

# The role of psychological factors in the management of severe asthma in adult patients

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## SUMMARY

Asthma is a long-lasting and life threatening condition. Patients with asthma often have unpleasant subjective complaints regarding their respiratory symptoms. Many studies highlight the association between psychosocial factors and asthma. Asthmatic patients have higher prevalence of anxiety and depressive disorders. Focusing on physiological and psychological elements is important for treatment. Management strategies combining pharmacologic with non-pharmacologic treatment are more effective in controlling asthma. Psychotherapeutic interventions aim to reduce patients' complaints, improve quality of life and disease self-management. Various psychotherapeutic approaches/techniques have been studied; Cognitive Behavioral and Analytic Therapy, Psychodynamic psychotherapies, Counseling, psycho-educational interventions, self-management education, relaxation, music therapies, hypnosis, biofeedback. Meta-analytic studies show that psychotherapy works. Following this, many studies tried to specify if psychotherapy is effective specifically for patients with moderate to severe asthma. Results show that psychological interventions have a positive supplementary impact on patients' traditional medical treatment. Variables examined are health-care services utilization, asthma symptoms, lung function, medication use, absence from work, quality of life, coping skills, self efficacy, locus of control, anxiety, depression. Future research should focus on high-quality, well-conducted and reported randomized trials. Research on psychological interventions in asthmatic patients provide the health care professionals with accurate information about the appropriate psychotherapeutic technique and the frequency of intervention needed for each patient. Asthma morbidity and mortality are still increasing and severe asthma accounts for half of the health service costs related to asthma. Therefore, it is urgent for patients, health-care services and professionals to manage and reduce asthmatic patients' symptoms and, by extension, hospital visits and admissions.

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## INTRODUCTION

Asthma is a long-lasting, life threatening and disabling condition. According to Global Initiative for Asthma (GINA) "Asthma is a heterogeneous disease, usually characterized by chronic airway inflammation<sup>1</sup>. Patients with asthma often have unpleasant subjective complaints regarding their respiratory symptoms, which include wheeze, shortness of breath, chest tightness and cough.

There is a considerable psychological literature devoted to asthma.<sup>2</sup> A number of studies highlight the association between psychosocial factors and asthma. There is empirical evidence that apart from physiological functions, various psychological factors are related to bronchial asthma. Patients with asthma encounter many psychosocial implications following the diagnosis, such as negative illness perceptions, feeling different than other people, feeling left out of group activities or sports.<sup>3</sup>

Thus, focusing on both physiological and psychological elements is very important for the treatment of asthma.<sup>4</sup> Patient-oriented management strategies which combine pharmacologic with non-pharmacologic treatment are more effective in controlling asthma than disease-oriented strategies.<sup>5</sup>

Psychological factors related to asthma may also trigger attacks.<sup>3</sup> Psychotherapeutic interventions in adult patients with asthma aim to reduce patients' complaints and improve quality of life as well as self-management of the disease. Specifically, patients learn strategies which help them to reduce emotions, e.g. fear or panic, improve their breathing and respiratory function and, by extension, to ameliorate their general health.<sup>4</sup>

Early theories on psychosocial parameters associated with asthma, indicated it as a psychosomatic illness and focused on mother-child attachment. However, nowadays asthma is considered a multi-factorial illness.<sup>3</sup>

## PSYCHOLOGICAL CO-MORBIDITY IN PATIENTS WITH ASTHMA

Many studies show that patients with asthma seem to have greater psychological burden than other patients. However, it is not clarified whether psychological factors trigger asthma symptoms or asthma deteriorates patients psychologically.<sup>6</sup>

There is evidence that asthmatic patients have a higher prevalence of anxiety and depressive disorders than general population, which results to poorer asthma control, medication adherence and increased hospitalization<sup>7</sup>.

A review by Lehrer et al<sup>8</sup> shows that asthmatic patients tend to report a high level of negative emotion, while the periods with higher levels of emotionality are linked temporally to asthma exacerbations, with bidirectional causality. However, in a previous study conducted in 1988 by Corecny et al<sup>9</sup>, anxiety does not appear to have a direct role in asthma exacerbation.

