

# Health Status Perception of People Close to Retirement Age: Relationship with Mental Health and Healthy Habits

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## Research Article

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2 **with mental health and healthy habits**

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5 **Short title:** *Pre- and post-retirement health status perception*

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1 **Abstract**

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3 **Background:** The ageing of today's society intensifies the need for the correct and healthy ageing  
4 of the elderly, in order to ensure their overall well-being. Practical strategies are needed to acquire  
5 healthy habits at this stage of life. The aim of this study is to analyse the life habits of subjects  
6 close to retirement age and the factors that could influence these habits (gender, physical and  
7 mental health).

8 **Methods:** A national (Spain) observational, descriptive and cross-sectional study, in which people  
9 close to retirement age are surveyed. The online survey included matters regarding socio-  
10 demographic, family, work, leisure, social participation and health indicators.

11 **Results:** The study comprised of 1,700 participants (581 working; 714 retired), average age = 63  
12 years (DT 5.7); 52% women. Most reported having a satisfactory social life (90%), living in pairs  
13 (74%), not smoking (80%), following a Mediterranean diet (73%) and taking medicines daily  
14 (70%). Disability (WHODAS-12) was higher in men (8.2 vs 6.5,  $p < 0.001$ ) although women showed  
15 more health problems and depression (mild-severe) (27% vs 17%,  $p < 0.001$ ), with a healthier diet  
16 and lower physical/work activity. The multivariate model showed a significant association of health  
17 status (EQ-VAS) with disability level, number of chronic diseases, sleep habits, exercise, diet,  
18 and alcohol consumption. When the level of depression was introduced, age and being a woman  
19 were also found to be related. In the subgroup of those retired or working ( $n = 1295$ ), retirees  
20 reported a better health status, associated with less disability, fewer chronic illnesses, lower  
21 depression, good eating and sleeping habits, and exercise.

22 **Conclusions:** The results show that retirement does not necessarily mean worse health, but  
23 rather an opportunity in life to reinforce favourable health activities and correct those lifestyle  
24 factors that deteriorate it. This, together with the differences observed according to gender in the  
25 perception of clinical and psychological health, will allow for the design of strategies that promote  
26 healthy ageing.

27 **Keywords:** Ageing, health, healthy habits, retirement, depression

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## 1 BACKGROUND

2 The ageing of today's society, as a result of the low fertility rate and the continued fall in the adult  
3 mortality rate, is unprecedented in human history [1]. On a global scale, the growth rate in the  
4 number of people over 60 is twice that of the growth rate of the general population [2]. In Spain,  
5 more than one fifth of its population is over 60, with the life expectancy of this group exceeding  
6 80 [3]. Addressing and adapting to this new demographic reality requires substantial changes in  
7 political, economic, social and health paradigms [4].

8 Sooner or later, ageing is associated with a decrease in one's physical and mental capacity, as  
9 well as an increased risk of chronic-degenerative diseases and comorbidities [5-7]. Without doubt,  
10 ageing also represents a success of human progress, provided that it is accompanied by actions  
11 promoting healthy and active ageing that promotes functional capacity, social contribution and  
12 quality of life in old age [5, 8]. Adopting healthy living habits during adulthood and old age can be  
13 a protective factor against disease (physical and mental), disability and premature death [9, 10].  
14 Moreover, such a lifestyle helps ensure healthy ageing as defined by the World Health  
15 Organization: the process of developing and maintaining the functional capacity that allows well-  
16 being in old age [11].

17 Retirement is a critical stage of life that entails the making of crucial decisions regarding health  
18 and healthy habits [12]. It may represent an opportunity to adopt healthier routines and living  
19 habits; but it may also give rise to the continuance or even intensification of previously established  
20 unhealthy behaviours [13]. For this reason, more studies are needed to analyse the determinants  
21 and factors associated with healthy living habits at this vital time of life.

22 Psychological and emotional status may prove to be of great importance at this stage of life. Life-  
23 changing events such as inactivity due to retirement, the increased frequency of chronic diseases,  
24 the assumption of new family and social roles (being grandparents), the loss of loved ones or the  
25 feeling of being close to death can influence one's psychological state and require both a physical  
26 and emotional adaptation [14]. When such adjustment is favourable, in the final stage of life more  
27 emotional control and psychological maturity are perceived, with a moderation of positive affect  
28 compared to younger people (the young and middle-aged) [15]. In this sense, the acquisition of

1 healthy habits such as the continued exercise of certain abilities can positively influence this  
2 process of growing maturity [14]. In Spain, more research is needed on the relationships between  
3 retirement, life habits, physical health and psychological health. Such information would allow for  
4 the design of useful programs and strategies for the promotion of healthy lifestyles, with the  
5 ensuing individual and social benefits they suppose.

6 For this reason, the present study was carried out with the aim of analysing life habits in a  
7 population close to retirement age, as well as their relation to physical and mental health, taking  
8 into account how gender may also be of relevance in this regard.

## 9 **METHODS**

### 10 **Study design and population**

11 A descriptive, observational and cross-sectional study on a national level, approved by the  
12 research ethics committee of the Universidad Francisco de Vitoria (Madrid).

13 The sample was obtained geographically by means of proportional multistage stratified sampling.  
14 The sample size was 1,700 individuals, taken from a target population of 10,506,015 people aged  
15 between 55 and 75 years of age (+/- 10 years relative to the average retirement age in Spain) in  
16 2020. In order to participate, after being informed of the purposes of the study, their informed  
17 consent was obtained.

18 The data were collected through a structured and online survey of around 20 minutes, including  
19 questions regarding socio-demographic, family, work, leisure, social participation, and health  
20 indicators. The survey was conducted by professional interviewers specifically trained for the  
21 project. The survey participants constituted a sample similar to the Spanish population in terms  
22 of age, gender and geographical distribution. As a prerequisite, all participants needed access to  
23 the Internet and had to be familiar with its use, being accustomed to answering online surveys.

