

# Factors associated with the successful aging of the socially-active elderly in the metropolitan region of Porto Alegre

## Fatores associados ao envelhecimento bem-sucedido de idosos socialmente ativos da região metropolitana de Porto Alegre

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### Abstract

**Objective:** To identify the factors associated with aging of the socially-active elderly in the metropolitan region of Porto Alegre. **Methods:** A cross-sectional study was conducted involving a sample of 400 elderly subjects. Through a conglomerate analysis using the combined results of the Flanagan Scale and the quality of life assessment instrument developed by the World Health Organization (WHOQOL-100), the subjects classified as presenting a higher quality of life were considered to have aged successfully. **Results:** After having been adjusted for the variables gender, age, level of depression, despair, perceived health status, meaning that personal beliefs give to life, satisfaction with social activities and relations, the following factors maintained their independent and meaningful effect on successful aging: family relations and friendships (OR = 4.93; 95% CI: 2.83–8.60), health and perceived well being (OR = 1.66; 95% CI: 1.07–2.59), functional capacity (OR = 23.70; 95% CI: 10.98–51.06) and psychosocial support (OR = 7.36; 95% CI: 4.00–13.54). **Conclusions:** Independence in performing daily life activities and autonomy, as well as satisfaction with family relations and friendships, were independent predictive factors of successful aging for both men and women. For women in particular, there were various predictive factors: material comfort; feeling physically well; body image and appearance; self-esteem; positive feelings; interpersonal relationships; social support; participation in recreational activities; sexuality; spirituality; and beliefs. The elderly maintain a relationship with themselves, with others and with their beliefs. Family is the main social support system.

**Keywords:** Aging; Quality of life; Aged; Social support; Depression; Geriatrics; Spirituality; Cluster analysis

### Resumo

**Objetivo:** Identificar fatores associados ao envelhecimento bem-sucedido de idosos socialmente ativos da Região Metropolitana de Porto Alegre. **Métodos:** Estudo transversal com 400 idosos. Pela análise de conglomerados, utilizando os resultados simultâneos da escala de Flanagan e do instrumento de avaliação da Qualidade de Vida, elaborado pela Organização Mundial de Saúde (WHOQOL-100), foram considerados com envelhecimento bem-sucedido os idosos classificados com qualidade de vida superior. A análise das variáveis associadas ao envelhecimento bem-sucedido foi realizada por meio da regressão logística múltipla. **Resultados:** Após ajustamento por gênero, idade, nível de depressão, desesperança, saúde percebida, sentido que as crenças pessoais dão à vida, satisfação com atividades e relações sociais, verificou-se que mantiveram um efeito independente e significativo com o envelhecimento bem-sucedido os fatores: relações familiares e de amizade (OR = 4,93; IC: 2,83-8,60), saúde e bem-estar percebido (OR = 1,66; IC: 1,07-2,59), capacidade funcional (OR = 23,70; IC: 10,98-51,06) e suporte psicossocial (OR = 7,36; IC: 4,00-13,54). A análise realizada com o grupo separado por gênero apresentou diferenças significativas. **Conclusões:** A manutenção da independência para as atividades da vida diária, autonomia e satisfação com relacionamento familiar e amigos foram fatores preditivos independentes do envelhecimento bem-sucedido, tanto para homens como para mulheres. Conforto material, sentir-se fisicamente bem, imagem corporal e aparência, auto-estima, sentimentos positivos, relações interpessoais, suporte social, participação em atividades recreativas, sexualidade, espiritualidade e crenças foram preditivos para as mulheres. O idoso é um ser de relação consigo mesmo, com os outros e com as suas crenças. A família é o principal suporte social.

