Archives of Gerontology and Geriatrics 58 (2014) 384–387

Contents lists available at ScienceDirect

Archives of Gerontology and Geriatrics

journal homepage: www.elsevier.com/locate/archger

Vision impairment and nutritional status among older assisted living residents

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ARTICLE INFO

Article history:
Received 9 July 2013
Received in revised form 10 December 2013
Accepted 12 December 2013
Available online 22 December 2013

Keywords:
Vision impairment
Nutritional status
Assisted living facilities

ABSTRACT

Vision impairment is common among older persons. It is a risk factor for disability, and it may be associated with nutritional status via decline in functional status. However, only few studies have examined the relationship between vision impairment and nutritional status, which was investigated in this cross-sectional study. The study included all residents living in the assisted living facilities in Helsinki and Espoo in 2007. Residents in temporary respite care were excluded (5%). Of permanent residents ($N = 2214$), 70% ($N = 1475$) consented. Trained nurses performed a personal interview and assessment of each resident including the Mini Nutritional Assessment (MNA), functional and health status. Patient records were used to confirm demographic data and medical history. Mortality in 2010 was retrieved from central registers. Of the residents, 17.5% ($N = 245$) had vision impairment and they were not able to read regular print. Those with vision impairment were older, more often females, and malnourished according to MNA. They had lower BMI, and suffered more often from dementia and chewing problems than those without vision impairment. In logistic regression analysis controlling for age, gender, chewing problems and dementia, vision impairment was independently associated with resident's malnutrition (OR 2.51, 95% CI 1.80–3.51). According to our results older residents in assisted living with vision impairment are at high risk for malnutrition. Therefore it is important to assess nutritional status of persons with vision impairment. It would be beneficial to repeat this kind of a study also in elderly community population.

1. Introduction

Sensory problems are common among older people. For example on orthogeriatric wards of the 65+ years hip fracture patients 15% had impaired vision, 39% hearing impairment and 30% combined sensory impairments (Grue, Kirkevold, & Ranhoff, 2009). The prevalence of vision impairment (blindness in one or both eyes or trouble in seeing or reading regular print) in elderly population varies most often from 13% to 18% (Campbell, Crews, Moriarity, Zack, & Blackman, 1999; Crews & Campbell, 2004; Dillon, Gu, Hoffman, & Ko, 2010; Grue et al., 2009; Lupsakko, 2004). Vision impairment is most common among the oldest patients, because prevalence increases with age (Dillon et al., 2010; Grue et al., 2009; van der Pols et al., 2000).

Vision impairment limits mobility and social contacts and is a risk factor for disability (Crews & Campbell, 2004; Reuben, Mui, Damesyn, Moore, & Greendale, 1999; Sharkey, 2008). Older 70+ people with vision impairments are three times more likely to report difficulty in managing medication (10.8% vs. 3.7%), and 3.5 times more likely to report difficulty preparing meals (19.2% vs. 6.3%) than people without sensory problems (Crews & Campbell, 2004). Impaired vision is more common in women and among those living in nursing homes (van der Pols et al., 2000). Persons with severe visual impairments are described to have multiple barriers to health information (Harrison, Guy, Mackert, Walker, & Pound, 2012) and to be more often those below the poverty threshold (Dillon et al., 2010).

Older people with vision impairment and age related eye diseases are less likely to report their health as good than are those who do not report problems in vision (Finger, Fenwick, Owsley, Holz, & Lamoureux, 2011). They report more often comorbidities. For example they suffer more often from hip fractures, stroke and depression than those without vision impairment (Crews &

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http://dx.doi.org/10.1016/j.archger.2013.12.002

Campbell, 2004). Visual impairment is also a predictor of mortality (Crews & Campbell, 2004; Reuben et al., 1999; Sharkey, 2008).

Although it is obvious that vision impairment may be associated with nutritional status via decline in functional status, like problems in shopping, preparing and having meals, only few studies have explored these associations among older people. Payette, Gray-Donald, Cyr, and Boutier (1995) found an independent association between poor vision and lower energy and protein intakes when studying the predictors of dietary intake in a functionally dependent older population in the community. Older adults who are blind have been shown more likely to be underweight in calculating body mass index (BMI) (Steinman & Vasunilashorn, 2011). Jones, Crews, and Danielson (2010) developed a health risk profile for older adults (≥65) with blindness or vision loss without blindness using ICF as a conceptual framework. They found that people with vision impairment were more likely to suffer from poor health status than those without. These study subjects were also more likely to be obese but not overweight than those without vision impairment. However, nutritional status was not examined in this study. More information is needed about the association between nutrition and vision impairment.

Older persons in institutionalized settings are at particular risk for malnutrition (Guigoz, 2006). When older persons' nutritional status has been compared in different living or care settings, nutritional status has been found to deteriorate as dependence, dementia and care needs grow (Guigoz, 2006). Malnutrition has been most common among long-term care residents and rarest among community-dwelling older persons (Guigoz, 2006; Soini, Suominen, Muurinen, Strandberg, & Pitkälä, 2011). We hypothesize that people with vision impairment are a special group with dependency that might be at risk for malnutrition. However, this group has not been studied in detail.

