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Care of Patients with Sleep Disorders

Social support, mastery, sleep-related problems and their association with functional status in untreated obstructive sleep apnoea patients



Vladimira Timkova, MSc ^{a,b,*}, Iveta Nagyova, PhD ^a, Sijmen A. Reijneveld, MD, PhD ^c,
Ruzena Tkacova, MD, PhD ^d, Jitse P. van Dijk, MD, PhD ^{b,c}, Ute Bültmann, PhD ^c

^a Department of Social and Behavioural Medicine, Faculty of Medicine, PJ Safarik University in Kosice, Slovakia

^b Graduate School Kosice Institute for Society and Health, PJ Safarik University in Kosice, Slovakia

^c University of Groningen Department, University Medical Center Groningen, Department of Health Sciences, Community & Occupational Medicine, Groningen, The Netherlands

^d Department of Pneumology and Phtiseology, Faculty of Medicine, PJ Safarik University in Kosice, Kosice, Slovakia

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ABSTRACT

Background: Social support and mastery are important aspects in the treatment of chronic diseases, however their role in connection with Obstructive Sleep Apnoea (OSA) remains unclear.

Objectives: The study examined the associations between social support, mastery, sleep-related problems and functional status in untreated OSA patients.

Methods: All patients in this cross-sectional study completed the Multidimensional Scale of Perceived Social Support, the Pearlin Mastery Scale, the Pittsburgh Sleep Quality Index, the Epworth Sleepiness Scale and the Functional Outcomes of Sleep Questionnaire. Multiple linear regression and mediation analyses were used to analyse the data.

Results: Participants were 150 newly diagnosed OSA patients (Apnoea-Hypopnoea Index–AHI \geq 5; 68% male; mean age 48.9 \pm 9.5 years). Compared with social support, mastery was more strongly associated with functional status. The indirect effects of sleep-related problems on functional status via mastery varied between 17.7% and 23.3%.

Conclusions: Supporting OSA patients' sense of mastery may significantly contribute to better disease management.

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Introduction

Obstructive Sleep Apnoea (OSA) is an incapacitating chronic disease caused by pharyngeal collapse during sleep.¹ OSA, along with insomnia, is considered to be one of the most common sleep disorders in adults, with an estimated prevalence of 2–10%,² and is related to higher all-cause mortality.³ OSA has been shown to be associated with night-time sleep disturbance^{4,5} and daytime sleepiness.⁶ These disabling symptoms pose multiple challenges

for functional status in patients with OSA,⁷ with a larger effect in females.^{8–11} Recent studies have also emphasized the importance of studying patients' functional status in sleep medicine research, because of its ability to provide insights which may go beyond the pathophysiology of commonly-investigated OSA-related symptoms.¹¹

Despite the acceptance of continuous positive airway pressure (CPAP) as a standard OSA treatment, there is a lack of consensus regarding the CPAP treatment effect on functional status in patients with OSA. Several studies have concluded that patients with OSA, even with a good CPAP treatment adherence, do not achieve normal functional status^{5,7,12,13} when compared to the general population. This suggests that other key factors may play a role.¹² Moreover, personalization of the OSA treatment,¹⁴ which includes overall evaluation of functional status and the psychosocial aspects of disease, becomes more important in current clinical practice.¹¹

Social support may be one of the essential, though under-investigated, protective factors associated with healthier sleep and better functional status in people with OSA.¹⁵ There are several

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* Corresponding author.

E-mail address: vladimira.timkova@upjs.sk (V. Timkova).

plausible pathways which may link social support with sleep, including protecting against social isolation, attenuating stress responses, encouraging healthy sleep behaviours, and entraining circadian rhythms.¹⁶ Patients with OSA may experience lower levels of social support compared to other populations with chronic diseases. A study by Glenn et al. (2015)¹⁷ revealed an association between a low level of social support and the presence of sleep disordered breathing symptoms. Poor social support was also found to be independently associated with short sleep duration when controlled for sociodemographic variables.¹⁷ Moreover, partners of patients with OSA also described their relationship as adversely affected by their partners' OSA symptomatology.¹⁸ Lack of social support has a significant impact on health-related behaviour and risk of illness.^{19,20} Moreover, lack of social support was associated with poorer self-rated health in patients with acute myocardial infarction,²¹ chronic arthritis pain,²² multiple sclerosis²³ and depression.²⁴ Social support also had a positive influence on sleep in people with insomnia.¹⁶ Although it has been posited that social support may be a key indicator of how patients with OSA manage their disease,¹⁵ to date only one study²⁵ has been performed regarding social support in the association with health outcomes in patients with OSA. Social support was also found to have a positive effect on CPAP treatment adherence.¹⁸ Insufficient emotional (e.g., encouragement) and instrumental (e.g. help with putting on mask, verbal reminders) support from partners of OSA patients was identified as a barrier for adherence with CPAP treatment.¹⁸

