

Psychometric properties of the CASP-12 in a Spanish older community dwelling sample.

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Abstract

Current studies have shown that older people's Quality of Life (QoL) is more associated to individual's sense of happiness and subjective life satisfaction than to objective problems, such as physical functioning. CASP scale conceptualizes QoL based in a psycho-sociological perspective. Originally it consisted of 19 items (four factors: control, autonomy, self-realization and pleasure; the first letter of each factor were joined to create the acronym, CASP), but Wiggins, Netuveli, Hyde, Higgs and Blane (2008) proposed a shorter version including 12 items and three factors (control combined with autonomy, pleasure and self-realization).

Objective and methods. The aim of this study was to assess the structure of the CASP- 12 SHARE version using confirmatory factor analysis (CFA) in a sample of 1,108 people aged 60 years and over. We checked the CASP structures traditionally proposed (one-dimensional, four dimension first-order factor and second order factor model) and tested, for the first time, the three domains model proposed by Wiggins et al. (2008) with the objective of constructing a model with acceptable fit to the data that also retains the theoretical value of the scale.

Results. The three factor model (1) pleasure, 2) self-realization and 3) autonomy and control) showed a good overall fit (CFI=.932; TLI=.912; RMSEA=.067). An adequate internal consistency was also obtained.

Conclusion. This is the first study that explored the psychometric properties and validated a well-fitting three factor structure proposed by Wiggins and cols (2008) for the CASP-12 in a large population sample of older people from Spain. The results of the current study support a multidimensional model for the CASP-12 composed by three factors. The CASP-12 has potential to be used as a multidimensional tool to assess QoL in older people.

Keywords: quality of life, older people, reliability, validity.

Introduction

There are countless publications analysing the construct of QoL (Bowling, 2005), but there is no universal consensus about its empirical definition (Bowling & Stenner, 2011). Although there are different definitions of quality of life, the World Health Organization's Quality of Life assessment group definition (WHOQOL) is the most accepted. This group defines quality of life as an expression of how a human perceives his or her own attitude to life in the context of the culture where he or she lives and related to his/her own targets, expectations, life style and interests (WHOQOL Group, 1995).

QoL is a construct broadly used in the gerontological setting and its assessment is an important issue and a significant worldwide policy issue (Bowling, 2005; Hamren, Chunkham, & Hyde, 2014). QoL amongst older people is a difficult and multifaceted phenomenon that includes multiple dimensions (physical, psychological, social and environmental), comprises objective and subjective components, and includes social arrangements and individual characteristics (Fernández-Ballesteros, 2011; Higgs, Hyde, Wiggins, & Blane, 2003). In this line, Brown, Bowling and Flynn (2004) conducted a meta-analysis where the different components of quality of life in older people were analyzed, with the following as the most significant: health, family relations, interpersonal relationships, autonomy, independence, leisure activities, economics and emotional, spiritual and environmental conditions.

Nevertheless, some experts, especially within the health science setting, have shown a bias for health reductionism in its conceptualization and scientific definition (Holzhausen & Martus, 2013). Health has been used as the proxy for QoL being called Health Related to Quality of Life (HRQoL). HRQoL was defined by Shumaker and Naughton (1995) as the subjective assessment of the influence of health status and the level of physical, psychological and social functioning in the possibility of achieving the goals of life. This approach is based on the dominant paradigm of decline in older people, in which aging has been traditionally associated with illness, functional decline, and dependency. However, most western older people stay healthy and free of dependence (Sexton, King-Kallimanis, Conroy, & Hickey, 2013). Moreover, a meta-analysis indicates that QoL and health status are two distinct constructs from the patient's perspective (Smith, Avis, & Assman, 1999)⁴

A short time ago, a new measure called CASP was specifically designed to assess QoL in older people (Higgs et al., 2003) from an agentic perspective (Towers, Yeung, Stevenson, Stephens, & Alpass, 2015). From this perspective, QoL is based in the capacity of agency as more than just the presence or absence of disease. The original scale comprises 19 items organized according to a needs satisfaction model elaborated by Doyal and Gough in 1991, and focuses on the degree to which higher level needs in the Maslow hierarchy are satisfied (Higgs et al., 2003): control, autonomy, self-realization and pleasure. According to Higgs et al. (2003, p.244), control describes “the ability to actively intervene in one’s own environment” and autonomy represents “free from unwanted interference from others” (Higgs et al., 2003, p.244). These authors also stressed the need to achieve these basic requirements in order to pursue self-realization and pleasure. In this sense, self-realization is related to eudaimonic well-being and pleasure with hedonic well-being.