Almost half (49%) of the patients with difficult-to-control asthma, studied by Heaney et al<sup>10</sup>, had a psychiatric co-morbidity, while the most common diagnosis was depressive illness (29%). However, authors concluded that psychiatric disturbances are often not detected or diagnosed in difficult-to-control asthmatic patients.

Apart from other psychosocial factors, the association between asthma and psychological co-morbidities may occur as patients with asthma and patients with psychological disorders (e.g. depression or anxiety) have similar dysregulation in key biologic systems, such as neuroendocrine stress response or cytokine system. These aspects predispose people to both asthma and psychiatric illness.<sup>11</sup>

## PSYCHOLOGICAL INTERVENTIONS FOR ASTHMATIC PATIENTS

Psychological factors seem to have a major role in asthma; thus, including psychological therapies in patients' treatment is quite reasonable. Many different psychological interventions, individually or in combination, have been suggested to improve symptoms for adult patients with asthma, complementary to their drug therapies.

Psychotherapeutic approaches that have been studied are Cognitive, Behavioral<sup>12</sup>, Cognitive Behavioral<sup>13</sup>, Cognitive Analytic Therapies, Psychodynamic Psychotherapies and Counseling. Psychotherapeutic interventions usually teach asthmatic patients how to cope with their condition by recognizing and addressing their feelings, thoughts and behaviors related to asthma.

Particularly, as described by Smith and Jones<sup>14</sup>, cognitive therapy recognizes unhelpful thoughts that the patients may have and aims to enable constructive management of these dysfunctional thoughts. Behavioural therapy tries to identify through which processes the patients have learned specific behaviours. Then a variety of interventions (e.g. reward or punishment, bio-feedback) is used in order to help patients modify their behaviours. The combination of these two approaches, Cognitive Behavioural Therapy, helps the patients to develop and practice

coping strategies in order to resolve their problems.

Psychodynamic psychotherapies attempt to locate the emotional issues and response styles that result in maladaptive behaviours. Nevertheless, there is little evidence that psychodynamic interventions can be useful in a significant number of patients with asthma.<sup>11</sup> Counseling explores the immediate concerns a patient may have. These concerns may be different from session to session.<sup>14</sup>

Additionally, several scientific fields related to psychological interventions in adult patients with asthma have been under study. For example, there are reviews on psycho-educational interventions<sup>15,16</sup> and self-management education for adults<sup>17</sup>, relaxation<sup>18</sup> and music therapies<sup>19</sup>, hypnosis<sup>20</sup> and biofeedback.<sup>21</sup>

Psycho-educational interventions involve education, training in self-management and targeting psychosocial issues.<sup>14</sup> Self-management programmes range from teaching patients behavioural skills (e.g. using inhalers appropriately) to self-management skills (e.g. control and reduction of their anger and anxiety).<sup>22</sup> Relaxation methods aim to reduce patients' fear and panic and consciously produce body's relaxation, such as slower breathing, lower blood pressure and a sense of calmness.<sup>14</sup> In bio-feedback patients are taught how to monitor biological indicators and how to control them with relaxation techniques.<sup>14</sup> Another technique used in the management of asthma is therapeutic writing, which is a form of a patient's written emotional disclosure.<sup>14</sup>

## PSYCHOLOGICAL INTERVENTIONS' EFFECTIVENESS

In general, meta-analytic studies show that psychotherapy works.<sup>23</sup> Following this, a number of studies have been conducted in order to specify if psychotherapy is effective specifically for patients who suffer from moderate to severe asthma.

When we examine psychological interventions' effectiveness for patients with asthma we should bear in mind a very important issue; whether these interventions are more effective alone or when combined with each other, and if patients should receive therapeutic help individually or in a group.<sup>4</sup>

A study, conducted by Sommaruga et al in 1995<sup>24</sup>, examined an educational programme and a cognitive-behavioural intervention in patients with asthma. They found that psychological interventions are effective on the cognitive skills involved in the way asthmatic patients

perceive and manage their illness after 1 year. In addition, according to their findings Put et al<sup>12</sup> indicated that psycho-education, cognitive and behavioural techniques helped asthmatic patients in many different ways mentioned below. Recently, a British prospective randomized trial showed that patients who received a brief cognitive behavioural intervention had lower levels of asthma-specific panic fear immediately after treatment and at 6 months follow-up.<sup>25</sup>

Another psychological intervention that has been thoroughly studied is the self-management of asthma. This technique seems to be quite effective for patients with asthma, particularly when including a written care plan.<sup>26</sup> According to Creer<sup>23</sup>, asthmatic patients utilize self-management skills to manage their illness with greater consistency, imagination and confidence than expected and there is often remission of asthma symptoms.

