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Research paper

Factors associated with successful aging in persons aged 65 to 75 years



M.-M. Dahany^a, M. Dramé^{a,b,*}, R. Mahmoudi^{a,c}, J.-L. Novella^{a,c}, D. Ciocan^c,
 L. Kanagaratnam^b, I. Morrone^{a,c}, F. Blanchard^{a,c}, P. Nazeyrollas^{a,d}, C. Barbe^{a,b}, D. Jolly^{a,b}

^a University of Reims Champagne-Ardenne, Faculty of Medicine, EA 3797, 51092 Reims, France

^b Reims Teaching Hospitals, Robert-Debré Hospital, Department of Research and Innovation, 51092 Reims, France

^c Reims Teaching Hospitals, Maison Blanche Hospital, Department of Geriatrics and Internal Medicine, 51092 Reims, France

^d Reims Teaching Hospitals, Robert-Debré Hospital, Department of Cardiology, 51092 Reims, France

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ABSTRACT

Background: We aimed to identify, among persons aged 65 to 75 years, those presenting successful aging defined with health-related quality of life, and to identify factors associated with successful aging.

Methods: The study design was a cross-sectional study based on healthcare data from 2005, from a representative sample of the French population. Our study population was comprised of subjects aged 65 to 75 who completed the Duke Health Profile (DHP). The outcome was successful ageing as defined by a score on the general health dimension of the DHP above the 75th percentile according to sex. Logistic regression was used to investigate the association between successful aging and socio-demographic, psychosocial, physical and behavioural factors.

Results: In total, 2160 were included in this analysis, average age was 70.1 ± 3.0 years. Overall, 645 (29.9%) presented good quality of life as assessed by the general health dimension, and thereby qualified as successful aging. By multivariable analysis, lower weight (OR = 2.75), regular physical activity (OR = 1.44), and the fact of having religious beliefs (OR = 1.36) were positively associated with successful aging. Conversely, psychological distress, comorbidities, and obesity negatively influenced aging. Social support, smoking status and marital status were not.

Conclusion: This study, from a representative sample of the French population, found similar variables related to successful aging as in other studies. Physical and psychological well-being, regular exercise and nutritional status are major determinants of successful aging. It is thus vitally important that healthcare policies and programmes emphasise these elements in order to promote healthy and successful aging.

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1. Introduction

On January 1, 2011, the French population was estimated at 65 million inhabitants, of which 11 million (16.8%) were aged 65 or older. Life expectancy at birth was 78 years for men and 84 for women [1]. Regardless of all the hypotheses formulated about aging in France, the fact is that the population of metropolitan France will continue to expand until at least 2050. Accordingly, in the principal scenario at the basis of estimations in the Omphale study, persons aged 65 years and older will represent 23% of the population in 2025, and 29% in 2050 [2].

These figures almost certainly reflect an improvement in Health-Related Quality of Life (HRQoL) in our society. However, the question arises of the HRQoL of these extra years gained in terms of life expectancy. From this viewpoint, the individual and group objectives are one and the same, namely to age as successfully as possible, and to delay as long as possible the onset of frailty. This had led to renewed interest in recent years in the phenomenon of successful aging, a concept that chooses to take a positive approach to aging.

Historically, the concept of successful aging has been the object of several distinct approaches, albeit without achieving a consensus as to the actual definition of the concept *per se*. For Havighurst [3], successful aging was a question of subjective quality of life (QoL), whereas for Rowe and Kahn [4], in successful aging, extrinsic factors play a neutral or positive role, distinguishing it from usual or normal aging.

Since 1960, several more or less complementary definitions have been proposed for successful aging, ranging from the most

* Corresponding author. Tel.: +33 3 26 78 44 12; fax: +33 3 26 83 25 89. Reims Teaching Hospitals, Robert-Debré Hospital, Department of Research and Innovation, Rue du Général Koenig, 51092 Reims, France.

E-mail address: mdrame@chu-reims.fr (M. Dramé).

restrictive (little or no loss in age-related physiological functions [4]), to those that even allow for the presence of chronic diseases [5]. According to Baltes and Baltes, there is no unique criterion to define successful aging [6]. As with the concept QoL, successful aging is a multidimensional concept that covers physical, biological and mental health, but also cognitive function, social engagement, productivity, personal control and satisfaction with life. However, none of these aspects individually is sufficient to define successful aging. Baltes and Baltes suggest that by using subjective and objective criteria, taking into account individual and cultural variation, a global definition of successful aging can be reached. These conceptual differences are not without consequence. Indeed, Strawbridge et al. reported, from a sample of subjects aged over 65 years, a difference of more than 30% in the rate of successful aging, depending on whether subjective satisfaction criteria (of the Havighurst type) were used, or objective performance criteria as defined by Rowe and Kahn [7].