24 For analysis, the variables were grouped as follows: *Control variables*: socio-demographic  
25 characteristics (sex, age, marital status, educational level, employment status), physical health  
26 (comorbidity, disability through WHODAS-12[16], number of medications taken per day, self-

1 medication) and social and leisure characteristics (social activity, family relationships, sexual life).  
2 *Independent variables:* living habits (sleep, physical activity, tobacco and alcohol consumption,  
3 body mass index and preventive behaviours), evaluated by means of ad hoc questions. *Mediating*  
4 *variable:* mental health (*Patient Health Questionnaire, PHQ-9* 0 to 27 point scale [0=no  
5 depression, 1-4=minimal depression, 5-9=mild depression, 10-14=moderate depression, 15-  
6 19=moderate/severe depression, and 20-27=severe depression] [17-19], the EQ-VAS health  
7 perception scale (analogue visual scale of 0 to 100 points) From the EQ-5D-5L questionnaire [20,  
8 21] and the “ Five signs of emotional suffering tool ” scale [22], which contains questions  
9 regarding personality changes, agitated mood, isolation, poor self-care, or hopelessness  
10 behaviours, with a dichotomous response option [yes/no]. This questionnaire was answered both  
11 by the subject and a proxy (assessment by a family member or caregiver).

## 12 **Statistical analysis**

13 A general description of the total study sample (n=1700), by sex, was made, followed by an  
14 analysis of the sample of active workers compared to those retired (n=1295). Socio-demographic,  
15 family, academic, social and leisure variables as well as health indicators by gender and work  
16 status (active, unemployed, family and home care, pensioner and retiree) were compared, using  
17 the chi-squared test for categorical variables. Moreover, analysis of variance (ANOVA) was  
18 performed for quantitative variables such as age, number of chronic pathologies, PHQ-9, or  
19 perceived health status (EQ-VAS) reported by participants. Non-parametric equivalent tests were  
20 used when the variables did not follow a normal distribution. Bonferroni correction was used for  
21 multiple peer comparisons.

22 A multivariate linear regression model was performed with self-perceived health status (EQ-VAS)  
23 as a dependent variable. The socio-demographic variables, disability level, comorbidities, life  
24 habits, depression level, and health indicators were considered as independent variables. Two  
25 independent regression models were created - first with the entire sample and subsequently for  
26 the group of active workers and retirees. Tests were conducted to ensure that the basic  
27 assumptions of linearity, normality, and independence of the multiple linear regression model  
28 were met.

1 The minimum level of significance was set at  $p < 0.05$  and version 20 of the IBM SPSS for Windows  
2 statistical package was used.

### 3 **RESULTS**

#### 4 **Characteristics of respondents**

##### 5 *Total sample*

6 Data were obtained from 1,700 participants, of whom 581 (34.2%) were active workers and 714  
7 (42%) retired. Table 1 reflects the socio-demographic characteristics and life habits of the total  
8 sample by gender, including data on chronic diseases and medication. The mean age of the  
9 sample is 63 years old (DT 5.7 years), with 34% still working. The level of education is mainly at  
10 a secondary school (50%) or university (42%) level of studies. The majority (90%) report having  
11 a satisfactory or quiet social life, living in a couple (74%), not smoking (80%); They report following  
12 a Mediterranean diet (73%), carrying out physical activity more than three days a week (52%),  
13 almost 70% of the sample consume medicines daily and almost 50% consume more than three  
14 medicines a day.

##### 15 *Gender*

16 The sample includes a similar and comparable number of women and men. The percentage of  
17 women living with a partner is significantly lower than that of men (67% vs 82%). There is a high  
18 level of participants who report having university studies, 42%, the percentage being slightly lower  
19 in men than in women (38 vs 46%,  $p < 0.001$ ). In contrast, the percentage of women who report  
20 only having received primary education is significantly higher (9.4 vs 5.2%). The percentage of  
21 working women is lower than that of men (30.4 vs. 38.2%). However, the percentage of women  
22 who consider themselves family and home carers is much higher (13.9 vs. 0.7%,  $p < 0.001$ ). In  
23 general, the percentage of women who report having health problems is higher than that of men.  
24 There are also differences in certain health habits such as physical exercise, which is practised  
25 more by men (18% low physical activity in men versus 25% in women,  $p = 0.02$ ) and the perception  
26 of sex life ( $p < 0.001$ ), or following a healthy diet, which is more common in women ( $p = 0.003$ ) (table  
27 1).

## 1 **Perception of clinical and mental health**

2 No significant gender differences were observed in the average health status reported by  
3 participants using an analogue quality of life (EQ-VAS) scale (Table 2). The worst state of health  
4 was reported by pensioners and the best by the unemployed (71.5 vs. 79.6;  $p < 0.001$ ), who  
5 reported a level of health comparable to those working, with no differences found between men  
6 and women (Table 2). Regarding the disability scale measured by the WHODAS-12, men  
7 reported a higher value than women (8.2 vs 6.5,  $p < 0.001$ ), slightly higher being the percentage  
8 of women who reported depression (mild to severe) compared to men (27 vs 17%,  $p < 0.001$ ).

9 When analysing health habits with the multivariate model, a strong association was found  
10 between the subject's health status and disability level, the number of chronic diseases, sleeping  
11 habits, exercise, diet and alcohol consumption (Table 3). Health status was also significantly  
12 associated with sleeping well, exercising three or more times a week, drinking some wine or beer  
13 at mealtimes and following a Mediterranean diet with fruit and vegetables, legumes and lean  
14 meats on a regular basis (Table 3). When analysing the level of depression among subjects, the  
15 percentage of variance the model found rose from 33.3% to 36.3%, with age and sex appearing  
16 as new variables associated with the perception of health status (Table 3).

