

## Psychological status of COPD patients on long term oxygen therapy

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**ABSTRACT:** We evaluated the psychological status of chronic obstructive pulmonary disease patients with chronic respiratory failure, who were qualified for or on long-term oxygen therapy. Forty eight patients were examined. The patients' psychological status was assessed by means of the following methods: detailed clinical interview, the Taylor Manifest Anxiety Scale (MAS), Beck's Depression Inventory, and Tylka's Psychological Evaluation of Rehabilitation Efficiency Scale (SOPER). The study demonstrated that the great majority of patients presented a high degree of anxiety, depression and psychological tension, had low self-esteem and did not believe in the efficiency of therapy. *Eur Respir J.*, 1991, 4, 59-62.

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Reports in the literature concerning the psychological state of patients with chronic respiratory failure (CRF), characterized either by hypoxaemia or hypoxaemia and hypercapnia, demonstrate that many patients present with emotional disorders such as anxiety, depressive reactions and even delusional syndromes [1, 2]. The type of emotional disorders depends mainly on the individual's personality, frequency of negative events and knowledge of the disease [3, 4].

Emotional disorders in CRF patients may be influenced by significant limitation of exercise capability, dyspnoea, chronicity of illness and the inevitable dismal prognosis. Other situations, such as social isolation resulting from unemployment and consequent loss of earnings, increasing difficulties with everyday life, and inability in choosing new leisure pursuits, may result in increased levels of anxiety.

The aim of this study was to assess the psychological status of patients with CRF treated with or qualified to long term oxygen therapy (LTOT).

### Patients and methods

We studied forty eight patients, 34 males and 14 females, mean age 57 yrs with a range 34-75 yrs (two patients were below 40, 20 between 40 and 60, and 26 between 61 and 75 yrs) in whom CRF due to chronic obstructive pulmonary disease (COPD) was diagnosed by history, clinical examination, chest X-ray and lung function tests. The investigations were performed during a steady-state period of the disease, as

assessed by stable body weight, blood gas and spirometric data.

Functional characteristics of the studied patients are shown in table 1. Their dyspnoea was graded as II-IV degree [5]. All presented with severe bronchial obstruction and hypoxaemia. All but two had resting pulmonary hypertension, mean pulmonary arterial pressure >20 mmHg. All were subjected to an incremental symptom-limited exercise test on cycle ergometer performing work ranging from 20-60 W. Oxygen saturation measured by pulse oximetry fell during exercise from 85.7±7.2% to 82.9±7.7%.

Studied subjects were treated with long term domiciliary oxygen using an oxygen concentrator for a period ranging from 1-2 yrs (36 patients) or had recently qualified for such treatment (12 patients).

Table 1. - Functional characteristics of patients studied. n=48

VC	l	2.46±0.95	
FEV <sub>1</sub>	l	1.06±0.69	
Pao <sub>2</sub>	kPa	7.6±0.85	
	(mmHg)		(57±6.4)
Paco <sub>2</sub>	kPa	6.1±1.33	
	(mmHg)		(46±10)
pH		7.38±0.05	
PAP	mmHg	29±8.8	
PCV	%	51±5.6	

VC: vital capacity; FEV<sub>1</sub>: forced expiratory volume in one second; Pao<sub>2</sub>: arterial oxygen tension; Paco<sub>2</sub>: arterial carbon dioxide tension; PAP: mean pulmonary arterial pressure at rest; PCV: packed cell volume. Mean±SD.

Qualification criteria for LTOT were the following: arterial oxygen tension ( $P_{aO_2}$ ) < 7.3 kPa (55 mmHg) or  $P_{aO_2}$  7.5–8.7 kPa (56–65 mmHg) if accompanied by one of additional signs:

- 1) electrocardiographic (ECG) signs of right ventricle hypertrophy [6];
- 2) radiological signs of pulmonary hypertension [7];
- 3) packed cell volume > 55%.

The psychological state was evaluated by the following methods: socio-economical status was determined by detailed clinical interview; anxiety level was evaluated by the Taylor Manifest Anxiety Scale (MAS) [8]; depression level was evaluated by Beck's Depression Inventory [9]; basic mood, anxiety, psychological tension, self-ego picture, attitude towards therapy and attitude towards life was evaluated by the Tylka Psychological Evaluation of Rehabilitation Efficiency Scale (SOPER) [10], which is a Polish modification of the Cattell questionnaires [11].

Except for the Beck's Scale, the tests were standardized (sten scores) for classifying the results into three categories: 10–7 sten = high level; 6–4 sten medium level; and 3–1 sten = low level. The Beck's Inventory results were classified in six categories: 0–9, no depression; 10–14, borderline; 15–20, mild; 21–30, moderate; 31–40, severe; 41–61, very severe.

The aim of psychological assessment was first explained to the patients, followed by detailed clinical interview. Then questionnaires were given to patients. Each questionnaire was preceded by explanatory notes. If a patient had difficulties or doubts about how to fill in the questionnaire, he or she could turn to the psychologist for explanation. Special attention was paid so that the explanation would not influence the answer. The diagnosis of delusional syndrome was based on the psychiatric examination. Results were statistically evaluated using Pearson's linear correlation.

## Results

Results of clinical interview, SOPER, MAS and Beck tests gave the following results. Twenty six patients lived with their families, the rest lived alone. The majority among the latter group were those above 60 yrs of age who had no family and were visited only occasionally by their friends. All patients received a disability pension. Less than a half thought their financial circumstances were acceptable. Most considered them difficult and four believed their status to be very poor. The difficulty with finances was greatest in patients above 60 yrs of age, living alone.

