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Psychological intervention in severe asthma: from theory to practice

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ABSTRACT

Background: Severe asthma is frequently associated with psychological comorbidities that negatively affect disease control and quality of life. Despite clinical guideline recommendations, psychological care remains limited in multidisciplinary asthma units.

Objective: To evaluate the effectiveness of an online group psychological intervention in improving emotional well-being and disease control in patients with severe asthma.

Methods: A longitudinal study was conducted between 2021 and 2024 in a specialized severe asthma unit. The intervention consisted of eight weekly online sessions combining cognitive-behavioral techniques and emotional regulation strategies. Psychological and quality-of-life variables were assessed at baseline, post-intervention, and at 6 and 12 months of follow-up.

Results: A total of 41 patients completed the program. Significant and sustained improvements were observed in anxiety, depression, hyperventilation, and asthma-related quality of life up to 12 months after the intervention. No changes were found in alexithymia, perceived social support, or family functioning.

Conclusion: An online group psychological intervention is a feasible and effective approach to improving emotional health and quality of life in patients with severe asthma. Its integration into asthma care units may contribute to a more comprehensive and patient-centered management strategy.

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Severe asthma is a complex condition that is commonly associated with comorbidity. Consequently, severe asthma accounts for 80% of asthma healthcare spending worldwide, although it affects less than 10% of the asthmatic population [1]. In people with severe asthma, comorbidity control is a cornerstone of clinical management and the basis for the existence of specialist multidisciplinary asthma units [2,3]. Several studies suggest that psychosocial factors play a role in the onset, course, and maintenance of bronchial asthma [4,5]. Uncontrolled asthma impacts the lives of patients and their families in various ways, resulting in psychological and social imbalance and reduced qualify of life [6]. Although psychological interventions are covered extensively in clinical practice guidelines, the implementation of such interventions in Spain is clearly insufficient, and few severe asthma units have a psychologist in their multidisciplinary team. Various psychological interventions have shown a positive effect on quality of life and other psycho-emotional variables in people with asthma, although the evidence and experiences of group psychological interventions in this population remain scarce [7].

We aimed to determine whether a group psychotherapeutic intervention, in addition to medical treatment, could improve the psychophysical well-being of people with asthma and thus improve control of their disease. The Severe Asthma Unit of Alicante Hospital and the Institute for Health and Biomedical Research of Alicante (ISABIAL) obtained a part-time contract for a psychologist, who has worked in the unit since 2020. The goal was to implement and evaluate a programme of individual and group psychological interventions aimed at facilitating adaptation to the disease, identifying coping strategies, and enhancing patients' resources. This

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project (with reference number 2021–0435) was partly financed by ISABIAL and was approved by the hospital ethics committee. We developed a longitudinal study without a control group, taking measures before and immediately after the intervention, and six and 12 months later. The study was conducted between March 2021 and March 2024. We included adults (aged 18 years and older) treated in the Severe Asthma Unit of Alicante Hospital, with stage 4 or 5 asthma according to Global Initiative for Asthma Guidelines [2]. All participants had to be able to complete the questionnaire and give their informed consent to take part in the study. A psychologist conducted an initial in-person interview with each participant by telephone, to establish a therapeutic relationship, explain the project, and perform a psychological assessment before the start of group therapy. The data collected in this interview included sociodemographic and psychosocial variables, history of traumatic events, and psychological variables: anxiety measured on the State-Trait Anxiety Inventory (STAI) depression measured on the Beck Depression Inventory (BDI), and illness representation measured with the Brief Illness Perception Questionnaire (B-IPQ). The group psychological intervention programme was carried out online and consisted of eight theoretical and practical sessions, each lasting one hour and a half:

(1) Bronchial asthma and breathing
(2) Coping with chronic illness
(3) Anxiety in asthma
(4) Mood changes associated with asthma
(5) Emotional regulation
(6) Problem solving and self-care
(7) Social support and assertive communication
(8) Lifestyle management

The programme was based on the following psychological techniques:

(1) Cognitive restructuring techniques to address anxious or depressive responses
(2) Operant conditioning: reinforcement of adaptive behaviours, stimulus control, and planning of rewarding activities
(3) Breathing and relaxation techniques
(4) Mindfulness practices (full attention)
(5) Emotional regulation: recognising and encouraging pleasant emotions, and facing difficult emotions (anxiety, fear, sadness, anger, guilt, hopelessness, and uncertainty)
(6) Training on personal and interpersonal problem solving
(7) Social skills and assertiveness for resolving conflictive relationships and difficult communication

We assessed the following variables before beginning the group psychological intervention, immediately after the intervention ended, and six and 12 months later:

(1) Anxiety and depression, measured on the Hospital Anxiety and Depression Scale (HADS) [8]
(2) Alexithymia, measured on the Toronto Alexithymia Scale (TAS-20)
(3) Hyperventilation, measured with the Nijmegen Questionnaire [9]
(4) Perceived social support, measured with the Duke/UNC-11 questionnaire
(5) Family functioning, measured with the 12-item Family APGAR
(6) Quality of life, measured with the Mini Asthma Quality of Life Questionnaire (Mini-AQLQ) [10]

During the eight weeks of the group intervention, no changes were made to participants' usual psychopharmacological treatment.