As can be observed, this tool contrasts with health-related scales because it conceptualizes QoL based in a psycho-sociological perspective, stressing older people’s positive characteristics (Higgs et al., 2003). Unlike most QoL tools, CASP aspires to measure QoL without drawing a parallel with physical symptoms. What is more, current studies have shown that QoL is more associated to an individual sense of happiness and subjective life satisfaction than to objective problems, such as physical functioning.

CASP-19 has been assumed in many national and cross-national studies in order to be aware of the need to develop social services and policy resources adapted to recent demographic changes, such as the Korean Longitudinal Study of Ageing KLoSA, the HAPiEE Study (Kim et al., 2015), the English Longitudinal Study of Ageing (ELSA), the Irish Longitudinal Study of Ageing (TILDA), the Health and Retirement Survey (HRS), the British Household Panel Survey, the GAZEL Study, the CONSTANCE study. Thus, Wiggins et al. (2008) proposed a new version of CASP with 12 items and three factors (combined control and autonomy dimension), which showed more robust psychometric properties than the original version. Also, a shortened version, CASP-12, has been implemented in the Survey of Health, Ageing and Retirement in Europe (SHARE) (Vondra, Knesebeck, Wahrendorf, Hyde, & Siegrist, 2007).

However, there are relatively few studies that have tested the psychometric properties of this scale. For example, Lima et al. (2014) translated and evaluated the use of the CASP-19 amongst older Brazilians. Hamren et al. (2014) evaluated the measurement and predictors of CASP-12 amongst older Ethiopians. Wu et al. (2013) validated its structure in the New Zealand Longitudinal Study of Ageing (NZLSA) where it was included the CASP-12 version in the first data collection wave. The scale was also used in Nigeria (Ejechi, 2012). In 2010, Amit and Litwin (2010) used data from SHARE-Israel to study differences in QoL amongst immigrants in Israel. Recently, Borrat-Besson, Ryser and Goncalves (2015) analysed the structure of CASP-12 using data from the fourth wave of the SHARE project on population aged 50 and over in sixteen countries, including Spain. These authors tested some of the original structures of CASP (one-dimension, and four dimensions using a first-order factor and a second order factor model). Finally, they proposed a different version that included ten items and two factors. However, in this study it was not checked the three factor structure proposed by Wiggins and cols (2008).

Although life expectancy has increased in the past decades, it is surprising that several studies developed to assess older people's QoL have included people younger than 60 years old, such as the SHARE project, in which people aged 50 years old and over participated, as well as the study developed by Borrat-Besson et al. (2015), in which there was even a small proportion of participants below 50 years old. Regarding the lack of studies that have validated the CASP-12 in older people exclusively, the aim of this study was to explore the psychometric properties of the CASP-12 scale and its factor structure in a Spanish older community dwelling sample. In order to achieve this aim, we assessed the structure of the CASP-12 SHARE version in people aged 60 years and over, as the United Nations agreed cut-off criteria is 60 years and over to refer to the older population. We checked other CASP structures traditionally proposed (one-dimensional, four dimension first-order factor and second order factor model) and tested, for the first time, the three domains model proposed by Wiggins et al. (2008) with the objective of constructing a model with acceptable fit to the data that also retains the theoretical value of the scale.

Method

Participants

The sample consisted of 1,207 non institutionalized people aged 60 and over. 99 subjects were removed to control missing data, because they omitted some items of CASP-12. As a consequence, the final sample consisted of 1,108 subjects.

The mean age was 73.58 years old (SD =7.74), with ages ranging from 60 to 99. The gender distribution was homogeneous (56.6% women and 43.3% men). Most of the sample was married (58.8%) or widowed (32.6). A large percentage of participants perceived their health like good (42.3%) or fair (34.5%) and they had incomplete (33.9%) or complete (29.3%) primary education. The Table 1 shows the sample's distribution by geographical area.

INSERT TABLE 1 ABOUT HERE

Measures

The CASP scale measures the degree to which the older adults have their needs covered. The scale conceptualizes quality of life in psychosociological terms, rather than biological or medical, and explicitly resists a conflation of quality of life with health status, with its potential to mediate old age (Higgs et al., 2003). As result, it focuses on favourable and advantageous features of aging.

