stimuli interventions is just one more effective treatment that can do so. Consulting with an occupational therapist can promote more client-centered interventions in this population. Decreasing unwanted agitated behaviors can also encourage participation and meaning in daily life activities.

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ARTICLE BY NYLEN AND COLLEAGUES

To the Editor: Nylen and colleagues reported that physical fitness, as represented by exercise capacity, reduces the risk of mortality in people with diabetes mellitus regardless of age.[1] I compliment the authors on their excellent study.

I would also like to mention that data were reported from a study of 609 people with diabetes mellitus with a mean age of 70 with no history of coronary artery disease who were referred for an exercise treadmill sestamibi stress test because of chest pain or dyspnea.[2] At 47-month follow-up, stepwise Cox regression analysis showed that a predicted exercise capacity of greater than 85% was a significant independent predictor of time to development of myocardial infarction, stroke, or death (hazard ratio = 0.52, 95% confidence interval = 0.34–0.78; $P = .002$). Older persons with diabetes mellitus with a predicted exercise capacity of greater than 85% had a 48% lower chance of myocardial infarction, stroke, or death than those with a predicted exercise capacity of 85% or less.

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RESEARCH STUDIES

DEPRESSIVE SYMPTOMS, VISUAL IMPAIRMENT, AND ITS INFLUENCE ON PHYSICAL DISABILITY AND FUNCTIONAL LIMITATION

To the Editor: Depression and visual impairment occurs commonly in older people. Depression[1,2] and visual impairment[3,4] have been associated with poor physical function. There is evidence that treatment of depression improves physical function.[5] Visual impairment is modifiable to a certain degree, because it may be corrected through surgery and use of optical devices. Studies have also shown that these two conditions coexist.[6] It was hypothesized that older people with depression and visual impairment would have a higher prevalence of poor physical function than those with depression or visual impairment alone.

The aim of this study was to determine the relationship between the combined effect of depressive symptoms and visual impairment on physical disability and functional limitation.

METHODS

Participants in this analysis were from the Alor Gajah Older People Health Survey (AGOPHS) conducted between May 2007 and November 2008 in rural Malaysia.[7] The target population was all noninstitutionalized people aged 60 and older. Sampling frame was obtained from a comprehensive community list, and all older adults were recruited. Household visits were made to all eligible respondents, face-to-face interview were conducted, and respondents were invited to the health clinic for eye and physical examination. Of the 907 persons eligible, 765 (84.3%) participated in the interview and geriatric assessment.

Physical disability was assessed using the Barthel Index of activities of daily living (ADLs). Physical disability was defined as being unable to perform ADLs such as feeding, bathing, grooming, dressing, bladder and bowel control, transfer from bed to chair, walking, and climbing stairs. Respondents were classified as physically disabled if they answered no to any of these questions and nondisabled if they answered yes to all questions. Functional limitation was measured using the Tinetti Performance Oriented Mobility Assessment tool, which measures gait and balance. The maximum score was 12 points for gait and 16 points for balance. Subjects with a score less than 12 for gait component or 16 for balance component were defined as having functional limitation.

Visual acuity (VA) criteria were used to define visual impairment. The World Health Organization definition

Table 1. Unadjusted, Age-Adjusted, and Multivariate-Adjusted Prevalence Ratios for Depressive Symptoms, Visual Impairment, or Both to Physical Disability and Functional Limitation

Independent Variable	Prevalence Ratio (95% Confidence Interval)		
	Crude	Age Adjusted	Multivariable Adjusted*
Physical disability			
Without depressive symptoms or visual impairment	1.00	1.00	1.00
Depressive symptoms only	1.52 (1.19–1.94)	1.49 (1.22–1.82)	1.44 (1.17–1.78)
Visual impairment only	1.45 (1.13–1.86)	1.17 (1.08–1.45)	1.12 (1.01–1.38)
Depressive symptoms and visual impairment	2.96 (2.30–3.82)	2.09 (1.68–2.61)	2.07 (1.62–2.64)
Functional limitation			
Without depressive symptoms or visual impairment	1.00	1.00	1.00
Depressive symptoms only	2.50 (1.87–3.35)	2.37 (1.43–3.25)	2.04 (1.28–2.76)
Visual impairment only	1.29 (1.02–1.80)	1.09 (0.77–1.52)	1.02 (0.73–1.42)
Depressive symptoms and visual impairment	3.07 (1.94–4.89)	2.46 (1.85–3.75)	2.10 (1.56–3.23)

*Covariates used in the multivariate model were age, sex, ethnic group, education level, cognitive status, and presence of chronic diseases.

of visual impairment defines mild or moderate visual impairment as presenting visual acuity (PVA) between 6/18 and 3/60. Blindness is defined as PVA of less than 3/60 in the better eye. PVA was assessed using a Snellen chart of E type or alphabets at 6 m. Depressive symptoms were assessed using the 15-item Geriatric Depression Scale (GDS). Scores of 6 or greater indicate depressive symptoms. Based on the above examination, subjects were categorized into four groups: without depressive symptoms or visual impairment, depressive symptoms only, visual impairment only, combined depressive symptoms and visual impairment.

