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# The Living Standards Capabilities for Elders scale (LSCAPE): adaptation and validation in a sample of Spanish seniors

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## Abstract

Living standards capabilities are an important determinant of healthy ageing. The Living Standards Capabilities for Elders scale (LSCAPE) is the main instrument available to assess living standards capabilities among older adults based on Sen's Capability Approach. The objectives of this study were: (a) to adapt and validate LSCAPE for use in the Spanish population; (b) to examine the dimensionality, validity and reliability; and (c) to establish the convergent validity of LSCAPE using self-reported measures of quality of life and income. The LSCAPE was administered to 441 Spanish seniors aged 65 and over. Confirmatory Factor Analysis (CFA) was used to analyse the dimensionality, validity and reliability. Discriminant and convergent validity of the model were assessed using Average Variance Extracted (AVE). Reliability was shown by Composite Reliability (CR) and Cronbach's alpha. Convergent validity was tested by correlating the LSCAPE scales and sub-scales with the Short-form Health Survey (SF-12) sub-scales. CFA showed that the LSCAPE Six-factor Model fits well to the data, showing Standardised Root Mean Square Residual < 0.09 (0.084), Comparative Fit Index and Tucker–Lewis Index > 0.9 (0.925 and 0.917, respectively). LSCAPE showed also good reliability (CR indices > 0.7) and validity (AVE > 0.5) measures. Finally, LSCAPE had moderate to strong associations with SF-12 sub-scales (>0.6) and a moderate relationship with income (>0.3). Thus, LSCAPE has been demonstrated to be a reliable and valid instrument in measuring living standards capabilities among the Spanish older population.

**Keywords:** living standards capabilities; ageing; older people; validation; reliability; Sen's Capability Approach

## Introduction

Demographic change is one of the most challenging social phenomena of modern societies, and the need for healthy ageing is of primary economic and social importance in the context of an ageing population. Successful ageing is a challenge that lies ahead of modern societies. In order to tackle this challenge, international and European organisations are working towards a paradigm shift on ageing.

This new paradigm explains that success and wellbeing at this stage of life will be determined by physical and mental health as well as social, economic and cultural aspects, which together play a key role in how older people face the process of becoming older (Cosco *et al.*, 2014; World Health Organization, 2015). In this regard, the World Health Organization (2015) has deployed the concept of healthy ageing, which 'is about creating the environments and opportunities that enable people to be and do what they value throughout their lives'. Healthy ageing is not only determined by biological ageing health status and functionality but also by the capability of older adults to live well in later life (Yeung and Breheny, 2016). Thus, this stage that occupies a third of our life is a new opportunity to continue developing ourselves at the physical, psychological and social level, and thus an opportunity for personal growth (Gladman, 2019).

Socio-economic environment, physical environment and the person's individual characteristics and behaviours are major determinants of both health (World Health Organization Commission on Social Determinants of Health, 2008) and successful ageing (Zanjari *et al.*, 2017). Many of these determinants may be grouped under the general heading of social determinants of health, in which living standards are embedded (Solar and Irwin, 2010).

Standard of living is a concept used to describe how well a person can live his or her life in terms of objective wellbeing. Different approaches to this concept have been developed: from a purely material approach based on income, wealth and other material assets to a more holistic approach which not only considers material wealth but also social and environmental goods, their utility or benefit, and individual's use of these goods (Sen, 1987). In Sen's Capability Approach, a shift on how wellbeing and quality of life are measured occurred from a perspective based on 'resources' and 'preferences' to a perspective based on 'capabilities', where the focus is not only on the person, but also his or her context (Sen, 2009). 'Capability' is described as what individuals are able to do and be, and the level of their freedom to pursue the lives they have reason to value (Sen, 1999; Breheny *et al.*, 2016). Thus, it is necessary to pay attention to the material and social contexts of older people in order to understand and support their welfare regardless of health status (Gopinath, 2018). The Capability Approach to healthy ageing should be seen as the outcome of an interaction between personal characteristics (*i.e.* gender, age, presence of disabilities, *etc.*), economic resources or assets (*i.e.* pensions), and the social (social norms, sexism, racism, *etc.*), economic and environmental (*i.e.* availability of adequate infrastructures) aspects (Yeung and Breheny, 2016). In this sense, Sen's Capability Approach contributed to the design of the United Nations Development Programme Human Development Index which offers the possibility of comparing the wellbeing of countries (Sen, 1992).