## 17 **Active workers and the retired**

18 Table 4 reflects the characteristics of the subsample of active workers and those retired ( $n = 1295$ ).  
19 Compared with those working (3%;  $n = 17$ ), a higher percentage of retirees were widowers (7.2%;  
20  $n = 51$ ) and declared themselves to be consuming five or more medications on a daily basis  
21 ( $p < 0.001$ ). The degree of depression was lower in retirees ( $p = 0.001$ ). Data on the self-perceived  
22 levels of clinical and psychological health of workers and those retired are reflected in Table 5.  
23 Overall, retirees showed better overall health and lower levels of depression than those working.

## 24 *Linear regression model*

25 Table 6 reflects the results of the linear regression models of perceived health status (EQ-VAS),  
26 according to employment status. In the subgroup of those in active employment, the best  
27 perceived health status was associated with being a woman, having a lower degree of disability,

1 a lower number of chronic diseases, a lower degree of depression, and exercising three or more  
2 times a week (explained variance 33.9%). In the subgroup of those retired, the best perceived  
3 health status was associated with lower disability, fewer chronic diseases and lower degree of  
4 depression, a healthy diet (Mediterranean diet), the consumption of fruit and vegetables, legumes  
5 and lean meats on a regular basis, drinking some wine or beer at mealtimes, sleeping well and  
6 exercising 3 or more times a week (explained variance 35.9%).

## 7 **DISCUSSION**

8 The present study provides data on the socio-demographic and clinical profile of a countrywide  
9 sample of the adult and elderly population, in a time of life close to or recently after (between 55  
10 and 75 years) the average retirement age. It also provides information on factors that influence  
11 perceived health status.

12 Of the 1,700 respondents, the proportion of women and men was very similar, despite the fact  
13 that women are the majority population group in the elderly, and even more so the older the age  
14 [23]. As the sample was made up of those that volunteered to take part in a computer survey, it  
15 may have meant the over-representation of men and women with higher levels of studies, as they  
16 require access to and familiarity with the use of the Internet and new technologies. However,  
17 despite this observation, the sample may be considered an accurate representation of the national  
18 population.

19 With regard to the employment status, significant gender differences were observed: the  
20 percentage of active or retired was higher in men compared to women. In contrast, there was  
21 found a higher percentage of women engaged in domestic work, unemployed or pensioners when  
22 compared to men. These results are consistent with official data published in Spain and in the  
23 European countries (EU-28) by the National Institute of Statistics [3], reflecting the  
24 representativeness of the sample.

25 The self-perceived health status was higher than recently described in Spain by Janssen *et al.* for  
26 the age group 55-64-year-olds [24]. This may be due, in part, to the fact that these data [24] came  
27 from a study published by König *et al.*, in 2009 [25], when the economic and social situation in  
28 Spain was worse due to the global financial crisis of 2008 - a circumstance that could interfere

1 with the self-perceived state of health at that time. In any case, the effect of certain selection bias  
2 related to the origin of the sample population and its particularities with respect to the general  
3 Spanish population of the same age group cannot be ruled out.

4 Perceived health status was associated with lower disability and fewer chronic diseases, sleeping  
5 well, increased weekly exercise, and healthy eating (Mediterranean diet) including a moderate  
6 drinking of wine or beer during meals. Similar associations have been found in other studies,  
7 where perceived health was found to be strongly associated with physical and functional health,  
8 among others [26].

9 The slightly higher value of perceived health status in men is in accordance with previous studies  
10 which find a worse self-perception of health in women [24]. In Spain, this worse perception among  
11 women has been explained, among other reasons, by having less leisure time [27] and a greater  
12 burden of care. However, in our sample, it is women who reported having a significantly better  
13 social life. In this sense, a study in the Spanish population showed an increase in social life in  
14 women, although it was not statistically significant [1]. Other possible causes for this better  
15 perception in men could be greater physical activity [28, 29] - in our population, men were slightly  
16 more active than women - to which we must also include the absence, in men, of problems  
17 associated with menopause, which include osteoporosis and neurovegetative symptoms (hot  
18 flashes, sweating, headaches, etc.) [30, 31]. The presence of these disorders associated with  
19 menopause, along with other frequent age-specific comorbidities (including gynaecological  
20 cancers) that affect sexual satisfaction [30] may explain why women reported a worse sexual life  
21 than men.

22 In accordance with other studies that reflect a higher consumption of vegetables and fish in  
23 women and a higher consumption of processed and red meat in men [32], our results find a  
24 significantly healthier diet in women. These results suggest a need to design health promotion  
25 programs selectively aimed at improving men's eating habits, particularly training in the basic  
26 culinary skills for those who live alone or prepare their own food.

27 Regarding the perceived level of health according to the working status, as is the case in the  
28 general population, both in workers and in those retired, the best health status was associated

1 with a lower degree of disability. fewer chronic diseases and exercise three or more times a week.  
2 In workers, this perception of having a good diet was also related with being a woman and being  
3 retired. In both workers and those retired, the average level of disability was very low, with less  
4 disability observed in retirees, although without statistically significant differences. This may be  
5 due to the increase in weekly physical activity and to healthier eating habits (Mediterranean diet)  
6 reported by retirees, as it could serve as a counterbalance to the deterioration that ageing  
7 supposes. Similarly, the many positive effects of habitual moderate exercise are well known [33-  
8 35], among which a preservation of the cardiac function stands out [6]. In addition, it has been  
9 observed that a better diet, such as the Mediterranean diet, has protective effects in elderly  
10 individuals, whether or not they suffer from chronic diseases [36].