**Descritores:** Envelhecimento; Qualidade de vida; Idoso; Apoio social; Depressão; Gerontologia; Espiritualidade; Análise por conglomerados

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## Introduction

The aging of the population is a relatively recent, global phenomenon. Present demographic tendencies show that the global population has been aging,<sup>1</sup> and the elderly population accounts for the greatest part of that increase. In Brazil, the current population of elderly individuals (60 years or older) makes up more than 7% of the general population, whereas it was less than 1% in the year 1900.

There are various biological, psychological and sociological theories that try to explain the causes of the aging of the population. It is believed that it is determined by certain factors such as genetics, environment and lifestyle (extrinsic factors).<sup>2</sup> However, there is as yet no clear selection of the factors or key factors that would explain the phenomenon.<sup>3</sup>

The concept of successful aging, introduced by Rowe and Kahn, consists of the combination of a low probability of disease and of deficiencies related to diseases, maintenance or strengthening of physical and cognitive functions and full engagement in life, including productive activities and interpersonal relationships.<sup>4-6</sup> Subsequently, the authors suggested that resilience and wisdom should be included in the model as domains.<sup>7</sup>

In a review of the successful aging model by Rowe and Kahn, it was suggested that positive spirituality be incorporated as a factor in that model.<sup>8</sup> Since successful aging is more than the absence of disease or the severity of risk factors for diseases and goes beyond the maintenance of individual capacities,<sup>9</sup> it is a mistake to contemplate successful aging only in terms of the capacity to perform daily life activities.

Successful aging has been seen as a general process of adaptation, described as the selective optimization with compensation (SOC – Selection, Optimization, and Compensation). This model presupposes that the three elements – selection, optimization and compensation – constitute the basic component processes for changes regarding aging and adaptive capacity, and that the three always interact.<sup>10-13</sup>

The objective of the present study was to identify possible factors associated with successful aging in socially-active elderly individuals residing in the metropolitan area of Porto Alegre.

## Methods

A cross-sectional, observational study was carried out.

The sample comprised 400 elderly individuals. Of these, 239 were participants in the GENESIS Project (an interdisciplinary study on aging – in association with the City Hall of Gravataí – in the State of Rio Grande do Sul and the Institute of Geriatrics and Gerontology - PUCRS),<sup>14</sup> whose interviews were scheduled by the secretary of that project. The remaining 161 subjects residing in the metropolitan area of Porto Alegre were chosen by convenience from among the participants of groups for elderly people or from among those who were still working.

All participants gave written informed consent. The PUCRS Ethics in Research Committee approved the study (process number 01/01065).

The participants of the GENESIS Project-Gravataí comprised a sample of 1118 subjects, 72.1% of whom were female and 27.9% of whom were male.<sup>15</sup> Mean age was  $67.24 \pm 6.14$  years. Most were widows/widowers, living in their own residence, with an income from 80 to 160 dollars per month and an educational level from 6 to 8 years of schooling. The most prevalent comorbidities were systemic arterial hypertension, cardiovascular diseases and depression.

Subjects were considered socially active if they participated in groups for elderly people or engaged in any activities outside of the nuclear family.

Research data were collected using the following instruments: the Flanagan Quality of Life Scale; the World Health Organization WHOQOL-100 quality of life assessment instrument; Beck Hopelessness Scale (BHS); Geriatric Depression Scale, 15-item version (GDS-15, abridged from Yesavage),<sup>16</sup> as well as a form used to collect participant information. Structured interviews were carried out with the help of psychology, nursing and physical education students, who had been previously trained to that end. Interviews were carried out between May and December 2002.

All data were initially stored in an Excel spreadsheet and later transferred to and analyzed using the SPSS program, version 11.5.

The cutoff points on the GDS-15 scale for elderly subjects were: scores lower than 5 indicated normality regarding depression; scores from 5 to 10 indicated mild to moderate depression; scores higher than 10 indicated severe depression.

