

# Unrecognised psychopathology in patients with difficult asthma: major mental and personality disorders

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## Background

Difficult asthma is a severe subgroup of asthma in which the main feature is uncontrollability of symptoms. Psychopathology is suggested to be prominent in patients with difficult asthma and considered important in its treatment; however, the evidence is scarce.

## Aims

To describe psychopathology in difficult asthma, both major mental and personality disorders, based on diagnostic interviews.

## Method

This study was conducted in a specialised asthma care centre. A total of 51 patients with difficult asthma were diagnosed at the start of the treatment programme using two structured clinical interviews for both major mental (SCID-I) and personality disorders (SCID-II) according to DSM-IV-TR.

## Results

About 55% of the patients with difficult asthma had a psychiatric disorder of which 89% was undiagnosed and untreated before being interviewed. About 49% had a minimum of one major mental disorder of which the cluster of anxiety disorders was the most common cluster of major

mental disorders, followed by somatoform disorders. About 20% were diagnosed with a personality disorder. Of the 10 patients with a personality disorder, 9 had an obsessive–compulsive personality disorder.

## Conclusions

This study demonstrates that more than half of patients with difficult asthma had a psychiatric disorder of which 89% was unrecognised. This study highlights the importance of offering patients with difficult asthma a psychiatric diagnostic interview and/or a psychiatric consultation as part of their routine medical examination and provision of appropriate psychiatric treatment. Moreover, it highlights the urgency of further research into the role of psychopathology in the development of difficult asthma.

## Declaration of interest

None.

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Asthma is a lifelong respiratory disease characterised by airway obstruction, airway inflammation and bronchial hyperresponsiveness.<sup>1</sup> Asthma is a global health problem,<sup>1</sup> which affects about 1 in 12 people in the USA (8% of 316 million, 25 million) and numbers are increasing every year.<sup>2</sup> International guidelines on the treatment of asthma advocate a stepwise approach (Global Initiative for Asthma, GINA).<sup>1</sup> This stepwise approach consists mainly of five steps of pharmacological treatment, the final step including systemic corticosteroids (apart from general recommendations of avoiding asthma triggers, adequate drug compliance, etc.). In most asthmatic patients, the occurrence of symptoms and/or asthma attacks can be controlled with the GINA approach. However, there is a subcategory of asthmatic patients who cannot control their symptoms despite treatment at step 4 or 5 of the GINA guidelines.<sup>1</sup> In clinical practice, these patients are defined as those who present with difficult asthma,<sup>3</sup> affecting approximately 5% of the asthmatic population.<sup>4</sup> This would mean that about 1.25 million people in the USA and 2.5 million in Europe suffer from difficult asthma.<sup>1</sup>

Difficult asthma has a profound impact on health status and quality of life.<sup>5</sup> Patients with difficult asthma have frequent exacerbations that can result in hospitalisations, emergency room visits<sup>6,7</sup> and days of absence from work or school.<sup>8</sup> Moreover, patients with difficult asthma have an increased risk of sudden asthma death and adverse effects of high-dose corticosteroids.<sup>6</sup> Although the interest in difficult asthma has grown considerably, the aetiology of difficult asthma is poorly understood. It is well known that major mental

disorders are highly prevalent (31%) in asthma patients in general<sup>9</sup> compared with the general population (26%).<sup>10</sup> This 31%, however, encompassed both patients with treatable asthma and difficult asthma, which leaves the question whether the higher prevalence could be attributed to patients with asthma in general or to the difficult asthma population specifically. The prevalence of major mental disorders in difficult asthma appears to be high, but is hardly studied.<sup>11</sup> Two studies by Heaney *et al*<sup>11,12</sup> showed a prevalence of 49% in difficult asthma. However, these studies did not use structured interviews and used ICD-10 criteria instead of the DSM-IV-TR<sup>13</sup> criteria for assessing mental and personality disorders. These studies did report 81.3% of mental disorders to be unrecognised.<sup>11</sup> Although there is a recent publication on personality traits in difficult asthma,<sup>14</sup> to the best of our knowledge the prevalence of *personality disorders* in difficult asthma has not been previously reported utilising systematic research diagnostic interviews.