The Survey of Health, Ageing and Retirement in Europe (SHARE) proposed the development of a shortened version of the index, the CASP-12, which differs a little from the CASP-12 suggested by Wiggins et al. (2008) (Börsch-Supan et al., 2013). The scale consists of 12 items grouped into four factors: control (3 items), autonomy (3 items), pleasure (3 items) and self-realization (3 items). It is a summative scale where each item is answered on a four-point Likert scale (1 = never; 4 = often). Some items have a reversed score. The total score for quality of life ranges from 12 to 48, where higher scores mean better quality of life (scores below 35= low QoL; 35-37= moderate QoL; 37-39= high QoL;

39-41= very high QoL). This instrument has shown a strong internal consistency for the total score (Cronbach's alpha= .83) (Von demKnesebeck et al., 2007). Wiggins et al. (2008) proposed a different model with three factors: 1) pleasure, 2) self- realization, and 3) control and autonomy. The average value for the total sample in the CASP-12 was 35.06 (Table 2).

Procedure

This is a cross-sectional study in which we aimed to assess life conditions in older people community dwelling. The reference population is non-institutionalized people over 60 residing in the Basque Country and forming part of the population census. The sample recruitment was developed by an external company. We took this decision in order to ensure the following criteria: confidentiality, anonymity, autonomy, privacy, sample screening and direct relationship. These criteria were essential to guarantee a meaningful participation in this study and to prevent participants' response bias. The agreement with the external company included three main points: First, data will not be transferred to the external company. Second, data could only be used under conditions of anonymity, ensuring participants' confidentiality. Third, an exclusivity clause was included in order to ensure that data could be only used in this study. A three-stage sampling method by conglomerates was applied to select older adults aged 60 years and over. The first stage was stratified by sections of the census according to size. In the second stage, the sample elements were selected according to the households. And in the third stage, subjects were recruited according to the people resident in each household.

The participants were randomly selected by using the municipal census data. It was recruited a representative sample of inhabitants aged 60 and older. Participation was voluntary with no incentives offered. Then, a letter was sent to all the selected people with information about the nature and the goals of the research and, later, they were contacted by telephone and were invited to participate in the study. Following this, face-to-face interviews were carried out with those older people who agreed to take part in the study. Before the interviews were carried out, the interviewers were trained on the protocol in order to use homogenized criteria. In all cases, confidentiality and anonymity were assured with the informed consent procedures, which included the main information about the study. Therefore, informed consent was obtained from all the participants included in the study.

Data Analysis

Reliability was assessed using different indicators such as Cronbach's alpha and Spearman-Brown coefficient. Exploratory Factor Analysis (EFA) was used to assess the correlations between the items in order to estimate statistically the latent factors.

Since item scores are measured in ordered categories, the EFA was performed over the polychoric correlation matrix (Lancaster & Hamdan, 1964; Olsson, 1979). To determine the number of underlying data factors, we used several heuristics: K1 rule, scree plot, and a repertory of goodness of fit statistics: chi-square (and the quotient by its degrees of freedom), RMSR (Root Mean Square Residual) and RMSEA (Root Mean Square and Error

of Approximation), and parallel analysis using principal axes (O'Connor, 2000). We also took previous theories into account to assess the suitability of different factor solutions. For the extraction of factors, a robust weighted least squares estimation (WLSMV) was used, suitable for categorical data (Muthén & Muthén, 2007). After confirming that oblique rotation (Promax) solution matched the original structure, an orthogonal rotation (Varimax) was allowed. In order to check the fit of the structure obtained through EFA, a Confirmatory Factor Analysis (CFA) was also completed.

We tested the different CASP-12 structures (single factor model, four first-order factor model, four second-order factor model and three factor model), to determine how well the suggested factor structures fitted the new data. Reliability was assessed using different indicators such as Cronbach's alpha and Spearman-Brown coefficient.

CFA explicits the theoretical commitment that exists within a model, and then contrasts it with the data obtained in the sample (Ruiz, 2000). The estimation method used was Weighted Least Squares Means and Variance Adjusted (WLSMV). In order to assess the degree to which the data fitted the model, the following indexes were used: first, the chi-square statistic and the ratio of chi-square to degree of freedom. Then, the Comparative Fit Index (CFI), and the Tucker-Lewis Index (TLI) were used as comparative indexes. Also, the residual indexes SRSR (Standard Root Mean Square Residual) and RMSEA (Root Mean Square Error of Approximation) were obtained. According to Schreiber et al. (2006), CFI and TLI values over .90 are considered adequate. Also, the SRMR and RMSEA below .060 are considered adequate (Browne & Cudeck, 1993). SPSS 19.0 and Mplus software were used in data analysis.