We preliminarily conducted two methodological studies: one to validate the Flanagan Quality of Life Scale and one to validate the WHOQOL-100. A cluster analysis was carried out, using as entry variables the predicted factorial analysis scores. In accordance with this analysis, the elderly subjects were classified into two groups: superior quality of life and inferior quality of life.<sup>17</sup>

In this study, we defined successful aging as having a superior quality of life, meeting the criterion established by the cluster analysis, which was carried out using the Flanagan Quality of Life Scale and the WHOQOL-100. Similarly, those classified as having an inferior quality of life were considered normally aging elderly subjects (presenting ordinary or usual aging).

## Statistical analysis

Using the Student's t-test for the study of two independent samples, we compared the two groups (superior quality of life versus inferior quality of life) regarding the following variables: age, hopelessness, depression and the factors retained in the factorial analysis of the Flanagan Quality of Life Scale and WHOQOL-100. While conducting the test, the equivalence of population variances was assumed for age, but we considered different variances for the other variables (in accordance with the Levene test for the comparison of variances).

We compared the difference between the proportions of females and males presenting successful aging using Pearson's chi-square test.

In order to identify the probable determining factors for successful aging, we used multiple forward stepwise logistic regression analysis (Wald method), in which the dependent variable was codified into two categories: successful aging (one) and normal aging (zero). The subjects were classified into one of these two possibilities, according to their own point of view during an evaluation of their quality of life. Initially, a univariate logistic regression analysis was carried out. The independent variables under investigation were: gender, age bracket, perceived health status, marital status, educational level, personal beliefs, age, depression and hopelessness. In addition, factors 1 (social activities and relationships), 2 (family relations and friendships) and 3 (perceived health status and wellness) of the Flanagan Quality of Life Scale were investigated, as were factors 1 (functional capacity), 2 (psychosocial support) and 3 of the WHOQOL (environment).

**Table 1 – Student's t-test for the difference of two means between the two groups of subjects**

Variable	Group		t-test	p value
	Normal Mean (sd)	Successful Mean (sd)		
Age (years completed)	69.42 (6.93)	67.57 (6.23)	2.80	0.005
Hopelessness	4.99 (3.76)	2.36 (2.01)	8.57	< 0.001
Depression	5.00 (3.37)	2.32 (2.04)	9.45	< 0.001
WHOQOL Factor 1 (Functional capacity)	3.27 (0.62)	4.11 (0.47)	-15.10	< 0.001
WHOQOL Factor 2 (Psychosocial support)	3.60 (0.46)	4.16 (0.36)	-13.44	< 0.001
WHOQOL Factor 3 (Environment)	3.50 (0.54)	3.76 (0.45)	-5.28	< 0.001
Flanagan Factor 1 (Social activities and relationships)	4.97 (1.09)	5.80 (0.77)	-8.69	< 0.001
Flanagan Factor 2 (Family relations and friendships)	5.35 (0.99)	6.25 (0.49)	-11.30	0.001
Flanagan Factor 3 (Perceived health status and wellness)	4.98 (1.01)	5.98 (0.64)	-11.60	< 0.001

For the inclusion of variables in the multivariate model of logistic regression, we adopted, as a criterion, a correlation between successful aging and each independent variable at a significance level (p value) lower than 0.25.<sup>18</sup>

In the final multivariate model, we considered the variables associated with successful aging that presented a p value less than or equal to 0.05. The strength of the correlations between the variables in the univariate and multivariate analyses was determined by odds ratio, and their confidence intervals were calculated using Woolf's method.<sup>18</sup> The statistical analysis was repeated using the logistic regression technique after the studied group had been separated by gender.

### Results

Most of the 400 elderly subjects interviewed were female (73.8%). Regarding age bracket, 60.8% were between 60 and 69 years of age, 34.0% were between 70 and 79 and 5.2% were older than 79. Mean age was 68.43 years (sd = 6.66). Of those, 289 (72.3%) had less than 9 years of schooling; 189 (47.3%) were married or had a partner, and 149 (37.3%) were widows/widowers. Health status was considered good or very good by 190 (47.5%) subjects, whereas 72 (18.0%) perceived their health status as poor or very poor.