11 Those retired reported a significantly higher average number of chronic diseases than active  
12 workers, mainly involving osteoarticular, vision, and hypertension problems. This is something to  
13 be expected, given the association of ageing with the gradual deterioration of the body, changes  
14 in organs and systems [37] and a greater burden of chronic diseases [38], including hearing loss  
15 and vision problems [39, 40].

16 With ageing, biological changes occur in the human body affecting mood, physical condition and  
17 social activity that influence one's perception of health [41]. In Spain, depression takes ninth place  
18 in terms of chronic diseases and is also more prevalent in women [3, 42]. This phenomenon is  
19 reflected in our study: although the percentage of moderate to severe depression is low (less than  
20 1 in 10 participants), it is higher in women. In this sense, it has been noted that, in time, women  
21 are more likely than men to suffer from non-lethal disabling conditions such as depression [26,  
22 43]. When depression was included in our analysis, the model showed women and being younger  
23 were associated with a better perception of one's health status. It is logical that those women who  
24 do not suffer from this type of illness have a better perception of their health status. [26, 43].

25 In both workers and those retired, a better health status was associated with a lower degree of  
26 depression, with a significantly lower degree of depression observed in the latter group. There  
27 exist conflicting data on the prevalence of depression in retirement. Despite being related to the  
28 loss of employment and the social life associated with work, retirement is also seen as an escape

1 from work, which is a source of daily stress, obligations and responsibilities. [44, 45] In our case,  
2 the most plausible explanation is that of a sense of freedom from work, as our retired population  
3 had significantly more satisfactory social life and exercised more.

4 The fact that the sample analysed is composed of people who volunteer to conduct computer  
5 surveys (panelists), implies a limitation of the study as it suggests a bias in the representativeness  
6 of the overall population. Other limitations to consider are the cross-sectional design of the study,  
7 which does not allow the analysis of causality, and that the mental health analysed is self-  
8 referenced and therefore not quantifiable as in the case of cognitive scales.

9 **Conclusions:** The results of this study show that retirement does not necessarily have a  
10 detrimental effect on the health status of this population. Compared to workers, retirees have a  
11 lower degree of depression, increased activity, enjoy a healthier diet and have a better perception  
12 of their social life, although they do report a worse sexual life. The study clearly reflects how  
13 retirement can prove to be a vital opportunity to reinforce favourable health actions and to correct  
14 unhealthy behaviours at the end of one's active working life.

15 The study provides new and valuable information on the determinants of perceived health in the  
16 adult and mature stages of life, highlighting the similarities and differences between workers and  
17 those retired. Both before and after retirement, the best perceived health status is associated with  
18 a lower degree of disability and depression, a lower number of chronic diseases, and with those  
19 who exercise three or more times a week. In workers, it was also associated with being a woman  
20 and in those who have retired and have a healthy diet and adequate sleep.

21 Perceived differences according to gender also need to be taken into account. The perception of  
22 clinical and psychological health status proved to be similar among men and women, albeit with  
23 more depression reported by women. Disregarding depression, being a woman and of a younger  
24 age are also associated with a better perception of health status. Men do more physical exercise  
25 than women, although women have a healthier diet. The social life of women is better, although  
26 they profess to having a worse sex life.

27 It is important to act upon all identified factors in order to help improve health status and achieve  
28 satisfactory ageing. To achieve this, the implementation of specific strategies for each group is

1 recommended: Preventive, therapeutic and advisory that would promote change in unhealthy  
2 lifestyles.

### 3 **Abbreviations**

4 12-WHODAS: 12-item version of the World Health Organization Disability Assessment Schedule

5 PHQ: Patient Health Questionnaire

6 VAS: Visual Analogue Scale

7

### 8 **DECLARATIONS**

#### 9 **Ethics approval and consent to participate**

10 The patients gave informed written consent to be included in the study.

#### 11 **Consent for publication**

12 Not applicable

#### 13 **Availability of data and materials**

14 The data that support the findings of this study are available on request from the corresponding  
15 author.

#### 16 **Competing interests**

17 Diana Monge Martín, Fernando Caballero Martínez, Maria João-Forjaz, Manuel J. Castillo and  
18 Carmen Rodríguez-Blázquez declare that they have no conflict of interest. Competing interest  
19 not declared.

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#### 22 **Authors' contributions**

23 All authors contributed to the study concept and design. Material preparation, data collection and  
24 analysis were performed by Carmen Rodríguez-Blázquez, Diana Monge Martín, Maria João-  
25 Forjaz and Fernando Caballero Martínez. Manuel J. Castillo made substantial contributions to  
26 data interpretation. The first draft of the manuscript was written by Diana Monge Martín and  
27 Carmen Rodríguez-Blázquez, with all authors commenting on and making recommendations

1 regarding subsequent versions of the manuscript. All authors read and approved the final  
2 manuscript.