Another randomized prospective trial demonstrated that progressive muscle relaxation is effective in improving blood pressure, heart rate and lung function, as well as reducing anger levels in pregnant women with bronchial asthma. Hence, pregnant women have a better health-related quality of life.<sup>27</sup>

## OUTCOMES MEASURED

Most of the studies regarding the efficacy of psychological interventions for adults with asthma examined variables such as health-care services utilization, symptoms related to asthma, lung function measurements, medication use, absence from work and psychological health issues, e.g. quality of life, coping skills, self efficacy and locus of control, self-esteem, anxiety, depression.

## HOW DO PSYCHOLOGICAL INTERVENTIONS AFFECT OUTCOMES?

### Health-care services utilization

The length of hospitalization and the number of emergency visits appear to be decreased for both the Asthma Rehabilitation Group and the control group in a trial conducted in 1995.<sup>24</sup> There is some evidence that psycho-educational interventions have positive effects on hospital admissions in adults with asthma.<sup>28</sup> Self-management seems also to reduce the proportion of patients who were hospitalized or had unscheduled visits to their physicians.<sup>26</sup> On the other hand, Parry et al in 2012 found that service use costs were not reduced

for patients who received a brief cognitive behavioural treatment.<sup>25</sup>

### Symptoms related to asthma

The symptoms related to asthma were measured in various studies. Psychological techniques led to substantial but non-sustained improvement in morning peak-flow expiratory rate.<sup>13</sup> Compared to the control group, the programme group, which received an individualized asthma programme aiming at behavioural change, reported significant less obstruction, fatigue and irritation but not dyspnoea and hyperventilation<sup>12</sup>. Number of patients suffering from nocturnal asthma was also reduced for adults receiving self-management education.<sup>26</sup>

### Lung function measurements

Many studies examined intervention effects on patients' lung function. Compared to the placebo group, the treatment group improved significantly in measures of lung function (FEV1/FVC) in a randomized controlled study.<sup>29</sup> Another study showed that forced oscillation pneumography measurements were improved in patients receiving Heart Rate Variability (HRV) biofeedback as a complementary treatment for asthma.<sup>21</sup>

### Medication use

Relaxation treatment reduced drug consumption in adults with asthma.<sup>2,30,31</sup> Another study showed that patients who received a psychotherapeutic intervention alongside their medical therapy had significant improvement in reducing their bronchodilator medication in comparison to the patients who received only medical treatment.<sup>6</sup>

### Absence from work

Sommaruga et al<sup>24</sup> concluded that both the Asthma Rehabilitation Group and the control group have significantly less absences from work. Furthermore, Gibson et al<sup>26</sup> revealed that the self-management education in asthmatic patients reduced the number of patients who had days off work.

### Psychological health issues

**Quality of life:** Cognitive Behavioural Therapy seems to improve quality of life and asthma control for adult patients with severe asthma.<sup>7</sup> Ross et al<sup>13</sup> found an improvement in asthma-related quality of life for adults suffering from asthma and co-existing panic disorder.

There is also a significant improvement in the total score of the Asthma Quality of Life Questionnaire (AQLQ) for patients receiving Cognitive Behavioural Treatment and Asthma Psycho-Education.<sup>12</sup>

**Coping skills:** According to Aalto et al<sup>32</sup> patients' coping style can predict asthma morbidity.

**Self efficacy:** Self-efficacy seems to be improved in patients receiving psychological interventions.<sup>12,31</sup>

**Health locus of control:** It includes internal beliefs, external control through powerful others and chance. When examined this parameter, Sommaruga et al<sup>24</sup> found no significant differences.

