



## ORIGINAL ARTICLE

# Drug consumption and cognitive function in non-institutionalized elderly: A population-based study

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### KEYWORDS

Ageing;  
Drug consumption;  
Prevalence;  
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Central nervous  
system;  
Cognitive impairment

### Abstract

**Background:** Drug consumption in the general population is concentrated in the elderly. The aim of this study was to assess the pharmacological profile of elderly people 75 years of age and older, to assess the relationship with the cognitive function and the variables associated with drug consumption.

**Methods:** This is an epidemiological, cross-sectional, door-to-door study among the non-institutionalized population in a rural area. Participants were inhabitants aged 75 and older from the Anglès Primary Healthcare Area (Girona). Drug prescriptions were recorded from participants' medicine chest. Cognitive function was assessed using the Mini-Mental State Examination.

**Results:** A total of 875 individuals took part (82%). Participants with mild and moderate cognitive impairment consumed an average of 4.6 (SD=2.9) and 5.2 (SD=3.2) drugs, participants without cognitive impairment consumed an average of 4 (SD=2.7) drugs ( $P < 0.005$ ). In the bivariate analysis, taking into account the degree of cognitive impairment, there was a change in drugs acting on the digestive tract and metabolism ( $P=0.003$ ) and nervous system ( $P=0.001$ ). Multivariate analysis identified four variables associated with the central nervous system drugs: age, sex, comorbidity and suspicion of depression ( $P < 0.05$ ).

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$\diamond$  Appendix 1 includes a list of the researchers belonging to the FRADEGI Group.

*Conclusions:* Participants with severe cognitive impairment had a higher frequency of anti-psychotic and antidepressant drug consumption. However, the multivariate analysis shows that advanced age, female sex and suspicion of depression are variables associated with a higher central nervous system drug consumption.

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#### PALABRAS CLAVE

Envejecimiento;  
Consumo farmacológico;  
Prevalencia;  
Polifarmacia;  
Sistema nervioso;  
Deterioro cognoscitivo

#### Perfil de consumo farmacológico y función cognoscitiva en edad avanzada: estudio de población general no institucionalizada

##### Resumen

*Introducción:* El consumo de fármacos en la población general se concentra en las personas de edad avanzada. El objetivo del presente estudio fue valorar el perfil farmacológico en ancianos de 75 años y mayores, estimar la relación con la función cognoscitiva y las variables asociadas al consumo farmacológico.

*Métodos:* Estudio epidemiológico transversal y poblacional puerta a puerta de una muestra de población rural no institucionalizada representativa de los habitantes mayores de 74 años del Área Básica de Salud de Anglès (Girona). La prescripción farmacológica se registró a partir de los medicamentos presentes en el domicilio de los participantes. La función cognoscitiva se evaluó mediante el *Mini-Mental State Examination*.

*Resultados:* Participaron 875 individuos (82%). Los participantes con deterioro cognoscitivo leve y moderado consumían una media de 4,6 (DE = 2,9) y 5,2 (DE = 3,2) fármacos, superior a los 4 (DE = 2,7) fármacos de media consumidos por los que no sufrían deterioro cognoscitivo ( $p < 0,05$ ). En el análisis bivariante, según el grado de deterioro cognoscitivo existía una variación en el consumo de fármacos del aparato digestivo y metabolismo ( $p = 0,003$ ) y del sistema nervioso ( $p = 0,001$ ). El análisis multivariante identificó cuatro variables asociadas al consumo de fármacos del sistema nervioso: edad, sexo, comorbilidad y sospecha de depresión ( $p < 0,05$ ).

*Conclusiones:* Los participantes con deterioro cognoscitivo grave presentaron una mayor frecuencia de consumo de antipsicóticos y otros antidepresivos. Sin embargo, el análisis multivariante señala que son la edad avanzada, el sexo femenino y la sospecha de depresión las variables asociadas a un mayor consumo de fármacos del sistema nervioso.

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## Introduction

Demographic projections show that the population is aging and that the group of elderly people will increase throughout the present century.<sup>1</sup>

Gradual and irreversible changes take place in the structure and function of the organism during aging as a consequence of the passage of time.<sup>2</sup> This process is characterised by an increase in interindividual variability of cognitive functions. Despite this variability, adult age and cerebral aging are characterised in population studies by a certain degree of natural decline of cognitive functions.<sup>3</sup>

The phenomenon of polypharmacy is common in aging. Although there are no unified criteria to define it, from age 75 onwards, it is usually defined as the consumption of more than 5 drugs simultaneously. Under normal circumstances, aging involves a degeneration in the function of some organs, leading to changes in metabolism, distribution, and excretion of drugs.<sup>4</sup> Bearing this in mind, polypharmacy represents an increase in the probabilities of pharmaceutical

interactions and in the appearance and severity of secondary effects.<sup>5</sup> This increase in consumption of drugs by the elderly compared to other age groups is mostly due to the fact that age increases the incidence of chronic medical conditions and the probability of combining different diseases.<sup>6</sup>

One of the most common clinical manifestations in this age group is alterations of cognitive function. On a global level, more than 25 million people suffer from dementia.<sup>7</sup> Psychological and behavioural symptoms associated to cognitive deterioration appear during the evolution of this disease and have negative repercussions. Elderly individuals with cognitive deterioration have to cope with the typical manifestations of dementia, together with those of other diseases associated with aging. This situation makes this population subgroup more likely to suffer polypharmacy, drug interactions and side effects from some of the drugs.

Although some studies from other countries have revealed a higher drug consumption by the elderly than by any other age group,<sup>8</sup> there is little information in our country about

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