ELSEVIER

Alzheimer's & Dementia: Diagnosis, Assessment & Disease Monitoring 1 (2015) 179-186

Alzheimer's & Dementia

Subjective memory impairment: No suitable criteria for case-finding of dementia in primary care

Tilly Eichler[a,*,1], Jochen René Thyrian[a,1], Johannes Hertel[a,b], Diana Wucherer[a], Bernhard Michalowsky[a], Katinka Reiner[a], Adina Dreier[c], Ingo Kilimann[d], Stefan Teipel[d,e], Wolfgang Hoffmann[a,c]

[a]*German Center for Neurodegenerative Diseases (DZNE), Greifswald, Germany*
[b]*Department of Psychiatry and Psychotherapy, University Medicine Greifswald, Greifswald, Germany*
[c]*Department of Epidemiology of Health Care and Community Health, Institute for Community Medicine, University Medicine Greifswald, Greifswald, Germany*
[d]*German Center for Neurodegenerative Diseases (DZNE), Rostock, Germany*
[e]*Department of Psychosomatic Medicine, Rostock University Medical Center, Rostock, Germany*

Abstract

Introduction: Subjective memory impairment (SMI) might be used for the case-finding of dementia. Present analyses aim to determine the diagnostic value and the predictive ability of SMI and related worries for the discrimination of patients screened positive or negative for dementia.

Methods: The analyses are based on data derived from the ongoing German general practioner (GP)-based, randomized controlled trial DelpHi-MV. A total of 5106 patients (age $\geq$ 70, living at home) were first asked for SMI and related worries and then screened for dementia in 110 participating GP practices (November 2011 to August 2014; preliminary data) using the DemTect.

Results: A total number of 2556 patients (50%) stated that they experience SMI and 892 patients (17%) screened positive for dementia. The sensitivity of SMI for the correct classification of positively screened patients was 54%, the positive predictive value (PPV) 19%. The specificity of SMI was 51%; the negative predictive value (NPV) 84%. Among 2480 patients with SMI, 45% reported SMI-related worries (sensitivity 52%; specificity 57%; PPV 22%; NPV 84%). Receiver operating characteristics analyses showed no statistically significant improvement in the area under the curves when using SMI or related worries as predictors (additional to age and sex) for the discrimination between positively and negatively screened patients.

Discussion: The analyses showed that the risk of overlooking cognitive impairment in the subgroup of patients who state that they do not experience SMI would be unreasonable high. Thus, the results provide clear evidence that neither SMI nor related worries can be used as a valid criteria to decide whether an elderly primary care patient should be tested for dementia.

Trials registration: ClinicalTrials.gov Identifier: NCT01401582.

Keywords: Subjective memory impairment (SMI); SMI-related worries; Dementia; Screening; Case-finding; Diagnostic value; Predictive ability; Sensitivity and specificity; Primary care; DelpHi-trial

1. Introduction

The timely recognition of dementia is the prerequisite for adequate information, treatment, and care. Nevertheless, dementia is known to be considerably underdiagnosed; even in high-income countries with advanced medical care systems about 50% to 80% of people with

[1]Equal contributors.

*Corresponding author. Tel.: +49-3834-867591; Fax: +49-3834-8619551.