Depression was rated as very severe in 6, severe in 1, moderate in 21, mild in 10, borderline in 6 and no depression in 4 of the patients. Anxiety was graded as high in 18, medium in 28 and low in 2 subjects. Only two patients had a low level of both anxiety and depression. Two patients had a delusional syndrome with an anxiety component requiring treatment by a psychiatrist. Only two of the studied subjects had a positive attitude towards therapy, 22 presented

indifferent attitude, in the remaining 24 attitude towards therapy was negative.

None of the patients showed a positive attitude towards their ambitions and return to work. An indifferent attitude was presented by 10 and negative by 38 subjects. None of the patients demonstrated normal self-esteem. A lowered self-esteem (ambivalence) was found in 12 and negative (rejection) in 36 patients. Level of self-esteem correlated with sex, being higher in women and lower in men ( $r=0.68$ ) (table 2).

Table 2. – Correlations between sex and level of self-esteem.

Categories	Total	Male	Female
normal	-	-	-
lowered	26	22	38
negative	22	26	10

Correlation statistically significant,  $r=0.68$ .

A raised psychological tension state was present in 34 and a medium in 14 patients. None of the examined individuals had an euphoric mood or was in a state of relaxation. A lowered basic mood was seen in 26 and a stable, normal one, in 22 studied subjects. A statistically significant negative correlation was found between basic mood and psychological tension; higher basic mood correlated with lower tension,  $r=0.60$ . (table 3).

Table 3. – Correlations between basic mood and psychological tension.

Factor Basic mood	Categories	Factor Psychological tension
5	high	27
21	medium	21
22	low	-

Correlation statistically significant,  $r=0.60$

Furthermore, we looked for the frequency of factors that may be responsible for a lowered mood. The following factors were found: increased or high level of anxiety in 18 patients, increased or high level of depression in 7 patients, lack of life goals and conviction about inability to perform any work in 38, lowered self-esteem in 36, a feeling of high psychological tension in 34, difficult financial circumstances in 28, lack of confidence in the positive outcome of treatment in 24, very narrow range of interests in 24, loneliness in 22, and age above 60 in 20 patients.

## Discussion

The results presented show that COPD patients with CRF have marked emotional disorders, especially a high level of anxiety or depression. The majority of patients presented a negative attitude towards life

and therapy. We mixed patients already treated with oxygen with those who were to start LTOT. It seems that this did not influence the results. In a recent study LAHDENSUO *et al.* [12] found little influence of LTOT on psycho-social status of COPD patients.

Previous studies showed significant depression in similar groups of patients, and thought it was due to chronic hypoxia [13, 14], personality type [4, 15], patients' age, severity of the disease and their socioeconomic situation [16-18].

Thus many factors may determine the emotional disorders. Our patients often experienced dyspnoea accompanied by anxiety. They knew that their disease would inevitably progress and their performance status would worsen. They were restricted in their physical activity and the majority could not leave the home. Similarly, interests and social contacts were limited. The majority of the studied group were over 60 yrs and lived alone in poverty. Chronic disease, loneliness, old age or poverty would each separately be sufficient to cause depression. All these unfavorable conditions occurred together in the majority of the examined patients, thus probably having a multiplicative effect [4].

There are few papers in the available literature evaluating the psychological state of patients with CRF. The majority confirm the coexistence of breathlessness and hypoxia and emotional disorders [1, 13]. The patients with CRF are characterized by lowered mood which becomes a problem for patients, their families and the attending doctor [14, 15, 18].

Emotional disorders are considered inseparably connected with CRF [4, 19]. Personality testing (MMPI) has demonstrated that the features of depression such as psychasthenia, hysteria and hypochondriasis are dominant psychological factors in patients with CRF [15]. Similar studies made by other authors have demonstrated that patients with CRF are characterized by neurotic depression, hysteria and hypochondriac neurosis [4]. Neuropsychological studies showed a progressive mental and emotional psychodegradation as a result of the chronic brain hypoxia [20, 21].

According to our study, some patients were convinced that they would return to active life as soon as the disabling symptoms of the disease disappeared. Two patients admitted that from the beginning of the illness their importance in the family rose significantly and therefore they accepted this as a positive aspect of the disease. The best adapted to the disease were women with families, who did not lose their high status within the family unit. This last situation may be strongly connected with social role of woman in our society. Men who are not physically active and unemployed, have few interests or need assistance, lose self-esteem. Most of the patients did not accept their disease and the consequent limitations. This may be the reason why some patients did not follow medical advice. Low compliance to LTOT may be one such reaction.

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*Etat psychologique des patients BPCO sous oxygénothérapie au long cours. J. Borak, P. Sliwinski, Z. Piasecki, J. Zielinski.*

RÉSUMÉ: Nous avons évalué l'état psychologique des patients BPCO en insuffisance respiratoire chronique,

qui venaient en ligne de compte pour l'oxygénothérapie au long cours ou étaient sous ce traitement. Quarante-huit patients ont été examinés. Leur état psychologique a été apprécié au moyen des méthodes suivantes: interview clinique détaillée, échelle d'anxiété manifeste de Taylor, inventaire de dépression de Beck, et évaluation psychologique de l'échelle d'efficience de réhabilitaion de Tylka (SOPER). L'étude a démontré que la grande majorité des patients ont un degré élevé d'anxiété, de dépression et de tension psychologique, une faible estime d'eux-mêmes, et ne croient pas à l'efficacité de la thérapeutique.

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