Missing values treatment was not carried out because there was a small degree of missingness (8%).

Results

Item Analysis

The means of the elements ranged between 2.35 (item 1) and 3.39 (item 8). The average was 2.92 and the standard deviation ranged from .783 (item 8) and 1.122 (Item 6). It was observed a ceiling effect in the items 2, 3, 5, 7, 8, 9, where the highest category was chosen between the 34.6% and the 54.8% of the subjects.

All the items showed a significantly corrected homogeneity index different from zero (see Pardo & San Martín, 2001). Only two items (item 5 and item 6) showed a corrected homogeneity index lower than .170. However, its deletion did not contribute to a significant increase of the internal consistency. For this reason, it was finally decided not to remove it. The final test consisted of 12 items (see Table 3).

Exploratory Factor Analysis

Following the original structure of the questionnaire, it was decided to retain four factors. The model explained the 47.93% of the total variance. The Kaiser-Meyer- Olkin index showed a value of .894 and a significance minor than .001 was obtained in the Bartlett's

test. Factor analysis after rotation showed the underlying structure which is presented in Table 4. Considering the content of the items, these factors have been named Pleasure (factor 1), Control and Autonomy (factor 2) and Self-realization (factor 3).

Confirmatory Factor Analysis

We carried out four CFAs in order to analyze which of them fitted better with our data. First, we tested a one-dimensional model. Then, we tested a model that included four first-order factors, a model that included four second-order factors and a model with three first order factors. The results found are showed in table 3.

The one-dimensional model showed a poor data fit (figure 1). Then, the model with four first-order factors showed an excellent model fit, with adequate values in all the fit indexes analyzed (see figure 2). In contrast, the model formed by four second-order factors showed a poor data fit (see figure 3). Thus, the model composed by three first-order factors showed an excellent fit of the data, with values slightly lower than the ones found in the second model tested that included four first-order factors (see figure 4). However, the correlation matrix (see table 4) showed a very high correlation between autonomy and control factors ($r=.90$).

In table 5 are shown the factor loadings obtained in the third and fourth models. As can be observed, the factor loadings were similar. These results support the proposal of joining autonomy and control in one factor. This model would not only be more parsimonious, but also the fit indexes are located with the recommended values.

Indicators of Reliability

The Cronbach's α found in the 12 item scale was .859. The coefficient of reliability of the complete test, using the Spearman-Brown formula, was .74. The two indicators of reliability were above .70, exceeding Nunnally's recommendations for tests under validation or adaptation (Nunnally, 1981).

The internal consistency of the four factor model ranged from .82 to .39. Control (Cronbach's $\alpha = .78$), pleasure (Cronbach's $\alpha = .75$) and self-realization (Cronbach's $\alpha = .82$) showed an adequate internal consistency. However, autonomy showed a low internal consistency (Cronbach's $\alpha = .39$). In contrast, the internal consistency of the three factor model showed higher scores, with a Cronbach's alpha of .72 in the factor in which autonomy and control were joined.

Discussion

There are no a broadly accepted older people QoL standardized scales. The most used measures are focused on assessing health variables which may underpin a negative perspective of ageing. In contrast, QoL is more than health. In fact, several studies have indicated that a holistic model with wider QoL domains (such as psychological well-being, social relationships, life satisfaction and independency) is also valued positively by older people. This was confirmed in Fry's (2000) results, in which older people demanded

control, autonomy and independence while making decisions. Moreover, the subjective dimension of QoL has been measured in life satisfaction scales that include eudaimonic and hedonic components, both included in CASP scale.

Previous research carried out with the CASP-12 SHARE version has encompassed people aged 50 years and over, and what is more, the study developed by Borrat-Besson et al. (2015) even included a small proportion of people below 50 years old. This is a paradox phenomenon because, while life expectancy is increasing, some studies, as the ones mentioned above, have included people younger than 60 years old labelling them as older adults. For this reason, we tested the different CASP-12 structures (single factor model, four dimension first-order factor model, second-order factor model and three domains factor model), in order to determine how well the suggested factor structures fitted the new data. And we assessed people aged 60 years and over following the cut-off criteria proposed by UN.

The results showed a good fit of three domains model of the CASP-12 proposed by Wiggins et al. (2008). Although the four first-factor structure also showed a good data fit, it showed an inadequate internal consistency in one factor (autonomy). In all revised studies, the reliability of the autonomy domain was the weakest, with unacceptable scores. In fact, for the autonomy dimension many studies have found values close to .50 (Wiggins et al., 2008; Sim, Bartlam, & Bernard, 2011) or even lower (Borrat-Besson et al, 2015).

