



Health, frailty and disability after ninety: Results of an observational study in France



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ABSTRACT

Background: In spite of their increasing demographic weight, health characteristics of the oldest old remain poorly described in epidemiological studies.

Objective: To describe the health of people aged 70 years and over included in the SIPAF study, and to compare the prevalence of health indicators including successful aging, frailty, and disability between three age groups including the oldest old.

Methods: The study population is composed of 2350 retired people recruited between 2008 and 2010, of whom 512 are aged 90 and over (21.8%). A comprehensive geriatric assessment was performed at home by trained nurses. The prevalence of health and functional indicators, as well as the distribution of people among successful ageing, frailty, and disability, were described by age group (70–79, 80–89, 90+) and sex. **Results:** Compared to their younger counterparts, people aged 90 years and over were more likely to experience functional limitations, sensory impairment, cognitive impairment, poor mood, and frailty. One third of the nonagenarians needed help in at least one basic activity of daily living and 25% met the frailty criteria. In contrast, the prevalence of most chronic diseases did not increase after ninety. Successful ageing concerned 9% of the oldest old. Women were less likely to experience successful ageing and more likely to be frail or dependent.

Conclusion: This study shows the diversity of health states in very old age and points out that one quarter of the people aged 90 and over said frail are likely to take advantage of preventive actions of disability.

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1. Introduction

Thanks to medical and social advances, life expectancy has dramatically increased during the 20th century. Whereas the increase in life expectancy was initially due to the diminution of infant and child mortality, the increase in life expectancy is now related to the increasing longevity of old people. According to the central scenario established by the French Institute for Statistics and Economic Studies, the number of centenarians could reach 200,000 by 2060, in other words 13 times the current number. The quality of life at very old age has become an important issue. The joint action on healthy life years (JA: EHLEIS) (Robine et al., 2013)

revealed that additional life years may be at the cost of some limitations. In France, life expectancy increased by 1.8 year for women and 1.6 year for men between 2005 and 2011. During the same period, disability-free life expectancy remained relatively stable (+0.3 years for women and +1.2 year for men) (*Espérance de vie en bonne santé: dernières tendances*, 2015).

Epidemiological studies focusing on the oldest old are needed to improve our knowledge of the characteristics and needs of this increasing segment of population. Such studies exist, mainly in North European countries, United Kingdom (UK), and Japan. The UK was pioneer in the description of functioning in the oldest old (Jagger, Arthur, Spiers, & Clarke, 2001; McGee, Johnson, & Kay, 1998; O'Connor, Pollitt, Brook, & Reiss, 1989; Xie, Matthews, Jagger, Bond, & Brayne, 2008). The predominance of functional indicators in early studies was counterbalanced thereafter by the use of health indicators (physical and mental illnesses) (Collerton et al., 2009; Marengoni, Winblad, Karp, & Fratiglioni, 2008). Some tried to classify the oldest old in homogeneous groups according

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to their health and/or functional status (Cevenini et al., 2013; Gondo et al., 2006; Motta et al., 2005) and others to investigate the predictors of longevity (Dupre, Liu, & Gu, 2008; Edjolo et al., 2013; Ferrer et al., 2008; Robine et al., 2012; Tiainen, Luukkaala, Hervonen, & Jylha, 2013). In order to better understand the heterogeneity of situations in old age, Rowe and Kahn suggested to distinguish and value “successful ageing” from ageing with disability or in poor health (Rowe & Kahn, 1987). In Finland, Nosraty et al. compared the prevalence of successful ageing according to different definitions (Nosraty, Sarkeala, Hervonen, & Jylha, 2012), its predictive value with regard to longevity after 90 years (Nosraty, Enroth, Raitanen, Hervonen, & Jylha, 2015), and its different components according to the oldest old themselves (Nosraty, Jylha, Raittila, & Lumme-Sandt, 2015). The concept of frailty, defined as a loss of resistance to stress, exposing the subject to an increased risk of falls, loss of autonomy and death (Bergman et al., 2007), is often considered as a state of pre-disability and can hence contribute to disentangle the heterogeneity of situations in the oldest old (Ferrer et al., 2013). All these studies, as well as additional ones (Andersen-Ranberg, Fjederholt, Madzak, Nybo, & Jeune, 2013; Arai et al., 2010; Berlau, Corrada, & Kawas, 2009; Berlau, Corrada, Peltz, & Kawas, 2012; Christensen et al., 2013; Engberg, Christensen, Andersen-Ranberg, & Jeune, 2008; Freeman, Kurosawa, Ebihara, & Kohzaki, 2010; Guay, Dubois, Corrada, Lapointe-Garant, & Kawas, 2014; Nogueira et al., 2010; van Houwelingen et al., 2014; von Strauss, Aguero-Torres, Kareholt, Winblad, & Fratiglioni, 2003; Wu et al., 2012; Zhao et al., 2010), are presented in a chronological overview of the literature about the health of the oldest old in Appendix A.

