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Journal search and commentary

Should we aggressively evaluate and treat sleepiness in the elderly?

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1. Article reviewed

Title: Functional outcomes of excessive daytime sleepiness in older adults

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2. Objective(s)

Assess effects of excessive-daytime sleepiness (EDS) on functional outcomes based on subjective self-reports for an elderly community population.

3. Study population

Subjects over 65 were recruited from independent-living complexes in continuous care retirement communities. Exclusion criteria were dementia (Short Blessed Test > 6) or major depression (Geriatric Depression Scale—Short Form > 16 or positive diagnosis on the Center for Epidemiologic Studies Depression Scale). All eligible subjects in a sample of independent-living elderly were recruited and 114 met these entry requirements. Mean age \pm standard deviation was 77.7 ± 5.98 ; 73.7% were female, 44.7% were married and 87.7% were Caucasian.

4. Methods

In this retrospective case-control study the subjects were divided into two groups: those with excessive daytime sleepiness (EDS group) who reported problems with sleepiness at least 3 or 4 times a week and a control group

who must also have reported that they fell asleep in active or passive situations less than twice per month. Subjects completed the Functional Outcomes of Sleep Questionnaire (FOSQ), the Epworth Sleepiness Scale (ESS) and a sleep characteristics questionnaire. The 30 items on the FOSQ have been developed to assess sleepiness effects on domains relevant to the normal life of the elderly population, and factor analyses has produced five separate factors for this scale. It was hypothesized that the elderly with EDS compared to the controls would have more functional impairment on the FOSQ scales.

Statistical analyses used both non-parametric (Wilcoxin rank sum) where needed for group comparisons given the lack of normal distributions and also parametric regression analyses for identification of significant relationships to FOSQ outcome variables.

5. Results

There were 66 EDS and 38 control subjects. Data are not provided comparing basic demographics (age, gender, race, education) of these two groups. The EDS group compared to the control group showed the expected significantly greater scores on the EPSS (mean \pm SD 9.4 ± 4.3 vs. 4.9 ± 4.0). Similarly the EDS group showed significantly ($P < 0.05$) greater deficits on the FOSQ than the controls for the total score and for each of the subscales except for intimacy. The strongest effect was for the vitality subscale with moderate effect sizes of the differences for social outcome, general productivity and vigilance subscales.

Sleep characteristic reports showed that complaints of frequent awakenings and tossing/turning were associated with the daytime sleepiness.

An elaborate analysis of subject factors contributing to these results found a strong effect for the number of medical diagnoses, which in regression analyses became the only significant factor aside from the group placement. Number of medications, type of medical disorder, and gender were

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not significant contributors after removing the effect of number of medical diagnoses. EDS subjects with three or more medical diagnoses had significantly higher scores on the FOSQ compared to those with two or fewer diagnoses. Moreover in a multiple regression the number of medical diagnoses accounted for 26% of the variance in predicting FOSQ total scores. This was not the case for the control population.

6. Conclusions

Excessive daytime sleepiness occurs with quantifiable impairment in daytime functioning of the elderly that is prominent for vitality and at least a moderate effect for the other aspects of daily living with the exception of intimacy. Contrary to common assumption these effects do not occur because of depression or dementia. Daytime sleepiness in the elderly deserves aggressive evaluation and treatment

7. Commentary

EDS is a major and common problem for the elderly. The effects of sleepiness for the elderly have been previously evaluated for many specific factors including significant adverse behaviors such as falls [1] or more physiological issues such as response to cardiovascular events [2]. Until recently, however, we did not have data on the effects on general domains of life appropriate for the elderly, nor did we before this article have evaluation of these effects when the patients with depression and dementia were excluded. It has been a common belief that these problems associated with sleepiness really result from the dementia or depression. This study shows excessive sleepiness in itself deserves attention and cannot be dismissed as significant only in relation to depression and dementia.

The one unfortunate weakness of the paper was the failure to provide any direct comparison of the subject variables for the EDS and control group. This oversight seems puzzling given the careful and well-presented statistical analyses of the results. This is, however, mitigated by the use of the regression analyses including these factors. So the results stand even if there are significant group differences.

The sample size and the uncertainty about how representative this sample is of the larger population of independent-living elderly also reduces confidence in how much these results generalize to the larger population. Clearly this sort of analyses should be replicated in a larger study and the findings from the regression analyses could

then be validated in an independent sample. Until this has been completed the results remain promising but not definitive. We also know that sleepiness is a problem for a large percentage of the elderly but we do not know what percentage of those not depressed or demented have sleepiness. Thus it is hard at this point to know the extent of this sleepiness problem in the population of non-dement and non-depressed elderly. But these data indicate that where present in this group the problem of sleepiness deserves clinical attention.

These are, overall, clinically significant results. It was striking that the EDS produced such a prominent impairment in vitality, characterized as being active, keeping up with others, performing housework and engaging in sports. This loss of physical activity seems particularly undesirable for the elderly since it may contribute to decreased exercise and poorer overall physical condition. The degree of impairment in the other domains was also clinically significant contributing to impaired quality of life.

The interesting issue raised by this and similar studies is that of evaluation and treatment. The sleepiness in these subjects was associated with the complaint of frequent awakenings and tossing/turning in their sleep. It could be that these patients have unrecognized sleep disordered breathing, but it seems just as likely they have some other disorder disrupting their sleep such as periodic limb movements, restless legs syndrome, or a movement disorder such as Parkinson's Disease. Many, however, may have some occult or unknown sleep disorder or may be experiencing some aspect of the sleep and aging interaction we do not yet understand. We may not be able to correct the daytime sleepiness by improving the sleep at night. The fundamental and difficult question then becomes how we should consider treatments to directly improve alertness in the daytime. Perhaps this becomes something like pain, where the underlying cause cannot be corrected but where we have safe medications that can reduce the primary symptom. If, as the data in this study indicate, sleepiness by itself robs quality from the life of the elderly, should we be withholding treatments that appear safe and would restore better life quality?

References

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- [2] Newman A, Spiekerman C, Enright P, et al. Daytime sleepiness predicts mortality and cardiovascular disease in older adults. The Cardiovascular Health Study Research Group. *J Am Geriatr Soc* 2000; 48:115–23.