The importance attributed to the different aspects of living standards is subjective and varies across different age groups. The levels of living standards have been reported to increase with age (Groffen *et al.*, 2008; Litwin and Sapir, 2009; Breheny *et al.*, 2013). Lifetime accumulation of wealth may explain this tendency, as well as the change in the experiences and expectations of living standards and income as people age (Stoller and Stoller, 2003; Berthoud *et al.*, 2006; Wilkinson, 2016). Moreover, living standards have been traditionally associated with quality

of life by many authors stating that living standards are an important part of older people's quality of life (e.g. Lawton, 1983; Smith *et al.*, 2005; Diener *et al.*, 2010). Both measures are, in turn, related to health – understood as physical and mental health – which has been shown to be affected by living standards and to have an effect on quality of life for older people (Fergusson *et al.*, 2001; Low and Mozahn, 2007).

Therefore, it is particularly important to measure living standards among older adults. To this aim, it is essential to have a living standards measure able to assess both the variety of living standards of older people and their change over time (Breheny *et al.*, 2016). One of the main instruments to assess living standards capabilities among older adults is the Living Standards Capabilities for Elders scale (LSCAPE) (Breheny *et al.*, 2013). This scale was developed based on Sen's Capability Approach. LSCAPE is a 25-item scale which include questions on a variety of living standards: health, social integration, contribution, enjoyment, security and restriction. The authors also proposed a short version of LSCAPE consisting of six items that are scored as in the original scale (Breheny *et al.*, 2016). This six-item version of LSCAPE has been included as part of the Healthy Ageing in Scotland study to assess living standards, which is the first long-term ageing study to improve the lives of elderly people in Scotland (Douglas *et al.*, 2017).

LSCAPE was validated using the New Zealand Longitudinal Study of Ageing involving a sample of 2,968 older adults (aged 50–87 years) in New Zealand (Breheny *et al.*, 2016). The psychometric properties of the scale were evaluated by the authors with reliability and validity. Reliability results indicated excellent internal consistency of LSCAPE (Cronbach's alpha for the six sub-scales ranged from 0.81 to 0.90 and the total LSCAPE score was 0.96). Regarding the dimensional structure of LSCAPE, Confirmatory Factor Analysis (CFA) was performed indicating a six-factor structure.

At the time this study was performed, there was no official Spanish version of the scale. Therefore, the aims of the present study are: (a) to adapt and validate the LSCAPE for use in a Spanish population; (b) to examine the dimensionality, validity and reliability, using CFA, of LSCAPE in a sample of Spanish older people; and (c) to establish the convergent validity of LSCAPE with quality of life and a self-reported monthly income measure.

## Method

### Sample

The target population of this study was older population from the city of Valencia (Spain). Participants were recruited in two health centres between March 2017 and March 2018. The inclusion criteria were living independently, lacking severe cognitive impairment and having the capacity to provide informed consent. Consecutive patients meeting the inclusion criteria were invited to take part in the study by their general practitioners (GPs), with an acceptance rate of 69.7 per cent.

The final sample was composed of 411 home-dwelling older adults aged between 65 and 92 with an average age of 77 years, from which 38.32 per cent were men (169 persons) and 61.68 per cent were women (272 persons).

The analysis of the income of the participants revealed that 64.85 per cent of them (286 out of 441) had an income of €1,200 per month or less, while 17.69 per cent had an income between €1,200 and 1,700 (78 persons), 8.84 per cent between €1,700 and 2,300 (39 persons), and 7.03 per cent more than €2,300 (31 persons).

With regard to the household composition, 25.85 per cent of participants (114 persons) were living alone, 58.50 per cent were living with one more person (258 persons) and 15.65 per cent were living in households of three or more people (69 persons).

