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A diagnostic symptom profile for sleep disorder in primary care patients

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Abstract

Objective: The aim of the present study was (1) to evaluate the extent and nature of sleep disorder-related symptoms in the older primary care patient population and (2) to differentiate a pattern of self-reported symptoms that identify patients who should be referred to the sleep clinic for further evaluation. **Method:** One hundred ninety-six older adults recruited from family practice centers were administered a brief symptom survey measure. All were invited to participate in an extensive self-report evaluation, consultation with a sleep medicine specialist, and an overnight polysomnographic study. **Results:** A substantial number of older primary care patients report symptoms related directly or indirectly to physiological sleep disorder. Over 30% of total reported some insomnia, 40% daytime sleepiness, and 10% apnea. Those participants who agreed to pursue further aspects of the study protocol endorsed a higher number and greater severity of primary sleep disorder symptoms than those who declined to continue beyond the first phases. Participants who chose to pursue polysomnography (13% of total) had a very high rate (88.5) of diagnosed sleep disorder. **Conclusion:** This study suggests that an older patient, male or female, who both endorses medically unexplained daytime sleepiness, fatigue, or other sleep disorder related symptoms and agrees to further evaluation, including overnight polysomnography, is at substantial risk for physiologically based sleep disorder. In the future, a brief, validated measure, such as the Sleep Symptom Checklist used in this study, would be an important part of the diagnostic process.

Keywords: Diagnosis; Sleep apnea; Symptom presentation; Primary care; Referral

The presence of sleep apnea/hypopnea syndrome (SAHS) in the older population is believed to be high, in the range of 20–60% [1–4]. However, it is underrecognized in primary care and therefore underdiagnosed and undertreated by sleep disorder specialists [5]. There is a need for clear practice guidelines to identify patients who are likely to have sleep apnea as well as other sleep problems [6–8]. Primary care physicians receive very little training in sleep disorders [7,9,10], and even among sensitized practitioners, referral rates to sleep clinics for sleep apnea evaluation fall well short of the expected population rate [7,10,11].

It is increasingly well known that sleep has a very important role in the maintenance of endocrine, immune, and metabolic functions [12–14]. SAHS disrupts sleep architecture, reduces blood oxygenation, and has an impact on multiple bodily systems [15]. Therefore, patients may present with a wide array of associated symptoms. Some of the patients may report direct signs of SAHS, such as loud snoring and sleep disruption. Others report symptoms such as headache, body pain, and depression, which are indirectly related to sleep apnea and reflect the disorder's impact on other systems [16,17]. Consequently, sleep apnea-related complaints can be presented in a variety of ways and may not be immediately recognized by the primary care physician.

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Detecting sleep apnea in the community

In a recent prospective study [18], we recruited a sample of 112 community-based older adults on the basis that they experienced daytime sleepiness, fatigue, or insomnia. They had never been diagnosed with any sleep disorder. They completed an extensive self-report battery that evaluated sleep quality, daytime sleepiness, fatigue, psychological adjustment, and perceived health. They also underwent medical examination and overnight polysomnographic recording. Our findings indicated (1) a very high rate of sleep disorder (77% of the women, 98% of the men) in this self-selected sample, (2) a male-to-female ratio of 1.2 to 1 for diagnosed SAHS, (3) men and women with diagnosed SAHS reported similarly severe apnea signs and symptoms, and (4) virtually no differences in psychological adjustment and few perceived differences in health limitations between men and women with diagnosed SAHS. Our self-selected community sample clearly showed high rates of SAHS. However, our data could not explain why SAHS, particularly in women, is underrecognized by primary care physicians. Therefore, the appropriate next step was to sample older patients in the primary care system.

Present investigation

Our overall goal was to improve identification of symptomatic cases in primary care. The specific aims of the study were (1) to evaluate the presence and severity of sleep disorder symptoms in older primary care patients and (2) to discover a symptom constellation or "profile" that could identify patients who should be referred to the sleep clinic for further evaluation. We surveyed a wide range of sleep disorder symptoms, including those directly and indirectly consequent to SAHS, to reflect its pervasive effects.

Method

Participants

Participants were 196 older adults (71 men: mean age=69.93, S.D.=9.1; 125 women: mean age=69.96, S.D.=10.8) recruited from the waiting areas of three family practice centers. Inclusion criteria were age 50 and over, community resident, volunteer, and sufficient cognitive and language skills to complete measures in English or French.

Measures

Sleep Symptom Checklist

This data collection instrument was developed for the present investigation based upon items from prior validated questionnaires (e.g., Structured Sleep and Medical History [19], Sleep Questionnaire [20], Beck Depression Inventory [21], Spielberger State-Trait Anxiety Inventory [22], SF-36 Health Survey [23]). Our aim was to design a brief measure, one that, potentially, would be practical in a busy general practice office and was oriented to specific sleep disorders such as sleep apnea, periodic limb movement disorder or insomnia. The Checklist consists of 21 items on one page relating to direct and indirect signs and symptoms of sleep disorder, including snoring, breathing interruption in sleep, insomnia, daytime fatigue, sleepiness, and psychological maladjustment. Participants place a check mark next to the symptoms they experienced within the prior month. For each symptom checked, they (*a*) rate its severity from 1 to 3 (a score of 0 is attributed if an item is not checked), (*b*) indicate if the symptom was discussed with their physician at the current appointment or (*c*) within the past year. In an open-ended format, they report what, if anything, their doctor recommended in terms of referral or treatment. The temporal stability of the severity ratings was evaluated using a 3-week test–retest format with a convenience sample of 21 individuals (14 female, 7 male; mean age=46.1, S.D.=12.1). Pearson product–moment correlations showed acceptable temporal stability ($r=0.79$, $P<.01$, for the total score). Cronbach's alpha was .74 for the first administration and .68 for the second. Reliability testing demonstrated good internal consistency for the measure (Cronbach's alpha=0.86 for checked symptoms; 0.88 for severity ratings) [24].

Polysomnographic Assessment

Participants were monitored in a supervised sleep laboratory from 10 p.m. to 7 a.m. Monitoring includes three leads, electroencephalogram (EEG), electrooculography, bilateral anterior tibialis and chin electromyogram, electrocardiogram, pulse oximetry, nasal and oral airflow with nasal pressure cannulae (a thermistor for backup if technical difficulties were detected during recording), and respitrace bands for measurement of respiratory effort [25]. All signals were acquired on a digital data management system (Sandman, Nellcor–Puritan Bennett & Tyco, Ottawa, Canada). One polysomnographic technologist with 10 years of experience manually scored the studies blind to the results of symptom assessments. Sleep stages were first scored in 30-second epochs according to standard criteria [26]. Next, EEG arousals were scored according to standard current consensus criteria [27]. An apnea event was scored when there was a cessation of breathing for ≥10 s. A *hypopnea* was defined a priori as an event lasting at least 10 s with a decrease of >50% from a baseline in the amplitude compared to the mean of the largest 3 breaths over the previous 4 epochs or a lesser reduction in airflow signal amplitude accompanied by either at least a 3% desaturation or an EEG arousal [28]. Leg movements, apnea events, and associated arousals were scored manually according to the scoring rules established by the Atlas Task Force of the American Sleep Disorders Association [29]. The cutoff criterion for defining a case with significant apnea/hypopnea as well as