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### 7 **REFERENCES**

- 8 1. Pino L, Gonzalez-Velez AE, Prieto-Flores ME, Ayala A, Fernandez-Mayoralas G, Rojo-  
9 Perez F, Martinez-Martin P, Forjaz MJ: **Self-perceived health and quality of life by  
10 activity status in community-dwelling older adults.** *Geriatr Gerontol Int* 2014,  
11 **14(2):464-473.**
- 12 2. Nations U: **World Population Ageing.** In. Edited by Affairs DoEaS. New York; 2009.
- 13 3. INE. In. <https://www.ine.es/>; Instituto Nacional de Estadística; 2020.
- 14 4. Souza MAHd, Porto EF, Souza ELd, Silva KId: **Profile of lifestyle of older elderly  
15 persons.** *Revista Brasileira de Geriatria e Gerontologia* 2016, **19:819-826.**
- 16 5. Han LKM, Verhoeven JE, Tyrka AR, Penninx B, Wolkowitz OM, Månsson KNT, Lindqvist  
17 D, Boks MP, Révész D, Mellon SH *et al*: **Accelerating research on biological aging and  
18 mental health: Current challenges and future directions.** *Psychoneuroendocrinology*  
19 2019, **106:293-311.**
- 20 6. Jakovljevic DG: **Physical activity and cardiovascular aging: Physiological and  
21 molecular insights.** *Experimental gerontology* 2018, **109:67-74.**
- 22 7. Roca F, Lang PO, Chassagne P: **Chronic neurological disorders and related  
23 comorbidities: Role of age-associated physiological changes.** *Handbook of clinical  
24 neurology* 2019, **167:105-122.**
- 25 8. WHO: **Ageing: Healthy ageing and functional ability.** In.  
26 <https://www.who.int/ageing/healthy-ageing/en/>; 2020.
- 27 9. King DE, Xiang J: **Retirement and Healthy Lifestyle: A National Health and Nutrition  
28 Examination Survey (NHANES) Data Report.** *Journal of the American Board of Family  
29 Medicine : JABFM* 2017, **30(2):213-219.**
- 30 10. McDonald S, O'Brien N, White M, Sniehotta FF: **Changes in physical activity during the  
31 retirement transition: a theory-based, qualitative interview study.** *Int J Behav Nutr  
32 Phys Act* 2015, **12:25.**
- 33 11. OMS: **Informe Mundial sobre el envejecimiento y la salud.** In.  
34 <https://www.who.int/ageing/publications/world-report-2015/es/>; WHO; 2015.
- 35 12. Ali-Kovero K, Pietilainen O, Mauramo E, Jappinen S, Rahkonen O, Lallukka T, Kanerva  
36 N: **Changes in fruit, vegetable and fish consumption after statutory retirement: a  
37 prospective cohort study.** *The British journal of nutrition* 2020:1-6.
- 38 13. Zantinge EM, van den Berg M, Smit HA, Picavet HS: **Retirement and a healthy lifestyle:  
39 opportunity or pitfall? A narrative review of the literature.** *European journal of public  
40 health* 2014, **24(3):433-439.**
- 41 14. Izquierdo Martínez A: **PSICOLOGÍA DEL DESARROLLO DE LA EDAD ADULTA: TEORÍAS Y  
42 CONTEXTOS.** *International Journal of Developmental and Educational Psychology*  
43 2007, **1(2):67-86.**

- 1 15. Marquez-Gonzalez M, Izal Fernandez de Troconiz M, Montorio Cerrato I, Losada Baltar  
2 A: **[Emotional experience and regulation across the adult lifespan: comparative  
3 analysis in three age groups]**. *Psicothema* 2008, **20**(4):616-622.
- 4 16. **Whodas 2.0\_12 Items Interview\_ spanish**  
5 [[https://es.scribd.com/document/129861831/Whodas-2-0-12-Items-Interview-  
6 spanish](https://es.scribd.com/document/129861831/Whodas-2-0-12-Items-Interview-spanish)]
- 7 17. Díez-Quevedo C, Rangil T, Sanchez-Planell L, Kroenke K, Spitzer RL: **Validation and  
8 utility of the patient health questionnaire in diagnosing mental disorders in 1003  
9 general hospital Spanish inpatients**. *Psychosom Med* 2001, **63**(4):679-686.
- 10 18. Kroenke K, Spitzer RL, Williams JB: **The PHQ-9: validity of a brief depression severity  
11 measure**. *Journal of general internal medicine* 2001, **16**(9):606-613.
- 12 19. **Oncology Nursing Society. Patient Health Questionnaire (PHQ-9)**  
13 [[https://www.ons.org/sites/default/files/PatientHealthQuestionnaire9\\_Spanish.pdf](https://www.ons.org/sites/default/files/PatientHealthQuestionnaire9_Spanish.pdf)]
- 14 20. Ramos-Goni JM, Craig BM, Oppe M, Ramallo-Farina Y, Pinto-Prades JL, Luo N, Rivero-  
15 Arias O: **Handling Data Quality Issues to Estimate the Spanish EQ-5D-5L Value Set  
16 Using a Hybrid Interval Regression Approach**. *Value Health* 2018, **21**(5):596-604.
- 17 21. Cabasés JM: **[The EQ-5D as a measure of health outcomes]**. *Gaceta sanitaria* 2015,  
18 **29**(6):401-403.
- 19 22. **The Campaign to Change Direction. Five signs of emotional suffering tool**  
20 [<https://www.changedirection.org/>]
- 21 23. Pérez Díaz J, Abellán García A, Aceitunoo Nieto P, Ramiro Fariñas D: **Un perfil de las  
22 personas mayores en España, 2020. Indicadores estadísticos básicos**. Madrid,  
23 **Informes Envejecimiento en red nº 25, 39p.** . In. Edited by (CCHS). CSdICCCdCHyS.  
24 Madrid; 2020.
- 25 24. Janssen MF, Szende A, Cabases J, Ramos-Goñi JM, Vilagut G, König HH: **Population  
26 norms for the EQ-5D-3L: a cross-country analysis of population surveys for 20  
27 countries**. *Eur J Health Econ* 2019, **20**(2):205-216.
- 28 25. König HH, Bernert S, Angermeyer MC, Matschinger H, Martínez M, Vilagut G, Haro JM,  
29 de Girolamo G, de Graaf R, Kovess V *et al*: **Comparison of population health status in  
30 six european countries: results of a representative survey using the EQ-5D  
31 questionnaire**. *Med Care* 2009, **47**(2):255-261.
- 32 26. Pino-Dominguez L, Navarro-Gil P, Gonzalez-Velez AE, Prieto-Flores ME, Ayala A, Rojo-  
33 Perez F, Fernandez-Mayoralas G, Martinez-Martin P, Forjaz MJ: **Self-perceived health  
34 status, gender, and work status**. *J Women Aging* 2016, **28**(5):386-394.
- 35 27. Adjei NK, Brand T, Zeeb H: **Gender inequality in self-reported health among the  
36 elderly in contemporary welfare countries: A cross-country analysis of time use  
37 activities, socioeconomic positions and family characteristics**. *PloS one* 2017,  
38 **12**(9):e0184676.
- 39 28. Rosenfeld CS: **Sex-dependent differences in voluntary physical activity**. *Journal of  
40 neuroscience research* 2017, **95**(1-2):279-290.
- 41 29. Yli-Piipari S, Leskinen E, Jaakkola T, Liukkonen J: **Predictive role of physical education  
42 motivation: the developmental trajectories of physical activity during grades 7-9**. *Res  
43 Q Exerc Sport* 2012, **83**(4):560-569.
- 44 30. Thomas HN, Neal-Perry GS, Hess R: **Female Sexual Function at Midlife and Beyond**.  
45 *Obstetrics and gynecology clinics of North America* 2018, **45**(4):709-722.
- 46 31. Thornton K, Chervenak J, Neal-Perry G: **Menopause and Sexuality**. *Endocrinol Metab  
47 Clin North Am* 2015, **44**(3):649-661.
- 48 32. Jurado-Fasoli L, Amaro-Gahete FJ, De-la OA, Martínez-Tellez B, Ruiz JR, Gutierrez A,  
49 Castillo MJ: **Adherence to the Mediterranean diet, dietary factors, and S-Klotho**

