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Hospital admissions, outpatient visits and healthcare costs of community-dwellers with Alzheimer's disease

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Abstract

Background: Detailed data on the health care service use of people with Alzheimer's disease (AD) are scarce.

Methods: We assessed the health care service use of all community-dwelling persons with clinically verified AD diagnosis, residing in Finland on December 31, 2005 (n = 27,948) in comparison to matched cohort without AD. Hospitalization data during 2006–2009 were extracted from the National Hospital Discharge Register.

Results: Comorbidity-adjusted incidence rate ratios; IRR (95% CI) were 1.25 (1.22–1.28) for inpatient admissions and 0.72 (0.68–0.77) for outpatient visits. People with AD had more general health care admissions (IRR, 95%CI 1.73, 1.67–1.80) but less admissions to specialty units 0.82 (0.79–0.85) than the non-AD group, with psychiatry being the only specialty with more admissions in the AD group. People with AD had 16 more hospital days/person-year.

Conclusions: It would be important to assess whether inpatient hospitalizations of AD patients could be decreased by better targeting of outpatient services and whether other conditions are underdiagnosed or undertreated among persons with AD.

Keywords: Alzheimer's disease; Cohort studies; Health services; Healthcare costs; Hospitalization

1. Introduction

Previous, mainly claims-based retrospective studies from the US have reported that people with dementia or Alzheimer's disease (AD; the most common form of dementia) have more hospitalizations than general aged population [1–5], leading to higher health care costs in this group [3,4]. Two recent studies found that persons with AD had more potentially avoidable hospitalizations than those with no AD [5,6]. Smaller cohort studies have reported lower admission rates to outpatient services [3], higher emergency admission rate [7], and higher hospitalization rate [5], partially because of higher admission rate due to infections [5,8]. In a small prospective study, majority of the emergency admissions among AD patients were due to behavioral problems and falls [9]. These studies have consistently shown that dementia is related to the increased risk of hospitalizations, and that some of the hospitalizations may be avoidable by better care management. However, detailed data on the possible differences in health care service use from large study populations of community-dwelling people are scarce and majority of the previous studies have been restricted to members of a particular insurance scheme, possibly limiting their generalizability.

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Competing Interests: None.

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Our aim was to investigate how the health care service use of community-dwelling persons with Alzheimer's disease differed from matched aged population without AD. More detailed aims were to assess the number of inpatient admissions and outpatient visits, number of hospital days, differences in general vs. special health care service utilization, and health care costs during 2006–2009 in a cohort including all 28,093 community-dwelling persons with AD who were alive on December 31, 2005.

2. Methods

2.1. Study cohort

The Medication and Alzheimer's Disease 2005 study is an exposure-matched cohort including all community-dwelling persons with a clinically verified diagnosis of Alzheimer's disease residing in Finland on 31 December 2005 (n = 28,093) and a single age-, sex-, and region of residence-matched comparison person for each individual with AD, leading to sample size of 56,186 [10]. The age range of the cohort was 42–101 years (mean 79.9 (SD 6.8) years) and 38,086 (67.8%) of the sample were women. Persons with AD were identified from the Finnish Special Reimbursement Register maintained by the Social Insurance Institution of Finland (SII). The Special Reimbursement Register contains records of all persons who are eligible for higher reimbursement due to certain chronic diseases, such as AD. This special reimbursement covers only the medication costs but not the use of health care or social services. To be eligible for reimbursement, the disease must be diagnosed according to specific criterion and diagnosis statement must be submitted to the SII by a physician. The comparison persons were identified from the register that contains all residents of Finland who are entitled to benefits by the SII, i.e. all citizens and residents living in Finland for at least 2 years. The formation of the study cohort is shown in Fig. 1. Altogether 145 comparison persons had been temporarily entitled to special reimbursement to AD medication before 2005 and thus these persons, together with their matched pairs were excluded from the analyses, leaving 27,948 matched pairs. Altogether 2015 comparison persons converted to AD during the 4-year follow-up and 18,257 participants died during the follow-up.

2.2. Finnish public health care system

Health care, provided by municipalities, is organized according to a national framework, set by Ministry of Social Affairs and Health. Finland is divided into five catchment areas (Helsinki, Kuopio, Oulu, Tampere, and Turku) for the provision of specialized level medical care. These catchment areas manage the common, centralized duties of the municipalities and social welfare and health care regions. All citizens/residents are covered by tax-supported public health service and have unrestricted access to health services, independent of socioeconomic status.

Each resident of Finland is assigned a unique social security number which was used to track prescription drug purchases and link the prescription data to national registers of hospital discharges and mortality from 2006 to 2009. Linking was performed by SII and all data were de-identified before submission to the research team. Ethics committee approval or informed consent were not required

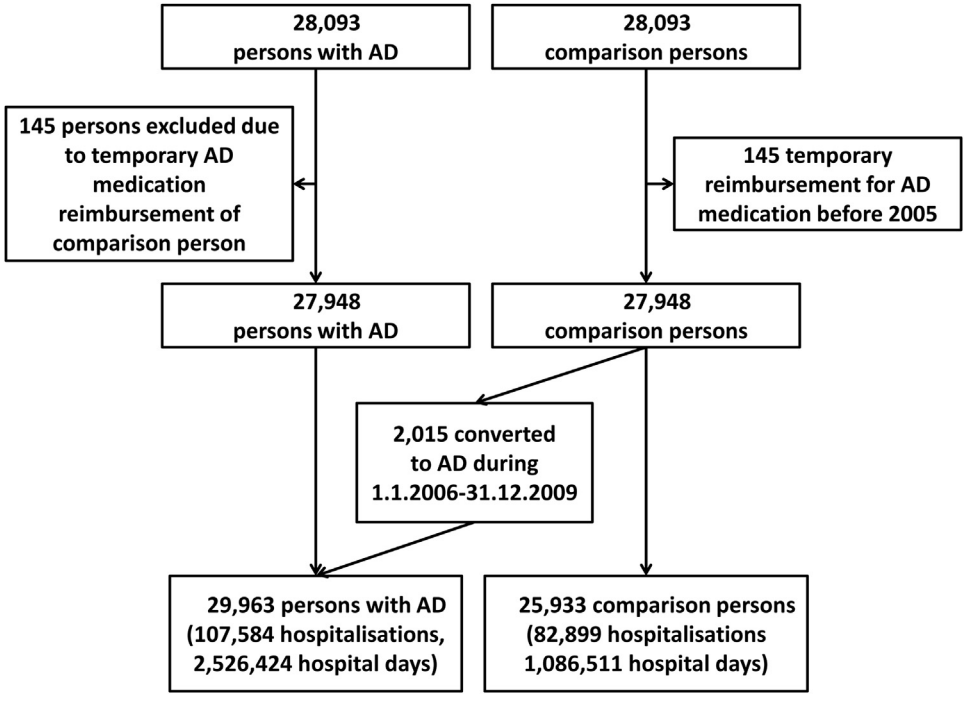

Fig. 1. Formation of the study cohort.