As patients with OSA have very little control over the symptoms of their disease and have to learn how to live with it, mastery may help them to reduce the stress that breathing and sleep-related symptoms bring about, and may thus improve their functional status.²⁶ According to Pearlin and Schooler,²⁷ mastery is defined as a general sense of control over one's life and circumstances. In line with this, a diminished sense of mastery was associated with a decrease in overall functional ability,²⁸ physical, mental and social functioning,^{29,30} and with increased mortality rates³¹ in patients with various chronic conditions or the general population.³² In older people a greater sense of mastery was found to be associated with seeking treatment at an early stage of disease and more efficient use of healthcare services.³³ In OSA patients with comorbid insomnia, the positive associations between mastery and both physical and mental quality of life remained significant even after adjustment for age, obesity, chronic diseases, erectile dysfunction, sleepiness, mood and financial strain.³⁴ It has also been suggested that the relationship between social support and mastery may be reciprocal, and that higher levels of mastery may help to facilitate needed social support, while greater perceived social support may lead to greater feeling of mastery over one's life and circumstances.³⁵

Sleep-related problems are associated with functional status in patients with chronic conditions,³⁶ including OSA.¹¹ Previous studies have shown that sleep disruption,³⁷ poor sleep quality and daytime sleepiness³⁸ were associated with impaired functional status in patients with idiopathic pulmonary fibrosis³⁷ and OSA.³⁸ Research and clinical practice should focus therefore not only on treating OSA, but also on ensuring that all OSA-related symptoms, including sleep related problems, are managed adequately. To achieve this, we first need to understand how these symptoms and constructs relate to functioning in untreated patients with OSA.

Patients with OSA are known to have a high level of sleep-related problems; in contrast, the role of social support and mastery in the association between poor sleep quality, daytime sleepiness and functional status is less clear. Therefore, the purpose of this study was to examine the associations between social support, mastery, sleep-related problems and functional status in untreated patients with OSA, and to assess the mediating role of social support

and mastery in the association between sleep-related problems and functional status in patients with OSA.

Methods

Study design and setting

This cross-sectional study was conducted at the Department of Pneumology and Phtiseology, L. Pasteur University Hospital and the Medical Faculty of PJ Safarik University in Kosice, Slovak Republic. All patients who visited the Department for one-night polysomnography (PSG) between July 2013 and June 2016 and underwent PSG were eligible for the study. To maintain ethical principles with regard to the participants, we explained the purpose of the study and guaranteed confidentiality. We also explained that the collected data would only be used for the purposes of this research. Each patient completed and signed an informed consent form prior to their participation in the study, which was fully voluntary and included no incentives for participation. The study was approved by the Ethics Committee of PJ Safarik University in Kosice (approval no. 115/2011).

Sample and procedure

Indication for PSG was based on a general practitioner referral form. OSA was diagnosed based on an overnight sleep examination. Only patients with OSA between 18 and 65 years of age were included due to possible functional changes, increased vulnerability and decline in abilities and performance related to age. The study sample comprised patients with an Apnoea Hypopnoea Index (AHI; number of apnoeas+ hypopnoeas per hour of sleep) score of 5 or more,³⁹ who had no previous continuous positive airway pressure (CPAP) therapy or other OSA treatment, were Slovak-speaking and had no major comorbidities. Out of 263 eligible patients, 41 patients who underwent PSG refused to participate in the study, yielding a total response of 84.0%. Another 72 were excluded because of major comorbidities; The reasons for exclusion were major comorbidities related to sleep (coexisting sleep disorder such as insomnia, narcolepsy, or circadian rhythm sleep disorder); major cardiovascular diseases (e.g. myocardial infarction, angina pectoris; primary pulmonary hypertension); pulmonary conditions (e.g. chronic obstructive pulmonary disease; Pickwick syndrome); and a history of cancer in the past twelve months. Neurological and psychological comorbidities included neurological condition (e.g. stroke, epilepsy); major psychiatric diagnosis (e.g. psychotic disorders, major depression) in the medical record, and/or current usage of psychiatric medications which may affect cognitive functions (e.g. benzodiazepine, antipsychotics or antidepressants); drug abuse in the past six months, and regular shift work in the past six months. Due to assessment of health outcomes related to sexual functioning, we excluded patients with diabetes and those using hypotensive medication, which may affect sexual functioning (following Hoekema et al.).⁴⁰ Screening for comorbidities was based on medical data and an initial clinical interview prior to data collection. The clinical diagnoses were established according to the standard International Classification of Diseases-10 revision Codes. Medical examinations of patients were conducted by a pulmonologist specialized in sleep-disordered breathing. Patients with non-respiratory sleep-related complaints (e.g. narcolepsy, insomnia) were routinely referred to another group of clinical specialists. The invitation letter, the informed consent and the questionnaires were sent to participants by postal mail three weeks before the medical examination. One week before the medical examination, patients were reminded about the questionnaires by phone call. Patients filled in self-report questionnaires at home.

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