Moreover, according to Diener et al. (1998), life satisfaction arises from feelings of mastery which includes aspects of control and autonomy. Given the strong association between control and autonomy factors, we tested the three factor model proposed by Wiggins et al. (2008). This model showed a good data fit as well as a good internal consistency in all the subscales. Comparing with Wiggins et al. (2008) study, we obtained greater scores in control and self-realization domains and slightly lower in pleasure and autonomy domain. As a consequence, the three factor model seemed to be more appropriate, suggesting the need to unite both factors (control and autonomy) in one domain.

The main contributions of the present study may be summarized as follows: first and foremost it provides empirical evidence of the importance of the assessment of QoL in older people using a broader and a holistic approach that is different from the approach based on the dominant paradigm of decline in older people (Wiggins et al., 2004). Older people in industrialized countries are increasingly similar to other age groups' interests and experiences. There has been a transformation of older people from a welfare group to a leisure class in the advanced industrial countries (Hyde, Wiggins, Higgs, & Blane, 2003). Older people are not separated from the rest of the population, so assessment of their QoL should not be restricted to health, disability or illness (Higgs et al., 2003; Towers et al., 2015). The use of health related to QoL in older adults reflected the fact that past generations suffered illnesses in older age in a greater extent than today. However, according to previous studies, QoL is the outcome of a complex interaction among different life components. What is more, given the relation that QoL has with positive ageing (Fernández-Ballesteros, 2011; Hamren et al., 2014), this differentiation between QoL subscales may be of special interest in terms of identifying specific areas in which older people may be at greater risk for a negative ageing. Knowing that QoL acts as a significant

mediator between chronic and disabling conditions and the perceived effects of burden, having QoL assessment instruments with strong psychometric support may contribute to give a better answer to older people needs.

Another strength of this study is that CASP is not a self-completed questionnaire. The incapacity to precise the degree to which responses exactly reflects the respondents' experiences caused by imprecise recall is a methodological problem usually related with the use of self-report tools (Kim et al., 2015). Self-report questionnaires present some limitations like social desirability, a phenomenon that is more frequent in older than younger people. For this reason, this version of the CASP is recommended to be used in future studies investigating QoL in Spanish older adult population. Moreover, the results of the current study support a multidimensional model for the CASP with three factors. To sum up, CASP-12 has potential to be used as a multidimensional tool in order to assess QoL in older people. Moreover, the CASP-12 average score is pretty similar to the score obtained in the SHARE study (Von demKneesebeck et al., 2007), which supports the findings of the study.

Although this research has generated important and interesting findings, there are some limitations that need to be acknowledged and addressed. First, because of the modest sample size of the present study, we cannot be certain whether these three factors show all the Spanish cultural variations. This would require a much larger prospective study involving several cultural groups. The sample used (older adults from the Basque country) limits the generalization of the obtained results to older adults from other regions and cultures. Future studies should analyze the usefulness of Spanish CASP-12 in samples including older people from a wider range of origins. However, to the best of our knowledge, no evidence has emerged to support the hypothesis that certain Spanish cultural groups experienced QoL differently. Second, the sample consisted of 1,207 non institutionalized people. This is another potential limitation to generalize the results of the present study to subjects living in long-term care facilities. Nevertheless, the majority of the Spanish older adults' population dwells in the community. Further assessment with other samples will provide more evidence for the validity of this tool. Third, because of the cross-sectional design, it is possible that the current factor structures are not temporally stable for the Spanish population. It is important to analyze CASP-12 responses across longitudinal studies in order to clarify the degree of temporal stability in the current three factor structure, or, whether Spanish response patterns differ over time. The stability of the Spanish CASP scale over time could be a focus of future research. Finally, it would be interesting to examine more in detail the differences of the scale scores between old and oldest-old individuals. The ageing process is heterogeneous and the same scale could be different among young retirees and very old individuals.

Despite the above-mentioned limitations, this is one of the first, and the largest study on the levels and psychometric properties of CASP-12 in Spain. In conclusion, CASP-12 is a valid and reliable tool for assessing QoL among older adults aged 60 years or older. Quality of life in later life has become a major global policy and research issue. This version of CASP is recommended to be used in future studies investigating QoL in Spanish population. This study provides Spanish-speaking countries a good scale to measure QoL in later life. Hopefully, future studies in these countries will be able to use this scale when assessing the

impact of Public Health services and cross- cultural comparisons.

Conflict of Interest: None

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study

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