Regarding quality of life, 213 (53.3%) were considered successful and 187 (46.8%) were considered normal. There were no significant proportional differences between males and females in terms of successful aging (p = 0.663).

Table 1 shows the results of the comparison between the two groups of subjects (successful and normal) regarding the various aspects under study. Successful elderly subjects presented lower means regarding age, depression and hopelessness and higher means in the other assessed aspects (factors) when compared to subjects that were considered normal. Table 2 shows the results of the univariate logistic regression including the categorical variables: gender, age bracket, perceived health status, marital status, educational level and meaning that personal beliefs give to their lives.

The factors that apparently influenced successful aging of socially-active elderly subjects were: perceived health status being very good, good or neither good nor poor; and the perception that personal beliefs give considerable or great meaning to life. As a consequence, we observed, for example, that those who perceived their health status to be good or very good were 5.12 times more likely to be classified as successful, whereas those who stated their

**Table 2 – Univariate logistic regression of regular or successful aging with categorical variables\***

Variable	Group		Odds-ratio** (95% CI)	p value
	Normal	Successful		
<b>Gender</b>			1	0.663
Male	51 (48.6)	54 (51.40)		
Female	136 (46.1)	159 (53.9)	1.10 (0.71; 1.73)	
<b>Age bracket (years)</b>			1	0.334
60 to 69	107 (44.0)	136 (56.0)		
70 to 79	68 (50.0)	56 (50.0)	0.79 (0.52; 1.20)	0.264
80 or older	12 (57.1)	9 (42.9)	0.59 (0.24; 1.45)	0.251
<b>Perceived health status</b>			1	< 0.001
Very poor or poor	52 (72.2)	20 (27.8)		
Neither poor nor good	71 (51.4)	67 (48.6)	2.45 (1.33; 4.54)	0.004
Good or very good	64 (33.7)	126 (66.3)	5.12 (2.82; 9.30)	< 0.001
<b>Marital status</b>			1	0.382
Married or with a partner	84 (44.4)	105 (55.6)		
Other	103 (48.8)	108 (51.2)	0.84 (0.57; 1.24)	
<b>Educational level</b>			1	0.842
Less than 9 years	136 (47.1)	153 (52.9)		
9 years or more	51 (45.9)	60 (54.1)	1.05 (0.67; 1.62)	
<b>Personal beliefs give meaning to life</b>			1	< 0.001
No or hardly	15 (88.2)	2 (11.8)		
Somewhat	30 (68.2)	14 (31.8)	3.50 (0.70; 7.44)	0.126
Considerably or greatly	142 (41.9)	197 (58.1)	10.41 (2.34; 6.22)	0.002

Results refer to the number of subjects per category (percent)

\*\*Odds-ratio – classification of a successful elderly subject; 95% CI: 95% confidence interval

**Table 3 – Univariate analysis between normal or successful aging and quantitative variables**

Variable	Odds ratio* (95% CI)	p value
Age	0.96 (0.93; 0.99)	0.006
Depression	0.68 (0.61; 0.75)	< 0.001
Hopelessness	0.70 (0.64; 0.77)	< 0.001
Flanagan factor 1 (Social activities and relationships)	1.56 (1.26; 1.92)	< 0.001
Flanagan factor 2 (Family relations and friendships)	2.76 (2.06; 3.69)	< 0.001
Flanagan factor 3 (Perceived health status and wellness)	2.71 (2.09; 3.50)	< 0.001
WHOQOL factor 1 (Functional capacity)	4.79 (3.45; 6.65)	< 0.001
WHOQOL factor 2 (Psychosocial support)	2.86 (2.19; 3.75)	< 0.001
WHOQOL factor 3 (Environment)	0.95 (0.78; 1.15)	0.589

\*Odds-ratio – classification of a successful elderly subject; 95% CI: 95% confidence interval

personal beliefs gave meaning to their lives were 10.41 times more likely to be considered successful.