**Anxiety:** When compared with usual care, anxiety levels seem to improve with Cognitive Behavioural Therapy.<sup>7</sup> When patients with asthma and co-existing panic disorder received a Cognitive Behavioural Treatment combined with Asthma Education there were substantial and durable anti-panic and anti-anxiety treatment effects.<sup>9</sup> On the other hand, Epstein et al<sup>30</sup> found no significant differences between the groups.

**Depression:** It seems there is no statistical improvement in the Beck Depression Inventory scores between groups.<sup>13</sup> Kew et al<sup>7</sup> also did not find clearly improved depression scale scores for patients receiving Cognitive Behavioural Therapy.

## GUIDELINES AND RECOMMENDATIONS ON PSYCHOLOGICAL ISSUES RELATED TO ASTHMA

It is worth mentioning that the Global Initiative for Asthma (GINA), the European Respiratory Society (ERS) and the British Thoracic Society (BTS) refer to psychological issues related to asthma.

Recent GINA guidelines<sup>1</sup> urge health-care professionals to provide to asthmatic patients guided self-management education. GINA guidelines also acknowledge that psychological support may be necessary for effective medication delivery and that psychological interventions may be helpful for some patients with severe asthma. The ERS<sup>33</sup> and the BTS<sup>34</sup> guidelines acknowledge psychological co-morbidity in patients with difficult-to-control and severe asthma. In addition, the BTS guidelines<sup>34</sup> include behavioural techniques, counseling and psychological therapies as means of promoting adherence to regular treatment.

## SUGGESTIONS FOR FUTURE RESEARCH

When discussing about moderate and severe asthma

in adult patients, medical treatment has been thoroughly studied. On the other hand, there is not enough research regarding the psychological parameters. In order to determine whether psychological techniques improve asthmatic patients' treatment and draw reliable conclusions regarding their effectiveness, future research should focus on high-quality, well-conducted and reported randomized trials.

Undoubtedly, many different variables are associated with asthma and multiple psychological approaches are proposed for asthma complementary treatment. Khateeb's meta-analyses<sup>35</sup> show that the efficiency of different psychotherapeutic interventions in asthma is largely dependent on the variables examined. It is, therefore, very important to design and conduct trials carefully paying great attention to such parameters. In addition, Yorke et al<sup>4</sup> propose that future studies should include larger sample sizes, use specific randomization and blinding techniques and monitor participants for sufficient time. Smith and Jones<sup>14</sup> also propose a 12-month post-intervention patient assessment in order to eliminate the possibility of bias related to symptom changes due to seasonality. Schmalting et al<sup>36</sup> suggest that an interesting issue that should be addressed in future studies is patients' motivation to adhere with their medication.

Another very important issue that must be taken into consideration by future investigators is the purpose that the patients need psychological treatment. As there is often psychological co-morbidity in asthmatic patients, it must be clear whether patients need to get psychotherapeutic treatment for asthma or for their psychological disease. Last but not least, there is little evidence on how Cognitive Analytic Therapy helps asthmatic patients to cope with their illness. This therapeutic intervention has become popular and quite promising for several mental health

problems<sup>37</sup> and its framework can be usefully applied to a non-clinical population to good effect.<sup>22</sup>

## CONCLUSIONS: TAKE HOME MESSAGES

Undoubtedly, emotional stress deteriorates asthma. A number of studies show that psychological interventions in patients with moderate or severe asthma have a positive supplementary impact on their traditional medical treatment. Large randomized trials, reported with accurate, valid and reliable details should be conducted in order to determine the effectiveness of various psychotherapeutic techniques used to treat severe asthma in adults. Nevertheless, as all trials conducted have a number of methodological weaknesses, interpretation of the research results should be made with caution.

Research on psychological interventions helping adult patients to cope with asthma is a very important area for clinical staff. Studies' results provide health practitioners with accurate information about the appropriate psychotherapeutic technique and the frequency of intervention needed for each patient individually. Thus, clinicians are trained to identify which psychological strategies are more effective for each patient enhancing an informed decision making. Accordingly, all international guidelines for asthma management should mention the importance of psychological interventions for patients with severe and difficult-to-control asthma.

Asthma morbidity and mortality are still increasing worldwide. At the same time, severe asthma accounts for about half of the health service costs related to asthma. Under these circumstances, it is urgent for all, patients, health-care professionals and health-care services to manage and reduce asthmatic patients' symptoms and, by extension, hospital visits and admissions.