This could explain why findings are highly heterogeneous and hotly debated, and why many reports underline the necessity of using subjective criteria to evaluate successful aging. Indeed, many older persons consider themselves to be aging successfully, even though they do not qualify as such according to Rowe and Kahn's physical criteria [8].

It appears possible to use HRQoL to evaluate successful aging with all its component factors. Indeed, the main dimensions of HRQoL cover physical, psychological and social health, and are established as subjective measures in that the most appropriate person to assess the completeness and preferences relating to different areas of their life is the individual himself. This hypothesis has already been applied in an English study among subjects aged 65 and over, which showed that using traditional cut-offs for defining successful aging were less sensitive than the use of HRQoL [8]. Other authors have chosen to evaluate successful aging based on HRQoL definitions, such as the WHOQOL-100 or the Flanagan QoL scale [9].

In this context, it appears both interesting and important to assess successful aging based on a subjective conceptual model represented by HRQoL. The information thus yielded could help to better apprehend the target population of older people, with a view to introducing effective strategies of health promotion.

This study aimed to identify, among a sample from the French population aged 65 to 75 years, those who presented "successful aging", and factors associated with successful aging.

2. Methods

This study design was a cross-sectional study based on data from the "Baromètre Santé 2005" performed in a sample of French population. The "Baromètre Santé" (health barometer) enquiry is a national telephone survey on health performed in randomly selected individuals aged 12 to 75 years. These surveys have been performed at regular intervals in selected populations since 1992 by the French health authorities. The population for our study was comprised of all individuals aged 65 to 75 who participated in the 2005 edition of the "Baromètre Santé" and in whom the Duke Health Profile was administered.

3. Study variables

The following variables were recorded. Demographic characteristics included age, sex, religion, and marital status. Social supporters or network concerned children, if any, whether the subject lived alone or not, existence of conflicts with friends or other members of their close circle. Data pertaining to health status included falls or accidents within the previous 12 months,

comorbidities and (body mass index [BMI]); lower weight was defined as BMI < 18, and higher weight as BMI > 25. Psychological health status was existence, in the 12 months prior to the interview, of psychological suffering, difficult situations (difficulties or negative results), depression, stress or anxiety. Health-related behaviours concerned at-risk behaviours, e.g. smoking, use of illicit substances, violence, suicide attempts, and health-promoting behaviours such as regular physical exercise.

The outcome was successful aging, defined based on self-reported HRQoL on a generic questionnaire, namely the Duke Health Profile (DHP).

The DHP is a generic HRQoL instrument comprising of 17 items (each graded 0 to 2) regrouped in 10 dimensions, to give a score ranging from 0 (worst possible HRQoL) to 100 (best possible HRQoL) [10]. For the purposes of this study, only the "general health" dimension was taken into account to define successful aging. This dimension is obtained by the average of the three health scales, namely physical health, mental health, and social health. Successful aging was analysed as a dichotomous variable. Successful aging was defined as a general health score above the 75th percentile according to sex.

This threshold chosen for our study is also in line with that used by Strawbridge et al., who considered as successful agers all subjects with a score above the 80th percentile on a scale measuring both physical and functional capacities [11].

4. Statistical analysis

As we had no influence over the calculation of the number of subjects for the study, since the database was already completed, we calculated the minimum risk that we would be able to show with the available data. Thus, at an alpha risk of 5%, a beta risk of 20%, and the proportion of successful agers set at 29.9% (645/2160 subjects), the study data would have sufficient power to detect an odds ratio (OR) of at least 1.35.

For descriptive analysis, quantitative variables are expressed as mean \pm standard deviation (SD) and qualitative variables as number and percentage. Bivariable analysis by logistic regression was performed to investigate the association between each explanatory variable and the outcome. Results are expressed as OR and associated 95% confidence intervals (95%CI). Multivariable logistic regression was performed including all variables related to the outcome by bivariable analysis using stepwise selection, with the threshold for entry and exit from the model set at 0.20 and 0.10, respectively. Since the successful aging was defined for each sex, we were unable to take sex into account in our analysis. Overall goodness-of-fit was assessed using the Hosmer and Lemeshow test. A *P*-value of 0.05 was considered statistically significant. All analyses were performed using SAS version 9.2 (SAS Institute Inc, Cary, NC, USA).

The program was set up in observance of the Declaration of Helsinki and French law relating to biomedical research involving human subjects.

5. Results

Among the 30,514 subjects who participated in the national "Baromètre Santé" survey in 2005, 2277 subjects aged 65 to 75 years completed the Duke Health Profile. Among these 2277, we included in this analysis the 2160 subjects for whom the score on the general health dimension of the DHP was available. Fig. 1 presents a flowchart of the study population, and the baseline characteristics are shown in Table 1. Average age was 70.1 ± 3.0 years with a majority of females (61.9%). In total, 645 (29.9%) had successful aging according to our definition. The evolution of HRQoL according to age is shown in Fig. 2.

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