Table 3 shows the univariate logistic analysis including the quantitative variables: age, depression and hopelessness, as well as the six factors determined by the scales for the assessment of quality of life<sup>17</sup> used in the present study.

According to the multivariate logistic regression model (Table 4), only four variables presented significant and independent effect, at a significance level of 5%, in relation to successful aging: psychosocial support, perceived health status/wellness and functional capacity, as well as family relations and friendships.

As seen in Table 4, The Hosmer-Lemeshow test produced a p value (significance) of 0.579 in step 4 (final) of the forward stepwise (Wald) method, showing that there is insufficient evidence to contradict the proper adjustment of the data in the logistic model.<sup>18</sup>

Table 5 shows the result of the multiple logistic regression by gender.

In the group composed of females only, the predictive independent variables that were preserved in the group as a whole (males and females) were also preserved. In the group composed of males only, as the only independent variables found to be predictive of successful aging were functional capacity and family relations/friendships.

## Discussion

There was a predominance of females in the study sample. The educational level of most of the sample was lower than or equal to eight years of schooling. The predominant age bracket was from 60 to 69 years. These results confirmed the tendency shown in other Brazilian studies.<sup>19-22</sup>

We also confirmed that the proportion of males in a group of elderly individuals is rarely higher than 20%. Although this sample is non-probabilistic, it can be considered as representative of the socially-active elderly population. The sample in the study was large enough (> 300) to guarantee, under the statistical treatment, the performance of a factorial analysis, as well as the interpretation of low factorial loading (< 0.40).<sup>23-26</sup>

The authors of various qualitative studies have attempted to analyze aging and self-perceived quality of life in the elderly.<sup>27-30</sup>

In the present study, we also extensively used the subjective impression of the elderly subjects in aspects regarding perceived health status, depression, hopelessness and assessment of quality of life. Data were collected through generic tools already available in the literature.

Successful aging, according to some researchers, is defined by daily life activities and mental capacity alone.<sup>31-32</sup> In one study, highly successful elderly subjects were identified as those who ranked in the 80th percentile or higher on a scale measuring physical function.<sup>32</sup> In the present study, in order to define successful aging, we chose to perform a cluster (superior group) analysis using two instruments for the assessment of quality of life especially validated for the elderly subjects of the present study, in which the (reduced) predicted factorial scores were used as entry variables in an exploratory factorial analysis.

The factors that had no apparent influence on the perception of successful aging in the univariate analysis were gender, age bracket, marital status, educational level and environmental factors.

The results of the present study were similar to a study carried out with elderly urban dwellers in São Paulo, in which no correlation was found between gender and functional dependence.<sup>33</sup> Neither was gender found to be a predictor of successful aging in international longitudinal studies.<sup>32,34-35</sup> However, various studies have presented results that are not in agreement with those obtained in the present study.<sup>36-40</sup>

We found no correlation between age bracket and successful aging, in disagreement with the results of another study, in which a clear effect was shown. In that study, the odds ratio increased in parallel with the age bracket: from 1.88 in the 65-69 age bracket to 25.52 in the over-80 bracket.<sup>33</sup>

Age, according to some studies, has shown an independent effect as a predictor of the functional capacity of the elderly as well as of healthy or successful aging.<sup>35-37</sup>

In the present study, the age variable was used as a controlling tool for possible confounding effects, which was a procedure similar to that used by other authors.<sup>32,34</sup>

**Table 4 – Multivariate analysis of normal or successful aging – Wald Forward method**

Step	Variable	Odds ratio* (95% CI)	p value	Percent of correct prediction
4	Flanagan factor 2 (Family relations and friendships)	4.93 (2.83; 8.60)	< 0.001	86.8
	Flanagan factor 3 (Perceived health status and wellness)	1.86 (1.07; 2.59)	0.024	
	WHOQOL factor 1 (Functional capacity)	23.70 (10.98; 51.06)	< 0.001	
	WHOQOL factor 2 (Psychosocial support)	7.36 (4.00; 13.54)	< 0.001	