- 1 **plasma levels in sedentary middle-aged adults. *Experimental gerontology* 2019,  
2 **119**:25-32.**
- 3 33. Hita-Contreras F, Martinez-Amat A, Cruz-Diaz D, Perez-Lopez FR: **Osteosarcopenic**  
4 **obesity and fall prevention strategies. *Maturitas* 2015, **80**(2):126-132.**
- 5 34. Wewege M, van den Berg R, Ward RE, Keech A: **The effects of high-intensity interval**  
6 **training vs. moderate-intensity continuous training on body composition in**  
7 **overweight and obese adults: a systematic review and meta-analysis. *Obes Rev* 2017,  
8 **18**(6):635-646.**
- 9 35. Amaro-Gahete FJ, De-la OA, Jurado-Fasoli L, Ruiz JR, Castillo MJ, Gutierrez A: **Effects of**  
10 **different exercise training programs on body composition: A randomized control**  
11 **trial. *Scand J Med Sci Sports* 2019, **29**(7):968-979.**
- 12 36. Di Daniele N, Noce A, Vidiri MF, Moriconi E, Marrone G, Annicchiarico-Petruzzelli M,  
13 D'Urso G, Tesauro M, Rovella V, De Lorenzo A: **Impact of Mediterranean diet on**  
14 **metabolic syndrome, cancer and longevity. *Oncotarget* 2017, **8**(5):8947-8979.**
- 15 37. Samuel D, Rowe P, Hood V, Nicol A: **The relationships between muscle strength,**  
16 **biomechanical functional moments and health-related quality of life in non-elite**  
17 **older adults. *Age and ageing* 2012, **41**(2):224-230.**
- 18 38. Atella V, Piano Mortari A, Kopinska J, Belotti F, Lapi F, Cricelli C, Fontana L: **Trends in**  
19 **age-related disease burden and healthcare utilization. *Aging Cell* 2019, **18**(1):e12861-  
20 e12861.**
- 21 39. Jura M, Kozak LP: **Obesity and related consequences to ageing. *Age (Dordrecht,*  
22 *Netherlands)* 2016, **38**(1):23.**
- 23 40. Roth TN: **Aging of the auditory system. *Handbook of clinical neurology* 2015, **129**:357-  
24 373.**
- 25 41. Dziechciaż M, Filip R: **Biological psychological and social determinants of old age: bio-**  
26 **psycho-social aspects of human aging. *Annals of agricultural and environmental*  
27 *medicine : AAEM* 2014, **21**(4):835-838.**
- 28 42. Lahera G, Andrade-González N, Gasull V, Pagés-Lluyot JR, Roca M: **[The public**  
29 **perception of depression in Spain]. *Anales del sistema sanitario de Navarra* 2019,  
30 **42**(1):31-39.**
- 31 43. Crimmins EM, Kim JK, Sole-Auro A: **Gender differences in health: results from SHARE,**  
32 **ELSA and HRS. *European journal of public health* 2011, **21**(1):81-91.**
- 33 44. Fehr R: **Is retirement always stressful? The potential impact of creativity. *Am Psychol*  
34 2012, **67**(1):76-77.**
- 35 45. van den Bogaard L, Henkens K: **When is quitting an escape? How different job**  
36 **demands affect physical and mental health outcomes of retirement. *European*  
37 *journal of public health* 2018, **28**(5):815-819.**

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1 **Table 1. Socio-demographic characteristics and lifestyle habits of the sample in**  
 2 **general and by gender**