The socio-demographic characteristics of our study sample are similar to those of the target population: older adults living in the city of Valencia. In January 2018, there were 164,341 adults aged 65 and older in Valencia, of whom 40.4 per cent were men and 59.6 per cent were women (Ajuntament de València, 2019). Their average monthly income was €1,050.24 (Generalitat Valenciana, 2019), and 26.31 per cent of them were living alone and 18.76 per cent were living in households of three or more people (Ajuntament de València, 2019).

### **Procedure**

Consecutive patients who visited health-care centres were invited by health professionals. The persons who agreed to participate in the study gave consent to provide the researchers with contact details and to be contacted by phone in the next two weeks. During the phone conversation, an appointment at the participant's home was set in order to administer the LSCAPE by a trained researcher. This study was approved by the Ethics Committee of Consorcio Hospital General Universitario and the Ethics Committee of Hospital Universitari i Politècnic La Fe, both from Valencia (Spain).

### **Measures**

#### **LSCAPE**

LSCAPE is a 25-item scale based on Sen's Capability Approach that assesses the living standards of older people in terms of their capability of achieving valued functioning across six domains: health, social integration, contribution, enjoyment, security and restriction (Breheny *et al.*, 2013). Each item is responded to on a five-point Likert-type scale ranging from 1 ('not at all true for me') to 5 ('definitely true for me'), with a total score that ranges from 25 to 125; the higher the score, the higher the living standards.

In the framework of this study, a Spanish version of LSCAPE (see Table 1) was developed using the back-translation method (Brislin, 1970). Two bilingual translators translated and adapted the items from English to Spanish and two different translators translated it back to English. The authors of this study verified the semantic equivalence of the translated version towards the original scale.

#### **Short-Form Health Survey version 2**

The Spanish version of the Short-Form Health Survey version 2 (SF-12v2) (Vilagut *et al.*, 2008) was used to measure the quality of life of older people in order to assess convergent and discriminant validity of LSCAPE. SF-12v2 is a reliable and valid

**Table 1.** Spanish version of the Living Standards Capabilities for Elders scale (LSCAPE)

<i>Salud [Health]:</i>
<i>Puedo permitirme todo lo que necesito para mantenerme bien [I can afford anything I need to remain well]</i>
<i>Puedo permitirme todo lo que necesito para mantenerme sano/a [I can afford all that I need to be healthy]</i>
<i>Puedo permitirme ir a un especialista de pago si lo necesito [I can afford to go to a medical specialist if I need to]</i>
<i>Puedo obtener toda la atención sanitaria que necesito [I can get all the health care I need]</i>
<i>Integración social [Social integration]:</i>
<i>Puedo visitar a otras personas siempre que quiero [I am able to visit people whenever I wish]</i>
<i>Puedo viajar siempre que me apetece [I am able to travel as much as I would like]</i>
<i>Puedo participar en las actividades periódicas que deseo (por ejemplo, clases de pintura, salir a caminar, etc.) [I am able to take part in any regular activities I want to (for example, art classes, going for a walk, etc.)]</i>
<i>Puedo realizar salidas especiales/puntuales (salir a comer, salir a tomar un café, etc.) [I am able to go on special outings (going out for lunch or a coffee, etc.)]</i>
<i>Contribución a los demás [Contribution]:</i>
<i>Soy capaz de dar a los demás todo lo que quiero/me propongo [am able to give to others as much as I want]</i>
<i>Puedo gastar dinero en los demás cuando quiero [I can provide for others when I wish]</i>
<i>Puedo ayudar a los demás cuando quiero [I can help people whenever I want]</i>
<i>Puedo donar todo lo que quiero a causas benéficas [I can give as much as I like to charity or the church]</i>
<i>Ocio [Enjoyment]:</i>
<i>Puedo dedicar mi tiempo a lo que me interesa [I am able to follow my interests]</i>
<i>Puedo hacer todo lo que me apetece [I am able to do all the things I love]</i>
<i>Puedo tener todo lo necesito para ser feliz [I can have everything I need to be happy]</i>
<i>Puedo permitirme caprichos regularmente [I can have regular treats]</i>
<i>Seguridad [Security]:</i>
<i>Espero tener suficientes recursos económicos durante toda la vida [I expect to have enough money to last my lifetime]</i>
<i>Espero no tener problemas económicos en el futuro [I expect a future without money problems]</i>
<i>Tengo suficientes ahorros para sentirme seguro/a acerca del futuro [I have enough money to feel secure about the future]</i>
<i>Dispongo de suficiente dinero para imprevistos [I have enough money for unexpected costs]</i>
<i>Restricciones [Restriction]:</i>
<i>Mis opciones están limitadas por el dinero [My choices are limited by money]</i>
<i>Tengo que ser cuidadoso/a con los gastos [I have to be careful with spending]</i>
<i>La falta de dinero me frena para hacer cosas [Lack of money stops me from doing things]</i>
<i>Tener más dinero haría mi vida más fácil [More money would make my life easier]</i>
<i>Hay cosas que me gustaría hacer, pero no me puedo permitir [There are things I would like to buy but cannot afford]</i>