\*Odds-ratio – classification of a successful elderly subject; 95% CI: 95% confidence interval

We found no correlation between educational level and successful aging, contradicting the results of other studies.<sup>32-33,37,41</sup>

Marital status was not found to correlate with successful aging. This result is in agreement with those of other studies<sup>32-33</sup> but not with those obtained in a longitudinal study, in which elderly subjects whose partners had passed away did not age satisfactorily.<sup>35</sup>

According to the results of the univariate logistic analysis, successful aging and normal aging were both influenced by the following factors: perceived health status, personal beliefs (meaning to life), depression, hopelessness, social activities/relationships, psychosocial support, functional capacity (physical, independence) and family relations/friendships.

It is important to highlight the fact that the perceived health status of the elderly was assessed but there was no objective determination of this status. The question asked was "How is your health?" and subjects chose one of the following alternatives: "very poor"; "poor"; "neither good nor poor"; "good"; or "very good". The results of questions like this are strongly correlated with "real" or "objective" health status.<sup>22</sup>

The variable "subjective health assessment" proposes a type of internal barometer for the subject and it seems as accurate in the prediction of the decline of the health status as its "objective" determination.<sup>33</sup> Therefore, perceived health was found to correlate with successful aging even though it had not been found to be an independent predictor. In this case there was agreement with the results of various studies.<sup>28-30,32-33,35-36,42</sup>

As we improve health care for the elderly, we contribute directly to successful aging.<sup>43</sup> We can conclude that health is a necessary condition for successful aging. However, health is only one part of the equation.

Social activities and relationships were all assessed by the Flanagan scale items "participation in associations and activities of public interest", "participation in active or passive recreation", "learning" (courses on general knowledge), "work as an interesting activity" and "communication". Despite being correlated (in isolation) with successful aging, social activities and relationships were not enough to distinguish between successful and normal aging, from a social point of view.

For every one-point increase in the GDS-15 score, there was a 32% decrease in the chance for an elderly subject to be classified as successful. However, this result was not an independent factor in the multivariate model after the adjustment of the variables gender, perceived health status, personal beliefs, hopelessness, activities and social relationships, family relations/friendships and psychosocial support. These results are in contrast with those found in one study, in which the absence of depression (after the adjustment of variables) increased the chance of successful aging by 94%.<sup>32</sup> This apparent contradiction may be attributed to the fact that those authors

conducted a longitudinal study of socially-active elderly subjects residing in the United States, in which predictive variables were monitored for a period of six years, whereas the present study featured a cross-sectional design.

Results for hopelessness were very similar to those found for depression in the present study. Therefore, for every one-point increase in the BHS score, the odds of successful aging were reduced by 30%. The results of a study conducted in Finland suggest that males who are hopeless are three times more likely to develop hypertension than those who face life in a more positive way.<sup>44</sup>

Although we found no evidence that gender is a predictor of successful aging, and the proportion of successfully aging males did not differ significantly from that of successfully aging females, we chose to repeat the procedures of logistic regression separating the groups by gender. Gender is one of the variables that influence social roles.<sup>45</sup> Studies on gender-based health differences in industrialized societies have shown that, although females live longer than males, they report higher morbidity and psychological problems and use health services more often.<sup>46</sup>

The analysis of the group separated by gender showed significant differences (Table 5).

After the adjustment for age, depression level, hopelessness, perceived health status, personal beliefs and satisfaction with social activities/relationships, the factors that remained independently and significantly correlated with successful aging among females were family relations/friendships, perceived health status/wellness, functional capacity and psychosocial support. Among males, only functional capacity and family and friendship relationships remained so correlated.