E-mail address: tilly.eichler@dzne.de

http://dx.doi.org/10.1016/j.dadm.2015.02.004

dementia (PWD) are not formally diagnosed [1,2]. There are approaches to improve the recognition of dementia, such as the proactive "dementia case finding scheme" that was initiated by the government of the United Kingdom [3] or the "Annual Wellness Visit" for Medicare enrollees in the United States which includes the detection of any cognitive impairment [4]. However, the best practice for the identification of dementia in primary care has not yet been established. Previous studies showed that the use of structured screening instruments improves the identification of cognitive impairment in primary care and that the screening for dementia increases diagnosis rates [5–7]. Nevertheless, routine screening is controversially discussed and not recommended in respective dementia guidelines because there is still a lack of evidence that patients benefit from it [8–12]. Arguments against routine screening include the risk of receiving a false-positive diagnosis of dementia after a positive screening outcome; the cause of anxiety or depression among positively screened subjects; unnecessary examinations and treatments; the diversion of resources that would better be used to care for real dementia cases; or the danger that older patients will avoid visiting their general practitioner (GP) because they fear to be diagnosed with dementia [13–16]. Therefore, routine screening of asymptomatic patients is not seen as the favorable solution to improve the recognition of patients with dementia in primary care. It has been suggested that the case-finding of dementia should focus on patients presenting with cognitive complaints [14,15].

Subjective memory impairment (SMI) may represent the first symptomatic manifestation of Alzheimer's disease and SMI and related worries have been identified as risk factors for the incidence of dementia in people without objective cognitive impairment [17–19]. However, the diagnostic value of self-reported cognitive impairment for prevalent dementia seems to be limited for several reasons: SMI is associated with depression [20–22]; cognitively healthy older persons frequently complain about memory impairment [23,24]; and PWD are often not aware of their memory problems [25,26].

Mitchell [27] conducted a meta-analysis of the diagnostic value of subjective memory complaints for manifest dementia in community samples with a low prevalence of dementia and found a positive predictive value (PPV) of 19% and a negative predictive value (NPV) of 94%. Mitchell concludes that the absence of subjective memory complaints may be a reasonable method of excluding dementia and could be incorporated into short screening programs in settings with low prevalence of dementia. However, to our knowledge this assumption has not yet been validated in clinical settings. This study aims to determine whether self-reported SMI or SMI-related worries could be used as a valid criteria to decide if an elderly primary care patient should be screened for dementia.

Therefore, we want to determine (1) the diagnostic value and (2) the predictive ability of self-reported SMI and related worries for the discrimination of patients with and without cognitive impairment (i.e. patients screened positive and negative for dementia).

2. Methods

2.1. Study design

The present cross-sectional analyses are based on data derived from the ongoing German GP-based, randomized, controlled intervention trial DelpHi-MV (dementia: life- and person-centered help in Mecklenburg, Western Pomerania). The details of the study are described elsewhere [28–30]. The eligible patients ($\geq$70 years, living at home) in participating GP practices are asked by the GP or the assistant whether they experience SMI and if so, whether they worry about their SMI. After the patients answered these questions they are screened for dementia using DemTect [31], which is a widely used dementia screening test in GP practices in Germany [32]. The DemTect score$<$9 is the inclusion criteria for the DelpHi-trial. Present analyses are based on the larger pool of patients tested for eligibility of the clinical trial. The patients who meet the inclusion criteria for DelpHi-MV are informed by their GPs about the study, invited to participate, and asked to provide written informed consent. When the patient is unable to give a written informed consent, his or her legal representative is asked to sign the consent form on his or her behalf (as approved by the Ethical Committee of the Chamber of Physicians of Mecklenburg, Western Pomerania, registry number BB 20/11). To compensate for their additional effort, study physicians receive an allowance for each screening (10€ per patient) and an additional allowance for the inclusion of patients in the trial (100€ per patient).

2.2. Study population

Of 5511 eligible patients (age $\geq$70 years, living at home) screened for dementia in 110 participating GP practices (November 2011 to August 2014) we included 5106 patients with complete data regarding age, sex, DemTect-score, and self-reported SMI into the analyses. A total of 406 patients were excluded of the analyses because of missing data in the variables sex (n = 16) and SMI (n = 389). For the analysis of SMI-related worries we included 2480 patients who reported the presence of SMI and responded to the question for SMI-related worries.

2.3. Procedures and instruments

For sample description we analyzed age, sex, DemTect-score, self-reported SMI, and related worries. DemTect [31] is a personal interview-based instrument that includes five tasks (recall of word list, number transcoding task,