Prevalence ratios (PRs) were calculated instead of odds ratios. All statistical analyses were conducted using SAS Proc Genmod's log binomial regression (SAS Institute, Inc., Cary, NC) and Poisson regression with robust variance (when binomial regression models did not converge).

RESULTS

A higher proportion of older people with combined depressive symptoms and visual impairment reported having physical disability (73%) and functional limitation (40.5%) than of the other three groups. In multivariate models (Table 1) adjusting for sociodemographic characteristics, chronic conditions, and cognitive status, depressive symptoms were associated with physical disability (PR = 1.44, 95% CI = 1.17–1.78) and functional limitation (PR = 2.04, 95% CI = 1.28–2.76). Visual impairment was associated only with physical disability (PR = 1.12, 95% CI = 1.01–1.38). The PR for physical disability (PR = 2.07, 95% CI = 1.62–2.64) and functional limitation (PR = 2.10 95% CI = 1.56–3.23) was much greater when combined depressive symptoms and visual impairment was present.

CONCLUSIONS

Older people with combined depressive symptoms and visual impairment were more likely to have physical disability and functional limitation than those with depressive symptoms or visual impairment alone.

Treating depression[5] and correcting visual impairment[8,9] would reduce physical disability and functional limitation. Although this may seem a logical approach, it is not always seen in clinical practice because depressive symptoms may be viewed as an understandable consequence of visual impairment and not be treated.[10] There is increasing evidence that treatment of depression reduces physical disability and functional limitation in patients with chronic diseases.[11] Primary care physicians and ophthalmologists treating older people with visual impairment should consider screening for depressive symptoms.

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GREATER RISK OF ALZHEIMER'S DISEASE IN OLDER ADULTS WITH INSOMNIA

To the Editor: Physiological changes in the continuity, architecture, and circadian timing of sleep accompany aging, the best-known risk factor for Alzheimer's disease (AD).[1] In older adults, dementia is also typically associated with sleep disorders. Epidemiological evidence shows an association

Table 1. Longitudinal Studies (Including Demographic Characteristics) that Have Analyzed the Presence of Sleep Complaints as Predictors of Cognitive Decline or Alzheimer's Disease

Study	Participants	N	Age	Female, %	Education, Years	Symptoms	Sleep Measure	Follow-Up, Years*	Risk
Lobo, 2008	Spanish community-dwelling older adults	4,803	73.5 ± 9.8	57.7	7.9 ± 3.6	Early-, middle-, and late-onset insomnia	Geriatric Mental State—Automated Geriatric Examination for Computer-Assisted Taxonomy	2	Greater risk of mild cognitive impairment (OR = 2.67, 95% CI = 1.92–3.70), Greater risk of Alzheimer's disease (OR = 2.81, 95% CI = 1.30–6.08)
Cricco, 2001	Icelandic community-dwelling older adults	6,444	72	62	81.8% <12	Early-, middle-, and late-onset insomnia. Chronic and incident cases.	Ad hoc insomnia questionnaire	3	Greater risk of cognitive decline in patients with chronic insomnia (OR = 1.78, 95% CI = 1.03–2.14)
Benito-Leon, 2009	Spanish community-dwelling older adults	3,286	79.1 ± 6.9	57	—	Longer sleep duration	Total hours of sleep in a 24-hour period	3	Greater risk of dementia (OR = 2.07, 95% CI = 1.04–4.14)†
Foley, 2001	Japanese-American community-dwelling older adults	2,346	76.6 ± 3.9	—	—	EDS and insomnia	Ad hoc questionnaire	3	Greater risk of dementia with EDS (OR = 2.19, 95% CI = 1.37–3.50). No association with insomnia
Tworoger, 2006	U.S. community-dwelling women	1,844	70–81	100	—	Sleep duration, difficulty sleeping, and snoring	Ad hoc questionnaire	2	No association with cognitive decline

* $P<.05$.
† Results were reported as relative risk, so an odds ratio (OR) was calculated for patients who slept for more than 8 hours a day.
OR = odds ratio; CI = confidence interval; EDS = excessive daytime sleepiness.