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## ΠΕΡΙΛΗΨΗ

### Ο ρόλος των ψυχολογικών παραγόντων στην διαχείριση του σοβαρού άσθματος σε ενήλικες ασθενείς

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*Το άσθμα είναι μία μεγάλης διάρκειας κατάσταση υγείας, που τις περισσότερες φορές είναι απειλητική για την ανθρώπινη ζωή. Οι ασθενείς με άσθμα συχνά έχουν δυσάρεστα υποκειμενικά παράπονα όσον αφο-*

ρά στα αναπνευστικά τους συμπτώματα. Πολλές μελέτες υπογραμμίζουν την σχέση που υπάρχει ανάμεσα στους ψυχολογικούς παράγοντες και στο άσθμα. Στους ασθματικούς ασθενείς συναντούμε υψηλότερο επιπολασμό ως προς τις αγχώδεις και καταθλιπτικές διαταραχές. Είναι σημαντικό για τη θεραπεία του άσθματος να επικεντρωνόμαστε σε φυσιολογικά και ψυχολογικά στοιχεία. Οι στρατηγικές διαχείρισης που συνδυάζουν τη φαρμακευτική με μη-φαρμακευτικές θεραπείες είναι πιο αποτελεσματικές στον έλεγχο του άσθματος. Οι ψυχοθεραπευτικές παρεμβάσεις αποσκοπούν στο να μειώσουν τα παράπονα των ασθενών, να βελτιώσουν την ποιότητα ζωής και την αυτό-διαχείριση της ασθένειας. Έχουν μελετηθεί διάφορες ψυχοθεραπευτικές προσεγγίσεις/τεχνικές: Γνωστική Συμπεριφορική και Αναλυτική Ψυχοθεραπεία, Ψυχοδυναμικές ψυχοθεραπείες, Συμβουλευτική, ψυχο-εκπαιδευτικές παρεμβάσεις, εκπαίδευση στην αυτό-διαχείριση, χαλάρωση, μουσικοθεραπείες, ύπνωση, βιοανάδραση. Μετά-αναλύσεις δείχνουν ότι η ψυχοθεραπεία λειτουργεί. Έτσι, πολλές μελέτες επιχειρήσαν να προσδιορίσουν αν η ψυχοθεραπεία είναι αποτελεσματική ειδικά για ασθενείς με μέτριο προς σοβαρό άσθμα. Τα αποτελέσματα δείχνουν ότι οι ψυχολογικές παρεμβάσεις λειτουργούν με θετικό τρόπο, συμπληρωματικά στην παραδοσιακή ιατρική περίθαλψη των ασθενών. Μεταβλητές που έχουν εξεταστεί είναι οι εξής: χρήση υπηρεσιών υγείας, συμπτώματα του άσθματος, πνευμονική λειτουργία, χρήση των φαρμάκων, απουσία από την εργασία, ποιότητα ζωής, ικανότητες διαχείρισης, αυτό-αποτελεσματικότητα, σημείο ελέγχου, άγχος, κατάθλιψη. Οι μελλοντικές έρευνες θα πρέπει να επικεντρωθούν σε υψηλής ποιότητας τυχαιοποιημένες μελέτες. Η έρευνα όσον αφορά στις ψυχολογικές παρεμβάσεις σε ασθματικούς ασθενείς παρέχει στους επαγγελματίες υγείας ακριβείς πληροφορίες σχετικά με την κατάλληλη ψυχοθεραπευτική τεχνική και την συχνότητα της παρέμβασης που χρειάζεται ο κάθε ασθενής. Η νοσηρότητα και η θνησιμότητα λόγω του άσθματος συνεχίζουν να αυξάνονται και το σοβαρό άσθμα ευθύνεται για το 50% του κόστους των υπηρεσιών υγείας που σχετίζονται με το άσθμα. Επομένως, επείγει τόσο για τους ασθενείς όσο και για τις υπηρεσίες και τους επαγγελματίες υγείας να ελέγξουν και να μειώσουν τα συμπτώματα των ασθματικών ασθενών, και κατ' επέκταση των επισκέψεων και εισαγωγών τους στα νοσοκομεία.

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