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Prescription errors in older individuals with an intellectual disability: Prevalence and risk factors in the Healthy Ageing and Intellectual Disability Study

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ABSTRACT

Prescribing pharmacotherapy for older individuals with an intellectual disability (ID) is a complex process, possibly leading to an increased risk of prescription errors. The objectives of this study were (1) to determine the prevalence of older individuals with an intellectual disability with at least one prescription error and (2) to identify potential risk factors for these prescription errors (age, gender, body mass index (BMI), frailty index, level of intellectual disability and living situation). The study population consisted of 600 older (≥50 years) individuals with an ID using one or more drugs who were randomly selected from the study cohort of the Healthy Ageing and Intellectual Disability (HA-ID) Study. The medication used at the time of measurement was screened for errors by a hospital pharmacist/clinical pharmacologist and a Master's student pharmacy using consensus methodology. Participants with one or more prescription errors were compared to participants without prescription errors by multivariate logistic regression to identify potential risk factors. The prevalence of individuals with one or more prescription errors was 47.5% (285 of 600 individuals; 95% confidence interval (CI) 43–52%). Relevant errors, defined as errors that actually do require a change of pharmacotherapy, were identified in 26.8% of the individuals (161 of 600 individuals; 95% CI 23–30%). Higher age (adjusted odds ratio (OR_{adj}) 1.03; 95% CI 1.01–1.06), less severe intellectual disability (moderate: OR_{adj} 0.48; 95% CI 0.31–0.74 and severe: OR_{adj} 0.56; 95% CI 0.32–0.98), higher BMI (OR_{adj} 1.04; 95% CI 1.01–1.08), higher frailty index (0.39–0.54: OR_{adj} 2.4; 95% CI 1.21–4.77 and ≥0.55: OR_{adj} 3.4; 95% CI 1.03–11.02), polypharmacy (OR_{adj} 8.06; 95% CI 5.59–11.62) and use of medicines acting on the central nervous system (OR_{adj} 3.34; 95% CI 2.35–4.73) were independently associated with the occurrence of prescription errors. Interventions targeted to high risk patients should be designed and implemented to improve pharmacotherapy in older individuals with an intellectual disability.

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1. Introduction

Inappropriate prescribing of pharmacotherapy occurs in about 20–40% of older individuals in the general population (Stafford, Alswayan, & Tenni, 2011; van der Hooft et al., 2005; Zaveri, Mansuri, & Patel, 2010). Polypharmacy, i.e. concomitant use of five or more drugs, is also very common among these older people (Heuberger & Caudell, 2011; Stafford et al., 2011) and has been identified as a risk factor for the occurrence of prescription errors (Stafford et al., 2011).

The life expectancy of older individuals with an intellectual disability (ID) is increasing and age-related frailty seems to start at a younger age (Evenhuis, Hermans, Hilgenkamp, Bastiaanse, & Echteld, 2012). As a result, polypharmacy is very common among individuals with an intellectual disability aged 50 years and older. For example, antipsychotics, that have been associated with inappropriate prescriptions in older individuals in general (Stafford et al., 2011), are frequently used by individuals with an ID to treat psychiatric diseases and behavioural problems (de Kuijper et al., 2010). Additionally, chronic somatic diseases, such as epilepsy (Beavis, Kerr, & Marson, 2007) and gastro-esophageal reflux disease (Bohmer, Klinkenberg-Knol, Niezen-de Boer, & Meuwissen, 2000), frequently require pharmacotherapy. Other factors that may increase the complexity of prescribing drugs to older individuals with an ID are the often atypical symptoms of disease (Stolker, Koedoot, Heerdink, Leufkens, & Nolen, 2002); the impaired ability to communicate about disease and effectiveness of pharmacotherapy (Stolker et al., 2002); and the limited evidence for treatment of mental and behavioural problems with psychotropic drugs (Ulzen & Powers, 2008).

As a result, older individuals with an ID may be especially at risk of prescription errors. However, the prevalence of prescription errors and risk factors for such errors have not been established in this population. Therefore, the objectives of this study were (1) to determine the prevalence of older individuals with an intellectual disability with at least one prescription error and (2) to identify potential risk factors for these prescription errors.

2. Methods

2.1. Design

A cross-sectional study was performed to determine the prevalence of older individuals with an intellectual disability with at least one prescription error and to identify potential risk factors for these errors.

2.2. Setting and study population

The included research population in this study consisted of older individuals with an ID using one or more medicines who participated in the study titled "Healthy Ageing and Intellectual Disability" (HA-ID) (Hilgenkamp et al., 2011).

The cohort from the Erasmus MC HA-ID study (Hilgenkamp et al., 2011) consists of 1050 clients with an ID, defined as an intelligence quotient of 70 and lower, aged 50 years and older, from three Dutch care organizations (Abrona, Huis ter Heide; Ipse de Bruggen, Zwammerdam; Amarant, Tilburg). The included population varies in ID level, living situation, mobility and level of care. The population in the HA-ID study is considered representative for the total population of older individuals with an ID using formal ID services in the Netherlands (Hilgenkamp et al., 2011).

For the current study 187 individuals with prescription errors and 187 controls were necessary to be able to detect odds ratios of at least 2, with alpha = 0.05 and power = 0.8. To obtain these numbers 600 individuals were randomly selected from the HA-ID cohort.

Since this study did not affect patient integrity, a waiver from the Medical Ethics Committee was obtained.

2.3. Data collection

The cross-sectional data of the HA-ID study were collected between March 2009 and March 2010. Participant characteristics (gender, age, level of intellectual disability, body mass index (BMI), living situation), medical data on co-morbidities and actual medication orders were obtained from the care-providing organizations and the responsible physician (i.e. a general practitioner or a specialized physician for individuals with an ID) or measured by the investigators of the HA-ID study (Hilgenkamp et al., 2011).

The frailty index indicates the increased vulnerability of an individual to adverse health outcomes. We created a frailty index for older individuals with ID based on the procedure described by Searle, Mitnitski, Gahbauer, Gill, & Rockwood (2008).

Frailty was assessed considering a list of 51 deficits, including age-related risk factors (such as falling, weight loss and hospitalization), morbidity (such as cancer, asthma/COPD, diabetes mellitus and heart failure) and disabilities (such as being unable to dress, bath or walking stairs) (Schoufour, Mitnitski, Rockwood, Evenhuis, & Echteld, 2013). The presence of these deficits was obtained from the medical records or measured by the investigators of the HA-ID study (Hilgenkamp et al., 2011). Subsequently, the frailty index was expressed as a ratio of present deficits to the total number of deficits considered (i.e. 51), resulting in a frailty index between 0 (no deficits) and 1 (all deficits are present). In the general older population aged 70 years and over a frailty index of 0–0.15 is most common (Searle, Mitnitski, Gahbauer, Gill, & Rockwood, 2008).

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