Psychological therapy was initially offered to a total of 230 patients, of whom 113 (49.1%) agreed to undergo evaluation, as shown in Table 1. A total of 72 patients declined participation in the group intervention due to lack of interest (57%), schedule incompatibility (35%), or technical difficulties accessing the online platform (8%). In total, 41 patients initiated the group intervention program.

Table 1 shows participants' baseline characteristics. We assessed 113 patients, with a mean age of 54.4 years (standard deviation (SD) 13.8). The mean time since asthma onset was 23.0 years (SD 16.5). Most participants were women (79.6%). Regarding education and employment, 28.3% of participants had higher education and 22.1% were unemployed or on sick leave. One-fifth of participants (19.5%) had a diagnosis of fibromyalgia, 28.3% had osteoporosis, and 46.9% had osteoarthritis. Almost half of participants (47.8%) were on chronic anxiolytic treatment, and 36.3% were on chronic antidepressant treatment (indicated by a primary care physician in 38.4% of cases). Only 12.4% of participants had been evaluated in a mental health unit. Psychological history-taking showed that 9.5% of participants had experienced sexual abuse in childhood, 20.8% had experienced physical abuse in childhood, and 33.3% had unresolved pathological grief.

Table 1. General characteristics of the study participants (n = 113).

Variable	n (%)[a]
Age (years), mean ± SD	54.4 ± 13.78
Sex (female)	90 (79.6%)
Years since asthma onset, mean ± SD	23.0 ± 16.5
Years with severe asthma, mean ± SD	7.39 ± 7.9
Comorbidities	
Gastroesophageal reflux disease	68 (60.2%)
Headaches	51 (52.3%)
Osteoarthritis	53 (46.9%)
Body mass index >30 kg/m^2	42 (42.8%)
Obstructive sleep apnoea	37 (32.7%)
Osteoporosis	32 (28.3%)
Fibromyalgia	22 (19.5%)
Socioeconomic and family variables	
Marital status	
Married	83 (73.5%)
Divorced	14 (12.4%)
Single	10 (8.8%)
Widowed	6 (5.3%)
Educational attainment	
Computing resources	92 (81.4%)
Primary education	38 (33.6%)
Secondary education	36 (31.9%)
Higher education	32 (28.3%)
No schooling	7 (6.2%)
Employment status	
In work	39 (34.5%)
Retired	30 (26.5%)
On sick leave	13 (11.5%)
Unemployed	12 (10.6%)
Homemaker	10 (8.8%)
Disabled	9 (8%)
Living alone	18 (15.9%)
Traumatic events	
Pathological grief	77 (33.3%)
Serious family conflict	69 (29.9%)
Economic crisis	55 (23.8%)
Physical abuse	48 (20.8%)
Work conflict	44 (19%)
Traumatic divorce	36 (15.8%)
Sexual abuse	22 (9.5%)
Previous assessment and previous mental health treatment	
Evaluated only by primary care physician	43 (38.4%)
Evaluated in mental health unit	14 (12.4%)
Pharmacotherapy	
Anxiolytics	54 (47.8%)
Antidepressants	41 (36.3%)
Antipsychotics	7 (6.2%)
Initial individual psychological assessment	
State anxiety score, mean + SD	29.42 ± 13.78
Trait anxiety score, mean + SD	31.33 ± 12.10
Total BDI score, mean + SD	10.0 ± 6.95
No depressive symptoms (0–4)	31 (27.4%)
Mild depressive symptoms (5–7)	17 (15%)
Moderate depressive symptoms (8–15)	41 (36.3%)
Severe depressive symptoms (≥16)	24 (21.2%)

[a]All variables are presented as number (%) of participants unless otherwise specified in the Variable column.
Abbreviations: BDI, Beck Depression Inventory; SD, standard deviation.

Forty-one participants completed the online group programme. Of the 41 patients who underwent group therapy, 21 were at step 4 of the GINA guidelines with triple bronchodilator therapy, and 20 were also receiving biological treatment The intervention was conducted in seven consecutive editions, each comprising groups of 4 to 10 participants. This reduced group size facilitated interaction and group cohesion. Before the intervention, 68.3% of these 41 participants had anxiety and 29.3% had depression, according to the questionnaire scores. Immediately after the intervention, we observed significant improvements in anxiety, depression, hyperventilation, and quality of life, and this improvement persisted at six months and 12 months after the end of the programme (Table 2).

