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## **ORIGINAL ARTICLE**

# Disease prevalence based on older people's self-reports increased, but patient—general practitioner agreement remained stable, 1992—2009

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#### **Abstract**

**Objectives:** Previous studies revealed increases in the prevalence of chronic diseases in older people in most countries. This study investigated if a changed inclination to report diseases underlies these increases, by comparing the agreement between self-reports and general practitioner (GP) records of chronic diseases between 1992–1993 and 2008–2009.

**Study Design and Settings:** Cross-sectional analyses were performed on data from two waves of the Longitudinal Aging Study Amsterdam. Data from older adults aged 60-85 years came from 1992-1993 (N=1,896) and from the same age group in 2008-2009 (N=1,086). We compared respondent (R) and GP records of lung disease, cardiac disease, peripheral arterial disease, stroke, diabetes, arthritis, and cancer. Multilevel regression models were applied to examine (change in) predictors of over-reporting (R+, GP-) and under-reporting (R-, GP+).

**Results:** Over-reporting of chronic diseases became significantly more common over time, whereas under-reporting became less common. Agreement and change in agreement differed across the specific diseases. Under-reporting was associated with male gender; over-reporting with female gender, worse self-rated health, and worse physical functioning. Older adults were less accurate in their self-reports than younger adults.

Conclusion: Trends in self-reported chronic diseases may be influenced by changes in reporting behavior, and future studies should take this possibility into account. © 2014 Elsevier Inc. All rights reserved.

Keywords: Trends; Chronic disease; Health surveys; Prevalence; Aged; General practice

#### 1. Introduction

Studies among older people have shown an increased prevalence of most chronic diseases over the last decades in Western countries, including The Netherlands [1–4]. Tentative explanations that are offered for these increases include improved medical care resulting in earlier diagnosis

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and increased survival among people with chronic diseases [1,5].

Most studies have relied on self-reported data on chronic conditions. A changed inclination of people to report diseases may therefore partly underlie increases in their prevalence [3,5]. In The Netherlands, several developments [6] may have influenced the extent to which older patients are inclined to report chronic conditions: Recent cohorts of older patients may be more informed about their diagnoses than earlier cohorts because of their higher educational level and assertiveness. Awareness of some chronic diseases may have increased because of intensive chronic care management programs, the use of other sources of health information (eg, the Internet [7]), and campaigns aiming

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#### What is new?

- This study compared the agreement between selfreports and general practitioner (GP) records of chronic diseases in 1992 and 2009.
- Results showed that over-reporting of chronic diseases (GP-, R+) became significantly more common, whereas under-reporting (GP+, R-) became less common over time. Agreement and change in agreement varied across the specific diseases.
- There have been no studies that examined the extent to which older people in recent decades have become more aware of their chronic diseases and how this may influence trends in self-reported chronic diseases.
- Self-reports of chronic diseases by older people are fairly accurate, but, relative to GP records, respondent's inclination to report chronic diseases may change over time. Researchers who use selfreports of chronic diseases to measure trends in health should be aware of this possibility.

at improving information provision by general practitioners (GPs) [6]. Owing to increased awareness, the chance that people under-report their diseases may become lower, resulting in more reliable self-reports. On the other hand, false-positive reports of chronic diseases may increase, which would negatively influence their reliability.

The Dutch health care system is primary care based [8], and consequently a changed likelihood of reporting chronic diseases can best be studied by comparing self-reports to GP diagnoses. Patients are obligatory listed with a GP and can only consult a medical specialist if they are referred to one by their GP. In turn, the GPs always receive all relevant medical information about their patients in specialist care.

Insight into changes in reporting behavior might improve the interpretation of trends in chronic diseases. This study investigated whether the agreement of self-reported chronic diseases with GP-recorded chronic diseases increased between 1992—1993 and 2008—2009 in Dutch older people. Additionally, in both periods, we investigated predictors of (dis)agreement on the presence or absence of chronic diseases between respondents and GPs.

#### 2. Materials and methods

#### 2.1. Study sample

Analyses were conducted using data from the Longitudinal Aging Study Amsterdam (LASA) [9]. In 1992, a random sample of older adults was drawn from the

population registries of 11 municipalities in three geographical regions in The Netherlands (aged 55–85 years; N=3,107; cooperation rate 62%). Respondents were examined in their homes by trained and supervised interviewers in 1995–1996, 1998–1999, 2002–2003, 2005–2006, and 2008–2009. In 2002, a new cohort was included (aged 55–65; N=1,002; cooperation rate 62%). The Medical Ethics Committee of the VU University Medical Center approved the LASA study, and informed consent was obtained from all respondents.

In 1995, 2000, 2005, and 2010, all the GPs of respondents who participated in the preceding LASA wave and who had given written informed consent to obtain additional medical information (>95% in both waves) were asked to fill in a questionnaire for each respondent.

For the present study, data from the first (1992–1993) and the most recently completed wave (2008-2009) were compared with GP data obtained in 1995 and 2010, respectively. In 1995, of 447 GPs, 360 (80.5%) returned completed questionnaires on 2,437 patients (82.3% of those who gave informed consent). In 2010, of the 561 GPs, 368 (65.6%) returned completed questionnaires on 1,444 patients (70.2% of those who gave informed consent). From these 1,444 patients, 191 participated for the last time in the wave 2005-2006. These respondents were excluded because any self-reported morbidity information at wave 2008–2009 was missing from them. The final study sample comprised 1,896 respondents in 1992-1993 and 1,086 respondents in 2008–2009. A minority of respondents (N = 234) were included in both waves. The age range available in both waves was 61-85 years. We excluded respondents not living in the community (N = 73) in 1992–1993; N = 13 in 2008–2009) because primary care in residential or nursing homes in The Netherlands is not comparable with the standard general practice care. Those without data on self-reported or GP-recorded diseases were also excluded (N = 15 in 1992–1993; N = 31 in 2008– 2009).

#### 2.2. Measurement of chronic diseases

Respondents were asked if they suffered from chronic nonspecific lung disease (CNSLD; including asthma, bronchitis, and pulmonary emphysema), cardiac disease, peripheral arterial disease (PAD; "Do you suffer from a disease or abnormalities of the arteries or blood-vessels in your belly or legs?"), stroke, diabetes mellitus, arthritis (osteoarthritis and rheumatoid arthritis), or cancer. Response options for each disease were "yes" or "no." The GP questionnaires included a list with chronic diseases, with some diseases asked more specifically: CNSLD was coded "yes" if either chronic obstructive pulmonary disease (COPD) or asthma was reported present. Cardiac disease was coded "yes" if any of angina pectoris, myocardial infarcts, congestive heart failure, or cardiac arrhythmias were reported to be diagnosed. The GPs were also asked for the year in which

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