<b>N=1700</b>	<b>General</b>	<b>Male</b>	<b>Female</b>	<b>p**</b>
<b>Gender, %</b>	-	48	52	
<b>Population age (years), average ± SD</b>	63.3 ± 5.7	63.4 ± 5.7	63.1 ± 5.7	0.228
<b>Marital status, %</b>				<0.001
Married - in a couple	74.4	82.4	67	
Single - separated - divorced	19.1	14.6	23.3	
Widowed	6.5	3.1	9.7	
<b>Educational level, %</b>				<0.001
Primary or below	7.4	5.2	9.4	
Secondary	50.6	48.5	52.5	
University	42	46.4	38.1	
<b>Employment status, %</b>				<0.001
Active	34.2	38.2	30.4	
Unemployed	7.2	5.7	8.7	
Retired	42.0	47.6	36.9	
Family and home care	7.6	0.7	13.9	
Pensioner	9.0	7.8	10.1	
<b>Chronic diseases</b>				
Nº (average) per individual (SD)	3.5 ± 2.5	3.2 ± 2.2	3.8 ± 2.7	<0.001
Bone, %	42.8	28.8	55.8	<0.001
HPB, %	36.4	43.3	30	<0.001
High cholesterol, %	34.3	31.9	36.5	0.042
Insomnia, %	25.7	18	32.7	<0.001
Vision problems, %	21.7	18.4	24.8	0.001
<b>Daily medication consumption, % (66.8% of the total),</b>				
1-2 medications daily	52.0	47.3	57.4	0.001
>3 medications daily	48.0	52.7	42.6	
<b>Alcohol consumption* (last year), %</b>	78.3	84.6	72.5	<0.001

<b>Tobacco consumption, %</b>				<0.001
Does not smoke daily	1.6	1.2	1.9	
Smokes daily	19.6	20.1	19.1	
Ex-smoker	46.2	56.1	37.2	
Non-smoker	32.6	22.6	41.8	
<b>Social life, %</b>				0.024
Satisfactory (stays active)	52.0	51.0	54.0	
Quiet (prefers to spend time alone)	39.0	42.0	36.0	
Hardly any social life, although he/she would like one	8.0	6.0	9.0	
Bad (lonely, with no one to turn to)	1.0	1.0	1.0	
<b>Sex life, %</b>				<0.001
Very good	4.5	5	4	
Good	41	44	38	
Normal	31	33	29	
Bad	13.5	12	15	
Very bad	6.5	6	13	
<b>Healthy lifestyle habits, %</b>				0.02
Exercises $\geq$ 3 days/week	52.3	55.0	50.0	
Exercises $\leq$ 1 day/week,	27.0	27.0	27.0	
Does not exercise (sedentary)	20.7	18.0	23.0	
<b>Eating habits, %</b>				
Very good diet (Mediterranean diet)	73.0	70.0	78.0	0.003
Diet could be improved	26.0	30.0	23.0	-
Unhealthy diet	1.0	1.0	1.0	-

1 \* Consumption of any kind of alcoholic drink, even if only in exceptional circumstances

2 **SD:** Standard deviation; HBP: high blood pressure \*\* t-student, Mann-Whitney U and Chi-squared tests

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6 **Table 2. State of health (clinical and psychological) as perceived by the sample**

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<b>N=1700</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b><i>p</i>*</b>
<b>General state of health (EQ-VAS scale), average</b>	75.9 ± 18.3	76.5 ±	75.4 ±	0.484
<b>(SD)</b>		17.2	19.3	
<b>State of health per employment status, average</b>				
Active	77.2 ± 17.0	77.1 ±	77.3 ±	
		15.5	18.5	
Unemployed	79.6 ± 16.8	79.1 ±	79.9 ±	
		17.4	16.5	
Retired	75.5 ± 18.7	76.3 ±	74.6 ±	
		17.7	19.8	
Family and home care	73.5 ± 17.7	73.2 ±	73.5 ±	
		20.2	17.7	
Pensioner	71.5 ± 21.91	72.6 ±	70.8 ±	
		20.9	22.7	
<b>Clinical situation (WHODAS-12 scale), average ± SD</b>	7.4 ± 11.4	8.2	6.5	<0.001
<b>Depression (PHQ-9 questionnaire), %</b>				
Minimal	47	46	47	
Mild	16	13	18	
Moderate	55	3	6	<0.001
Moderate/Severe	1	1	2	
Severe	1	0	1	

2 **SD:** Standard deviation; **EQ-VAS=** visual analogue scale to assess quality of life; **WHODAS-12=**

3 disability scale by the World Health Organisation; PHQ-9: Patient Health Questionnaire, 9 items.

4 \* Mann-Whitney U, Kruskal Wallis and Chi-squared tests

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10 **Table 3: Linear regression model of self-perceived health status (EQ-VAS) by the**  
 11 **respondents (n=1700),**

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	Model 1		Model 2	
	Standardised $\beta$ coefficients	<i>p</i>	Standardised $\beta$ coefficients	<i>p</i>
<b>Sociodemographic variables</b>				
Gender	-0.033	0.111	-0.049*	0.017
Age	-0.033	0.132	-0.048*	0.025
Educational level	0.007	0.728	0.006	0.778
Marital status	-0.037	0.068	-0.033	0.096
Employment status	0.000	0.993	0.003	0.903
<b>Health variables</b>				
Disability: WHODAS-12 (0-100)	-0.313*	0.000	-0.243*	0.000
N <sup>o</sup> Chronic diseases	-0.273*	0.000	-0.214*	0.000
Sleep problems	0.115*	0.000	0.066*	0.002
Smokes Yes/No	-0.021	0.290	-0.022	0.275
PHQ-9 (0-27)	-	-	-0.212*	0.000
Exercises $\geq$ 3 days/week	0.092*	0.000	0.083*	0.000
Healthy diet Yes/No	0.067*	0.001	0.043*	0.036
Alcohol (wine or beer) Yes/No	0.061*	0.003	0.056*	0.005
Adjusted R <sup>2</sup>	0.333		0.363	

2 **Note:** The table shows the standardised  $\beta$  coefficients and significance levels: \*  $p < 0.05$

3 **WHODAS-12**= disability scale by the World Health Organisation; **EQ-VAS**= visual analogue scale

4 to assess quality of life; **PHQ-9**: Patient Health Questionnaire, 9 items.