The maintenance of independence for daily life activities, autonomy and satisfaction with family relations/friendships were independent predictive factors for successful aging for males and females alike. Material comfort, feeling physically well, body image/appearance, self-esteem, positive feelings, interpersonal relationships, social support, participation in recreational activities, sexuality, spirituality and beliefs were predictors of successful aging for females.

In the present study, most of the findings were similar to those found in other studies and in other countries. Successful aging is a multidimensional construct that is subject to various interpretations. As a consequence, we would like to emphasize the need to take special precautions in order to avoid artificial, reductionist interpretations on this theme. Despite the similarities, we need to be careful in drawing comparisons with the results of other studies, in which different groups of items may have been used to assess the same characteristic.<sup>47</sup>

Our study sample was heterogeneous, and the information collected was subjective. Cultural values and terms concerning

**Table 5 – Multivariate analysis of normal or successful aging by gender**

Variable	Odds ratio* (95% CI)	p value	Percent of correct prediction
<b>Males</b>			
Flanagan factor 2 (Family relations and friendships)	8.79 (2.90; 26.61)	< 0.001	87.6
WHOQOL factor 1 (Functional capacity)	19.83 (6.30; 62.40)	< 0.001	
<b>Females</b>			
Flanagan factor 2 (Family relations and friendships)	4.89 (2.64; 9.05)	< 0.001	85.4
Flanagan factor 3 (Perceived health status and wellness)	1.63 (1.01; 2.62)	0.046	
WHOQOL factor 1 (Functional capacity)	19.48 (8.42; 45.09)	< 0.001	
WHOQOL factor 2 (Psychosocial support)	6.52 (3.32; 12.80)	< 0.001	

\*Odds-ratio – classification of a successful elderly subject; 95% CI: 95% confidence interval

the "new elderly" such as, for instance, "the best age", might have induced more satisfactory answers on the quality of life, and such answers might have expressed the desired, rather than the actual, quality of life of the subjects.

In contrast, there is a stereotype associating advanced age with losses. Elderly subjects are usually assessed taking into particular consideration their capacities or limitations to perform daily life activities and how they live with their losses. Their future expectations, objectives, beliefs and hopes are ignored, as well as their chances for gains. Successful aging is a challenge for everyone. It is not a random event. It is an objective to be intentionally sought. Happiness and optimism can be learned.<sup>48</sup>

The successful elderly are expected to have a positive vision of the future, the capacity to accept changes, high self-esteem, a positive self-image, a sense of autonomy, well-developed mechanisms for selecting significant goals/objectives, as well as for optimizing resources and compensating for losses (developing strategies to compensate for failures), and capacity in reserve or resilience in order to recover from, adjust and readapt to new conditions for daily life interactions. Interdisciplinary studies and the development of an agenda for the 21st century on successful aging, as well as humility on the part of researchers, are needed.<sup>49</sup> The production and dissemination of scientific knowledge regarding the possibilities for successful aging in Brazil is important and urgent.<sup>50</sup>

Currently, one of the main objectives of gerontology is the development of interventions in order to promote normal aging and preventive health care, i.e. to promote improved quality of life. Researchers at various centers have shown concern regarding preventive health care and regarding some behaviors/habits of subjects.

It is not normal for an elderly individual to be depressed. Therefore, they must be referred to medical treatment. It is important to have goals in life, to believe in the future, to pursue happiness and, if possible, to learn how to be optimistic. The capacity of individuals can be optimized. Successful aging is a challenge for elderly individuals, their families, communities and government organizations. In summation, it is a challenge for everyone.

We suggest the refinement of this study, in which questionings regarding resilience, active involvement in life, wisdom, performance of productive activities, investigation of behavior/health (habits), mechanisms of selection, compensation and optimization, general self-efficacy, resentment, satisfaction with social support (received or given), spirituality, religiosity and personal beliefs should be included.

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