In France, there is a paucity of information about the characteristics of the oldest old. Despite numerous sources of health information (national population-based surveys, epidemiological studies, analyses of data from the health insurance system), results concerning the oldest old are rarely displayed separately from results in the old age category (Sermet, 2013). The oldest old are often a minority in study samples, because this is a small age group compared to younger age groups, and because the oldest old are less likely to participate in epidemiological studies (Dartigues, 2005).

In this context, this study aimed to analyse the characteristics of a sample of 2350 old people aged in France, among which 512 subjects were aged 90 and over. Using the information of a comprehensive geriatric assessment, the objective was to describe and compare the proportion of subjects meeting the criteria for successful aging, frailty, and disability among three age groups including the oldest old.

2. Methods

2.1. Study design and population

This work is part of a cross-sectional study carried out to characterize health and functional independence among people aged 70 and older (SIPAF study, French acronym for “Système d’Information sur la Perte d’Autonomie Fonctionnelle de la personne âgée”). Subjects were selected at random among the 2,100,000 recipients of a supplementary pension fund, AG2R La Mondiale (Paris, France). The randomization was centralized and performed by the actuary of AG2R La Mondiale. Using information about the geographic area of residence, the sampling method was designed to ensure the inclusion of participants from all regions of France excluding overseas territories, in rural as well as in urban areas. The randomization was stratified by age group in order to include a larger proportion of oldest old than expected with a simple random drawing. As a result, people aged 90 years

and over represented 21.8% of our study sample whereas they represented 5.7% of the population of France in 2009 (according to the National Institute of Statistical and Economic Information). After they had given their informed consent, participants were interviewed at home by trained nurses who collected information on health and functional abilities. The research protocol was approved by an independent ethics committee (permission n°060316).

2.2. Health assessment

Information was collected about self-rating of health, unintentional weight loss, chronic diseases, emotional status, cognitive impairment, functional abilities, sensory limitations, and physical activity.

Self-perceived health was assessed using the question “How is your health in general?”. A complementary question was asked: “How is your health compared to people of the same age as you?”. Participants were asked about unintentional weight loss (of 10% of body weight during the past 6 months). Chronic diseases were identified by reported diagnosis/symptoms/treatment during the last 12 months of 14 diseases, including asthma, allergies, diabetes, cataract, high blood pressure, heart attack, stroke/cerebral haemorrhage, chronic bronchitis/emphysema, arthrosis/(rheumatic) arthritis, osteoporosis, gastric or duodenal ulcer, malignant tumour, migraines/frequent headaches, and chronic anxiety/depression (list used by the European Commission to monitor population health). Emotional status was assessed with the self-rating of morale and the 15-item Geriatric Depression Scale (GDS15) (Yesavage et al., 1982). Cognitive impairment was defined as a Mini-Mental State Examination score of 26 or less (Folstein, Folstein, & McHugh, 1975).

Questions about sensory limitations dealt with the ability to see newspaper print clearly, the ability to see the face of someone 4 m away clearly, and the ability to hear distinctly what is said in a conversation without difficulty, optionally with corrective devices (glasses, hearing devices). Participants were also asked whether they can walk up and down stairs without difficulty, and whether they can lift a bag weighing 5 kg without difficulty. The evaluation of activity limitations examined the five activities of daily living (ADL) included in the Katz index (Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963), i.e. bathing, dressing, toileting, transferring, continence and feeding, as well as instrumental activities of daily living (IADL) (Lawton and Brody, 1969) such as food preparation, the ability to use a telephone, housework (light and heavy), shopping and the ability to manage one’s finances.

The level of physical activity was assessed with the International Physical Activity Questionnaire (IPAQ) (Hurtig-Wennlof, Hagstromer, & Olsson, 2010) and 3 levels of activity were distinguished (low, moderate and high) according to time spent walking and doing moderate (for instance, carrying light loads, leisure bicycle ride, tennis) and vigorous activity (for instance, carrying heavy loads, digging, lifting a pack of 6 bottles or speed bicycle) during the past 7 days.

2.3. Other information

In addition to age and gender, socio-demographic information included the marital status, education level (number of years at school), self-rating of economic situation, and social isolation. Social isolation was defined as having reduced contacts with family (less than once a month) or as the absence of anyone to confide in, which could give an advice in case of need or show affection.

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