Table 2. Results of participants who completed the online group intervention.

Measurement scale[a]	Pre ($n = 41$)	Post ($n = 41$)	6 months ($n = 31$)	12 months ($n = 25$)	P value
HADS anxiety	11.80 ± 4.45	8.95 ± 4.67	9.13 ± 3.973	8.42 ± 4.39	A = **0.000** B = **0.000** C = **0.001**
HADS depression	8.32 ± 4.16	5.78 ± 3.45	6.48 ± 3.94	5.52 ± 3.39	A = **0.011** B = **0.006** C = **0.005**
TAS-20	52.44 ± 12.42	49.51 ± 10.66	51.32 ± 11.895	49.56 ± 13.05	A = 0.057 B = 0.301 C = 0.180
Nijmegen Questionnaire	25.88 ± 9.95	20.59 ± 10.19	23.61 ± 8.87	21.30 ± 8.03	A = **0.001** B = 0.093 C = **0.001**
Duke/UNC	24.98 ± 11.73	24.27 ± 9.91	24.32 ± 10.43	23.84 ± 10.10	A = 0.508 B = 0.420 C = 0.349
APGAR Family	7.27 ± 2.56	7.05 ± 3.0	7.23 ± 2.68	7.67 ± 2.25	A = 0.479 B = 0.852 C = 0.548
Mini-AQLQ	62.44 ± 22.17	68.29 ± 20.63	65.87 ± 22.79	71.36 ± 20.20	A = **0.006** B = **0.012** C = **0.012**

[a]All scores are presented as mean ± standard deviation.
A: pre versus post; B: pre versus 6 months; C: pre versus 12 months.
Abbreviations HADS, Hospital Anxiety and Depression Scale; Mini-AQLQ, Mini Asthma Quality of Life Questionnaire; TAS-20, Toronto Alexithymia Scale.

The high prevalence of anxiety and depression observed in the study population is consistent with previous reports in patients with severe asthma, where these comorbidities are closely linked to poorer quality of life [1–3] and inadequate asthma control, as defined by GINA criteria. The findings of the present study reinforce the importance of acknowledging and addressing the psychological and emotional burden in this population. An online group psychological intervention for patients with severe asthma led to significant and sustained improvements at 12 months in anxiety, depression, hyperventilation, and asthma-related quality of life. A recent review on cognitive-behavioral therapy (CBT) in adults with asthma demonstrated consistent improvements in quality of life, anxiety, and asthma control [4–6]. These results are also aligned with emerging priorities identified in the most recent bibliometric analysis on asthma and depression, which highlights the increasing relevance of targeted psychological interventions, particularly in the context of severe asthma [7].

The online pilot group format implemented in this study, previously suggested in psychoeducational programs and mind – body interventions for respiratory diseases [8], may help optimize healthcare resources. While it demonstrated high patient adherence among participants, it failed to attract the majority of eligible patients. Notably, the high initial refusal rate to participate in the program warrants further attention. From a practical standpoint, the feasibility of the online format may be particularly relevant in healthcare settings where geographical barriers or patients' time constraints limit access to in-person psychological care. This approach, in addition to being cost-effective, expands the reach of psychological support to a larger number of patients and facilitates the integration of mental health care into standard protocols for severe asthma units. Furthermore, this model could be adapted for other populations, such as adolescents and young adults, who according to the literature, are highly vulnerable to psychosocial stress and show low treatment adherence [9].

One of the main limitations of our study is the absence of a control group, which limits causal inference. Nevertheless, the persistence of the observed effect over 12 months supports the hypothesis that psychological interventions may not only produce transient benefits but also exert a lasting impact on disease trajectory. It is also worth noting that no significant changes were observed in TAS-20, APGAR Family, or Duke/UNC scores. These variables may reflect more stable psychological traits or perceptions such as alexithymia, family functioning, or perceived social support that are less sensitive to short-term, group-based interventions and may require more prolonged or individualized approaches to achieve measurable change. This finding paves the way for future research to assess whether sustained improvements in psychosocial variables translate into objective enhancements in asthma control.

In summary, this study provides novel evidence on the effectiveness and feasibility of an online group

psychological intervention in patients with severe asthma, showing clinically meaningful improvements in emotional health and quality of life. Its integration into asthma units could contribute to more comprehensive care, aligned with the real needs of this patient population. In our experience, the implementation was made possible through the temporary hiring of a psychologist funded by a grant, as psychological care is not routinely available in most asthma clinics. However, international guidelines emphasize the importance of addressing all comorbidities, including psychological ones, within a multidisciplinary approach. These findings support the inclusion of accessible, scalable interventions that enhance patient-centered care in severe asthma.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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