5 Linear regression model of self-perceived health status (EQ-VAS) by the respondents (n=1700), taking into  
6 account (model 2) or not (model 1) the level of depression according to the PHQ9 questionnaire.

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11 **Table 4. Sociodemographic characteristics and lifestyle habits of respondents according**

12 **to employment status: active workers and retirees**

<b>N=1295</b>	<b>Workers (n=581)</b>	<b>Retirees (n=714)</b>	<b>p **</b>
<b>Gender</b>			
Male, %	53.7	54.3	-
Female, %	46.3	45.7	-
<b>Age; years- average(SD)</b>	58.7 ± 3.5	67.5 ± 3.9*	<0.001
<b>Married or in a couple, %</b>	77.5	73.5*	0.003
<b>Personal situation, %</b>			
Lives alone	8.8	17.6	<0.001
Lives with partner and/or children	77.8	74.3	NS
Lives alone with children and/or other family	10.8	7.3	NS
Other	2.6	0.0	NS
<b>Educational level, %</b>			
Primary or below	2.7	9.5	NS
Secondary	47.9	48.3	NS
University	49.4	42.2*	<0.001
<b>Chronic diseases</b>			
Nº (average, SD) per individual	3.1 ± 2.4	3.7 ± 2.5*	<0.001
Bone, %	34.4	45.2*	<0.001
HPB, %	30.3	42.8*	0.002
High cholesterol, %	34.1	34.3	0.929
Insomnia, %	23.6	25.1	0.535
Vision problems, %	16.8	24.4*	0.001
<b>Sleep problems in the last month, %</b>	12.1	11.8	-
<b>Daily medication consumption, % (72.8% of the total):</b>			
1-2 medications daily,	64.4	45.4	NS
3-4 medications daily,	25.4	35.6	NS
5-6 medications daily,	5.8	11.0	NS
> 6 medications daily,	4.4	8.0	NS
<b>Alcohol consumption in the last year, %</b>	83.4	78.7*	<0.001
<b>Tobacco consumption, %</b>			

Daily	25.5	13.7*	<0.001
Not daily	3.4	0.5	NS
Ex-smoker	43.5	52.3	NS
Non-smoker	27.7	33.5	NS
<b>Social life, %</b>			
Satisfactory (stays active)	50.1	57.1	0.049
Quiet (prefers to spend time alone)	40.1	35.4	-
Hardly any social life, although he/she would like one	8.3	6.7	-
Bad (lonely, with no one to turn to)	1.5	0.8*	0.049
<b>Sex life, %</b>			
Very good / Good	52.2%	40.2%*	<0.001
Normal	29.8%	33.2%	-
Bad / Very bad	17.6%	26.6%	-
<b>Healthy lifestyle habits, %</b>			
Exercises $\geq$ 3 days/week	44.5	57.2*	<0.001
Exercises $\leq$ 1 day/week	31.9	25.0	-
Does not exercise (sedentary)	23.6	17.8	-
<b>Eating habits, %</b>			
Very good diet (Mediterranean diet)	68.3	76.6*	0.004
Diet could be improved	30.6	22.6	-
Unhealthy diet	1.0	0.8	-

1 \*= statistically significant; \*\* t-student, Mann-Whitney U and chi-squared tests

2 NS = not significant, HBP: High blood pressure; WHODAS-12=edisability scale by the World

3 Health Organisation.

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10 **Table 5. Self-perceived health status (clinical and psychological) according to**

11 **employment status: workers and retirees.**

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<b>N=1295</b>	<b>Workers (n= 581)</b>	<b>Retirees (n=714)</b>	<b>P*</b>
<b>General state of health (EQ-VAS scale), average ± SD</b>	77.2 ± 17.0	75.5 ± 18.7	0.389
<b>Clinical situation (WHODAS-12 scale), average ± SD</b>	6.89 ± 11.4	7.3 ± 11.5	0.662
<b>Depression (PHQ-9 questionnaire), %</b>			0.001
No	26.5	36.5	
Minimal	48.6	45.4	
Mild	17.7	13.3	
Moderate	5.6	2.9	
Moderate/Severe	1.1	1.2	
Severe	0.4	0.8	

2 **SD:** Standard deviation; **EQ-VAS=** visual analogue scale to assess quality of life; **WHODAS-12=**  
3 disability scale by the World Health Organisation; PHQ-9: Patient Health Questionnaire, 9 items.

4 \* Mann-Whitney U and Chi-squared tests

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18 **Table 6: Linear regression model of perceived health status (EQ-VAS) for the sample**  
19 **according to employment status.**

	Standardised $\beta$ coefficients		
	Workers	Retirees	Total Sample
<b>Sociodemographic variables</b>			
Employment status	-	-	0.018
Gender	-0.098*	-0.023	-0.054*
Age	-0.009	-0.031	-0.039
Educational level	0.031	-0.003	0.017
Marital status	-0.035	-0.019	-0.020
<b>Health variables</b>			
Disability: WHODAS-12 (0-100)	-0.191*	-0.259*	-0.238*
Depression PHQ9 (0-27)	-0.307*	-0.149*	-0.204*
Number of chronic diseases	-0.181*	-0.240*	-0.221*
Sleeps well	0.030	0.116*	0.084*
Smokes	-0.053	0.006	-0.021
Exercises $\geq$ 3 days/week	0.102*	0.045	0.070*
Healthy diet	0.001	0.088*	0.051*
Alcohol (wine or beer with meals)	0.038	0.095*	0.073*
Adjusted R <sup>2</sup>	0.339	0.359	0.348

1 \* p < 0.05

2 **WHODAS-12**= disability scale by the World Health Organisation; PHQ-9: Patient Health

3 Questionnaire, 9 items.

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