The aim of this study is to examine the association of vision impairment with nutritional status and other factors among older residents in assisted living facilities. This is a part of a larger study, where the objective was to assess the nutritional status of older residents in assisted living facilities.

2. Materials and methods

This cross-sectional study assessed nutritional, functional and health status, oral symptoms, nutritional care, psychological wellbeing (PWB), and demographics of all residents aged 65+ years living permanently in assisted living facilities ($N = 69$) in the Finnish cities of Helsinki and Espoo in March 2007.

Of all the residents ($N = 2214$), 5% ($N = 111$) were in temporary respite care. Among those living permanently in service houses ($N = 2103$), the informed consent could not be obtained from 628. The non-responders were persons unable to give informed consent because of dementia and not having a close proxy or they refused. Thus, the response rate of those living permanently in service houses ($n = 1475$) was 70%.

In each ward, trained nurses who knew the residents well carried out the assessments and interviews by a structured questionnaire, and retrieved information from medical records (demographics, diagnoses, weight and height). These nurses took part in educational sessions before the study period.

Residents' vision was assessed by a question "Is the resident's vision good enough for reading regular print" (yes/no) (with or without glasses). Those responding "no" were defined as visually impaired.

The MNA (Vellas, Guigoz, & Garry, 1997) was used in assessing the residents' nutritional status (0–30 points). A score less than 17 points indicates malnutrition, 17–23.5 a risk for malnutrition, and more than 23.5 points indicates a good nutritional status (Guigoz, Lauque, & Vellas, 2002). BMI was also calculated by dividing resident's weight by the square of height in meters.

Residents' functional status included dependence on the activities of daily living (ADL) and residents' ability to move outside. Dependence on ADL was assessed by the Clinical Dementia Rating (CDR) (Hughes, Berg, Danziger, Coben, & Martin, 1982) "Personal care". CDR class < 1 ("fully capable to take care of him-/herself") was defined as independence on ADL. Resident's ability to move outside was assessed by a question: "Is the resident able to move outside" (yes/no, needs a stick or a walker/no, needs help from another person/no, cannot walk). Those responding "yes" were categorized as able to move outside without devices or assistance.

In assessing residents' health status, medical records were used in retrieving medical diagnoses. Comorbidity was computed for each resident using Charlson's comorbidity index (Charlson, Pompei, Ales, & MacKenzie, 1987). Charlson's comorbidity index is a weighted index that takes into account the number and the seriousness of a resident's comorbid diseases. Residents' subjective health was inquired by a question "How do you rate your current health status", (healthy/quite healthy/unhealthy/very unhealthy). Those responding healthy and quite healthy were categorized as having "good subjective health".

PWB was assessed by 6 questions: (1) "Are you satisfied with your life?" (yes/no), (2) "Do you have zest for life?" (yes/no), (3) "Do you have plans for the future?" (yes/no), (4) "Do you feel needed?" (yes/no), (5) "Do you feel depressed?" (seldom or never/sometimes/often or always) and (6) "Do you suffer from loneliness?" (seldom or never/sometimes/often or always). A PWB score has been created from these questions, where each question represented 0 ("no" in questions 1–4, "often or always" in questions 5 or 6), 0.5 ("sometimes" in questions 5 or 6) or 1 ("yes" in questions 1–4, "seldom or never" in questions 5 or 6) point. The PWB score was created by dividing the total points by the number of questions the participant had answered. Thus, score 1 represents the best and 0 the poorest PWB (Routasalo, Tilvis, Kautiainen, & Pitkala, 2009.)

Nutritional care during the past three months was assessed by questions: "Does the resident eat snacks between meals?" (yes/no) and "Does the resident receive nutritional supplements?" (yes/no). Oral symptoms were examined by asking the residents if he/she has chewing problems (yes/no).

Mortality was retrieved from central registers in July 7, 2010.

The local ethics committee of Helsinki University Hospital approved the study. An informed consent was acquired from all participants.

The data were analyzed by NCSS statistical programme. Associations between dependent and independent variables were analyzed by X^2-test for categorical variables and by the Mann–Whitney U-test for non-normally distributed continuous variables. Logistic regression analysis with age, gender, chewing problems and dementia as covariates was used to determine whether vision impairment independently predicted malnutrition (MNA < 17 points). p-Values ≤0.05 were considered statistically significant.

3. Results

Residents' mean age was 83 years and 78% were females. Of the residents, 17.5% ($N = 245$) had vision impairment. Those with vision impairment were older, more often females, and suffered more often from malnutrition according to MNA than those without vision impairment (26.1% vs. 10.3%). They had lower BMI, and they had more often chewing problems, dementia, and dependence in ADL than those without. They also had poorer PWB and subjective health than those without vision impairment. Vision impairment was not associated with other comorbidities