Therefore, the current study assessed the prevalence of psychopathology in difficult asthma focusing on both major mental and personality disorders using research diagnostic interviews according to the DSM-IV-TR.<sup>13</sup>

## Method

### Setting

This study was conducted in Asthma Centre Heideheuvell, Hilversum, The Netherlands, a specialised asthma care centre

that offers in-patient pulmonary rehabilitation. Asthmatic patients referred to in-patient rehabilitation have highly impaired health status and no satisfactory response to prior medical and non-medical treatment by asthma specialists, often including out-patient rehabilitation.<sup>15,16</sup> These complex patients with difficult asthma receive a comprehensive 3-month rehabilitation programme on an in-patient basis by an interdisciplinary team of healthcare professionals, including pulmonary physicians and specialised healthcare psychologists, as described in detail elsewhere.<sup>15,16</sup> Patients enter the rehabilitation centre only after a multidisciplinary assessment of four days, confirming their indication. Patients have to be abstinent from smoking.

## Participants

During a period of 17 months, 65 patients with difficult asthma entered the treatment programme and were invited to participate in the current study. This included, apart from the standard intake programme, a psychiatric interview. Seven patients did not give informed consent and another seven patients dropped out during the intake of the rehabilitation programme before diagnostic interviews were performed. The remaining 51 patients consented to participate. Their characteristics are shown in Table 1.

## Measurements

In the first weeks after the start of the programme, each patient was interviewed by trained psychologists with the structured clinical interview (SCID-I)<sup>17</sup> diagnosing major mental disorders and the structured clinical interview (SCID-II)<sup>18</sup> diagnosing personality disorders, both according to DSM-IV-TR.<sup>13</sup>

## Ethical principles

Both the institutional medical ethics committee of the Asthma Centre and the medical ethics committee of the Utrecht Medical Centre approved the study protocol according to Dutch law. Patients were sent information about the study before they agreed on participation. All patients gave written informed consent.

## Statistical methods

Statistical analysis was performed using SPSS Statistics for Windows Version 19.0. To determine characteristics and psychopathology of the participants, descriptive statistics were used. Associations between subgroups of patients were analysed using chi-square statistics.

## Results

The characteristics of the 51 patients with difficult asthma are shown in Table 1. Of these, 41 patients (80.4%) were female, 45.1% were obese, 47.1% had a medium educational level and 84.3% middle-class SES. Of the 51 patients with difficult asthma, 28 patients (54.9%) had one or more major mental and/or personality disorders (Table 2). Females were more likely to have a major mental disorder (58.5%) compared with male patients (10.0%;  $\chi^2=7.58$ , d.f.=1,  $P=0.006$ ), which was not the case for personality disorders. As can be seen, 25 out of 51 patients (49.0%) had a major mental disorder, and 10 out of 51 patients (19.6%) had a personality disorder. Seven out of 51 patients (13.7%) reported both a major mental disorder and a personality disorder. Ten out of 51 patients (19.6%) reported more than one major mental disorder and 3 out of 51 patients (5.9%) reported more than one personality disorder. Overall, anxiety disorders (29.4%) were the most common cluster of disorders, followed by somatoform disorders (23.5%) and mood disorders (23.5%). Airway obstruction (FEV1%) did not

**Table 1** Characteristics of patients with difficult asthma ( $n=51$ )

Characteristics	<i>n</i>	Means (s.d.)
Gender, M/F	10/41	
Age, years		43 (15)
<i>Education</i>		
Low	15	
Middle	24	
High	12	
<i>SES</i>		
Low	7	
Middle	43	
High	1	
BMI		30 (7)
<24.9	12	
25–29.9	16	
>30	23	
FEV1 %		88.5 (24.2)
<i>GINA</i>		
Step 4	7	
Step 5	44	

SES, socioeconomic status; BMI, body mass index; FEV1 %, Percentage predicted forced expiratory volume in 1 second; GINA, global initiative for asthma.

