupe contrôle (7 hommes et 11 femmes). Les âges extrêmes étaient de 22 et de 66 ans. Les deux groupes ont eu à répondre aux mêmes questionnaires standardisés et quantifiés, à trois occasions, c' est-à-dire avant le début de l' école de l' asthme, après cinq mois et après douze mois. Les deux groupes ont augmenté leur connaissance de la maladie et de son traitement, avec des résultats légèrement supérieurs dans les groupe d' intervention. Toutes les auto-appréciations ont montré que les patients du groupe d' intervention se sentaient mieux que ceux du groupes contrôle. Le nombre de jours d' hospitalisation, ainsi que les visites d' urgence aux consultations, ont été réduits de façon significative après l' école de l' asthme. L' intervention n' a pas eu d' influence sur les variables spirométriques. *Eur Respir J.*, 1990, 3, 33–37.