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Agreement between patient interview data on prescription medication use and pharmacy records in those aged older than 50 years varied by therapeutic group and reporting of indicated health conditions

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Abstract

Objectives: To estimate the agreement between interview-ascertained medication use and pharmacy records among the population aged older than 50 years, and to identify patient-level predictors of discordance.

Study Design and Setting: The Irish Longitudinal study on Ageing is representative of community-dwelling adults aged 50 years and older in Ireland. Interview-ascertained medication data from 2,621 participants were linked to pharmacy dispensing records. The kappa statistics measured the agreement between the two sources for 19 therapeutic classes. Logistic regression assessed the effect of patient-level characteristics on survey under- and overreporting of regularly dispensed medications.

Results: Agreement was good or very good ($\kappa = 0.64$−0.86) for 15 medication classes, and moderate or poor for antiinflammatory and antirheumatic products ($\kappa = 0.54$), analgesics ($\kappa = 0.50$), psycholeptics ($\kappa = 0.59$), and ophthalmologicals ($\kappa = 0.37$). Not reporting an indicated health condition, less frequent dispensing, older age, and more medications regularly dispensed were associated with survey underreporting, but results varied by therapeutic class. Memory and cognition were not associated with discordance.

Conclusion: Ascertaining medication use via patient interview seems a valid method for most medication classes and also captures nonprescription and supplement use. However, medications applied topically and as needed may be underreported. The source of medication data should be carefully considered when performing pharmacoepidemiological studies.

Keywords: Medicines; Indication; Agreement; Pharmacoepidemiology; Interview; Aged

1. Introduction

Pharmacoepidemiological studies require reliable and valid ascertainment of medication use. Misclassification can bias risk estimates of medication use either toward or away from the null [1], that is, either under- or overestimate the true medication effects.

Pharmacy dispensing records and self-report data are often used to obtain information on medication use. Pharmacy records are potentially recorded more accurately, but may not represent actual use or be available for the population. Self-report (via a self-completed questionnaire [SCQ], telephone interview, or face-to-face interview) provides information on medicines actually used as well as nonprescription use. This can be supplemented by a medication inventory, whereby all medication packages are presented to interviewers, reducing any recall problems. Comparison between pharmacy records and self-reported data is essential for improved understanding of the relative merits of each and the extent of potential misclassification of medication use in pharmacoepidemiological studies. Few studies have investigated the agreement between pharmacy records and self-report in older populations [2−4]. For cardiovascular medications, only the Rotterdam Elderly Study has examined predictors of discordance, and found that neither age, sex, education nor socioeconomic status were associated [2].

These and other studies in the general population report mostly good agreement between self-report and pharmacy

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What is new?

- Ascertaining medication use via patient interview is valid in those aged older than 50 years; however, medications used topically or as needed and psycholeptics may be underreported.
- Reporting of regularly dispensed medications varied according to whether an indicated health condition was reported, and for some classes, dispensing frequency, number of medications, and age.
- Sex, marital status, cognitive function, memory, and mental health did not affect reporting.
- Studies planning to ascertain medication use should carefully consider questionnaire design and interviewer training to better record underreported classes including those with social stigma.
- When performing pharmacoepidemiological analyses, the source of medication data should be adequately considered taking into account the therapeutic classes studied.

records, but agreement has varied significantly by therapeutic group, with less agreement for medications taken topically, as needed, or for shorter periods [3,5,6]. Studies in various settings report worse recall for those who are older [7−10], unmarried [7], and with less education [7,11]. Yet, medication recall often does not vary by gender [2,7−9,11] or income [10]. Despite the potential importance of memory and cognition in recall ability, few studies have examined these and find mixed results [12−14].

We compared the agreement between in-home interview and pharmacy data on prescription medications used regularly within a population-based study of aging in Ireland. Commonly used classes of medications were selected for comparison. Patient-level predictors of discordance were examined, including demographic factors previously reported on, as well conducting the most thorough examination to date of the role of cognitive function and mental health.

2. Methods

2.1. Study population

Data were retrieved from The Irish Longitudinal study on Ageing (TILDA), which is representative of the community-dwelling adults aged older than 50 years in Ireland. In its first wave undertaken from 2009 to 2011, TILDA recruited 8,175 individuals with each participant undergoing an extensive in-home face-to-face interview, and being invited to complete a SCQ and attend a health assessment. Households were selected from a stratified clustered sample of Irish residential addresses resulting in an overall response rate of 62.0%. A description of the sample and preliminary findings are available elsewhere [15].

In Ireland, the medical card scheme provides free general practitioner and hospital visits and prescription medications at minimal cost to approximately 40% of the population (approximately 1.7 million). Medical cards are available to those aged younger than 70 years with low incomes or for whom medical expenses would cause undue hardship. For those aged older than 70 years, the income threshold is higher resulting in most being eligible.

TILDA participants reporting medical card scheme coverage ($n = 3,975$) were asked for consent to link their medical records and to provide their unique medical card number ($n = 2,862$) to allow linkage. TILDA was approved by the Faculty of Health Sciences Research Ethics Committee of Trinity College Dublin, and participants provided written informed consent before participation in the study. Participants with dementia or with a cognitive impairment severe enough to prevent being able to personally consent to the study (determined at the discretion of the interviewer) were not included in the study.

2.1.1. Self-reported medication data

Interviewers asked participants in their homes "to record all medications that you take on a regular basis, like every day or every week," and to provide medication packages to copy down the correct medication names. Assistance from relatives was permitted. Medications were assigned World Health Organization (WHO) Anatomic Therapeutic Chemical (ATC) Classification codes [16]. An experienced pharmacist (J.P.) coded each medication as likely prescribed or not based on the proprietary name. Medications included in this analysis were those likely prescribed.

2.1.2. Self-reported health data

Within the home interview, the number of doctor-diagnosed chronic diseases (categorized as 0, 1, 2, or >2) were reported from the following: heart disease, cataracts, hypertension, high cholesterol, stroke, diabetes, lung disease, asthma, arthritis, osteoporosis, cancer, Parkinson's disease, peptic ulcer, or hip fracture. Participants also self-reported pain (moderate or severe), urinary incontinence in the past 12 months, and sleep problems (trouble falling asleep most of the time). We examined whether participants reported one of the main indicated health condition(s) in the survey for each therapeutic group they were regularly dispensed.

Depression was defined as scoring 16 or greater on the Center for Epidemiologic Studies Depression Scale during the interview [17]. Anxiety was defined as scoring eight or greater on the Hospital Anxiety and Depression Scale—Anxiety subscale within the SCQ [18]. Poor delayed recall was defined as recalling 3 or fewer words from the 10