**Table 2** Major mental and personality disorders in 28 out of a sample of 51 patients with difficult asthma who were referred to our specialised asthma care centre (DSM-IV-TR)

	Total ( <i>n</i> =28) <i>n</i> (%)	Females ( <i>n</i> =41) <i>n</i> (%)	Males ( <i>n</i> =10) <i>n</i> (%)
Psychiatric disorders <sup>a</sup>	28 (54.9)	26 (63.4)	2 (20)
Major mental disorders	25 (49.0)	24 (58.5)	1 (10)
Mood disorders	12 (23.5)	12 (29.3)	1 (10)
Major depressive disorder	9 (17.6)	9 (22.0)	0
Dysthymic disorder	2 (3.9)	2 (4.9)	0
Bipolar disorder	1 (2.0)	1 (2.4)	0
Anxiety disorders	15 (29.4)	12 (29.3)	1 (10)
Social phobia	4 (7.8)	4 (9.8)	0
Specific phobia	5 (9.8)	4 (9.8)	1 (10)
Post-traumatic stress disorder	4 (7.8)	4 (9.8)	0
Panic disorder	1 (2.0)	1 (2.4)	0
Obsessive-compulsive disorder	1 (2.0)	1 (2.4)	0
Substance disorders	1 (2.0)	1 (2.4)	0
Substance abuse disorder	1 (2.0)	1 (2.4)	0
Somatoform disorders	12 (23.5)	11 (26.8)	1 (10)
Somatisation disorder	5 (9.8)	5 (12.2)	0
Undifferentiated somatoform disorder	4 (7.8)	3 (7.3)	1 (10)
Pain disorder	3 (5.9)	3 (7.3)	0
Personality disorders	10 (19.6)	9 (22)	1 (10)
Borderline personality disorder	1 (2.0)	1 (2.4)	0
Avoidant personality disorder	3 (5.9)	3 (7.3)	0
Obsessive-compulsive personality disorder	9 (17.6)	8 (19.5)	1 (10)
Dependent personality disorder	1 (2.0)	1 (2.4)	0
Personality disorder NOS	1 (2.0)	2 (4.9)	0

NOS, not otherwise specified.  
a. Patients may have more than one major mental and/or psychiatric disorder.

differ between the patients with and without a psychiatric diagnosis (data not shown).

Of the 28 patients who were diagnosed with a psychiatric disorder, 3 patients had had a psychiatric diagnosis before referral to the rehabilitation centre: one had an obsessive-compulsive personality disorder (receiving psychotherapy), one had a somatisation disorder (receiving psychotherapy) and one patient had a major depressive disorder (using antidepressants). This means that 25 of the 28 (89.3%) patients had a psychiatric diagnosis

which was not diagnosed before. Of the 23 patients who were not diagnosed with a psychiatric disorder according to the structured interviews, one patient received antidepressants and another six patients received benzodiazepines for sleeping problems (all prescribed by their GP).

## Discussion

This is one of the first studies in patients with difficult asthma assessing psychopathology using the DSM-IV-TR criteria.<sup>19,20</sup> The strength of the current study is the involvement of structured interviews (SCID-I and SCID-II) in order to get a DSM-IV-TR classification. The current study showed that over half (54.9%) of the patients with difficult asthma referred to the specialised asthma care centre had one or more psychiatric disorders (89.3% of which were previously unrecognised). Specifically, 49% of all patients had a major mental disorder and 19.6% were diagnosed with a personality disorder. Heaney *et al*<sup>11,12</sup> reported a similar prevalence (49%) of major mental disorder in patients with difficult asthma of which 81.3% was unrecognised. However, this study did not use structured interviews and diagnosed according to ICD-10 criteria. This prevalence is higher in comparison to the 31–34% reported by two studies by Lavoie *et al*<sup>9,21</sup> in asthmatic out-patients, encompassing both ‘normal’ asthmatic patients and patients with difficult asthma. The prevalence of 49% of major mental disorder in the current study is also substantially higher in comparison to the prevalence in the general population in the USA (26.6%)<sup>10</sup> and in The Netherlands (18%).<sup>22</sup> Similarly, the prevalence of personality disorders of 19.6% in the current study is also substantially higher compared with the general population in the USA (9%)<sup>23</sup> and in The Netherlands (13.5%).<sup>24</sup>

In the current study, the cluster of anxiety disorders was most common (29.4%) followed by somatoform disorders (23.5%) and mood disorders (23.5%), respectively. Specifically, major depressive disorder was the most common major mental disorder (17.6%) diagnosed and obsessive–compulsive personality disorder (17.6%) was the most commonly diagnosed personality disorder.

The current study is among the first using research-based standardised instruments based on DSM-IV-TR criteria to assess a wide range of DSM disorders including personality disorders in difficult asthma. Since we studied a group of patients with complex asthma in one specialised asthma care centre, the question remains open whether these findings are generalisable to the total population of patients with difficult asthma. In the current study, all patients did have difficult asthma according to GINA guidelines. However, patients who smoked, patients without sufficient learning ability for the (intensive) rehabilitation programme (e.g. because of intellectual disability, neuropsychological problems, motivational problems) and patients with known psychiatric or medical diseases interfering with this programme were excluded (as part of general policy of the rehabilitation centre) which might have resulted in an underestimation of the prevalence of psychiatric disorders. And the small number of male participants does not warrant a conclusion about differences between male and female patients with difficult asthma.

About 89.3% of the patients with difficult asthma in the current study who received a psychiatric diagnosis were not diagnosed before. Because of the dramatic manifestation of difficult asthma, psychiatric symptoms like anxiety or panic can be mistaken for asthma symptoms, which might explain the high number of unrecognised psychiatric disorders. Moreover, stigma about psychiatric disorders, for instance, resulting in being afraid that a psychiatric disorder would negatively impact asthma treatment, could cause unwillingness to acknowledge and accept psychiatric symptoms.<sup>25</sup>

Although beyond the scope of the current study, an important question about the direction of the relation is: is psychopathology a contributor or a consequence of difficult asthma? Psychiatric symptoms could worsen asthma symptoms and the dramatic manifestation of asthma symptoms in difficult asthma could probably cause or worsen psychiatric symptoms. However, the impact of psychiatric symptoms on difficult asthma does not appear to be a straightforward one.<sup>11</sup> Moreover, because by definition, most patients with difficult asthma use corticosteroids and it is well known that these drugs have major psychotropic side-effects, a possible independent effect of this medication on major mental disorders should be taken into account.<sup>26</sup> Psychological distress is heightened in patients with severe prednisone-dependent asthma<sup>14</sup> and the use of oral corticosteroids are related to lower quality of life.<sup>27</sup> Several psychiatric disorders are significantly associated with adult-onset asthma.<sup>28</sup> Prospective research is needed in which patients who develop difficult asthma after a prior diagnosis of asthma are followed and for patients with a first diagnosis of a psychiatric disorder and with a first diagnosis of asthma, to elucidate on a possible contributing role of psychiatric disorder in difficult asthma.

Both major mental disorders and personality disorders<sup>29</sup> have a substantial impact on quality of life, which is known to be poor in patients with difficult asthma.<sup>30</sup> Based on the effect of psychiatric therapy in general,<sup>31</sup> it is reasonable to suggest that the treatment of major mental and personality disorders also improves quality of life in difficult asthma. In chronic obstructive pulmonary disease (COPD), a severe pulmonary disease in which also high doses of corticosteroids are used, comparable figures of psychiatric disorder are reported.<sup>32</sup> In this population, the risk of missing diagnoses and treatment of concurrent psychiatric disorder is also high.<sup>32</sup> Studies on the treatment of psychiatric disorder in COPD show improvement for both physical and psychiatric complaints.<sup>32</sup> Given these results, one might hypothesise that similar outcomes of treatment might be obtained in a difficult asthma population. Future research is needed to determine the benefit of psychotherapy and/or pharmacotherapy in standard difficult asthma treatment.

This study advocates the importance of offering patients with difficult asthma a psychiatric diagnostic interview and/or a psychiatric consultation as part of their general medical examination since 54.9% of patients with difficult asthma were diagnosed with a psychiatric disorder, most of them unrecognised and untreated. Furthermore, the results stress the urgency of further research into the potential roles of mental disorders in difficult asthma and of difficult asthma in mental disorders.

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First received 17 Jan 2015, final revision 22 Apr 2015, accepted 22 Apr 2015

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