instrument for measuring health status, and physical and mental wellbeing. It consists of 12 items which are rated on a three- or five-point Likert scale. The items are condensed into two summary components – Physical Health and Mental Health – which demonstrated high internal consistency in our sample (0.90 and 0.81, respectively).

### Monthly income

Monthly personal income in euros was assessed with a five-point self-reported response: <700; 700–1,200; 1,200–1,900; 1,900–2,700; >2,700. This measure was also used to assess the convergent and discriminant validity of LSCALE.

### Data analysis

Firstly, CFA was carried out using the MPlus program (version 8) to test the fit of the 25-item LSCAPE Six-factor Model (Breheny *et al.*, 2013, 2016) for the whole sample (N = 441). The Weighted Least Square Mean and Variance Corrected method was employed to estimate the model and to overcome the non-normality and ordinal nature of the items (Finney and DiStefano, 2006).

The goodness of fit was determined through the estimated factor loadings which are significant when associated *p*-values of the *t*-test are lower than 0.001, and using the following statistics:  $\chi^2$ , Standardised Root Mean Square Residual (SRMR), Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI). The overall model fit is considered acceptable if: the probability of SRMR is close to 0, CFI  $\geq$  0.9 and TLI  $\geq$  0.9 (Hu and Bentler, 1999).

Discriminant and convergent validity of the model were assessed using Average Variance Extracted (AVE). According to the Fornell–Larcker testing system (Fornell and Larcker, 1981), discriminant validity can be assessed by comparing the amount of the variance capture by the factor and the shared variance with other factors. Thus, the levels of the square root of the AVE for each factor should be greater than the correlation involving the factors. On the other hand, AVE values higher than 0.5 indicate good convergent validity (Hair *et al.*, 2010).

The reliability (internal consistency) of the scale was demonstrated as good by Composite Reliability (CR) indices with values > 0.7 (Hair *et al.*, 2010) and Cronbach's alpha with values > 0.7.

Finally, convergent validity was analysed using Spearman rank correlation co-efficient ( $\rho$ ) – as the data followed a non-normal distribution – to determine the strength of the relationship between LSCAPE sub-scales and the SF-12 sub-scales and monthly personal income. The strength of correlation was interpreted as high ( $\rho > 0.7$ ), moderate (0.4–0.7) and low (<0.4) (Akoglu, 2018).

## Results

### Dimensionality

CFA has been used to test the fit of the 25-item LSCAPE Six-factor Model. Six dimensions were obtained: health care, social integration, contribution, enjoyment, security and restriction. As shown in Table 2, fit measures for all these dimensions present appropriate values: SRMR is lower than 0.09; CFI and TLI are higher than 0.9.

The convergent validity of the six-factor model was demonstrated since the AVE for each of the six factors is higher than 0.5, as well as the factor loadings which present significant values over 0.5 (Hair *et al.*, 2010), as shown in Table 3. Moreover, discriminant validity has been confirmed because the square root of the AVE between each pair of factors is higher than the estimated correlation between those factors, as shown in Table 4.

**Table 2.** Goodness-of-fit indexes of the model

Model	$\chi^2$	<i>p</i>	SRMR	CFI	TLI
LSCAPE 6F	2,080.162	0.000	0.084	0.925	0.917

Notes: N = 441. LSCAPE 6F: 25-item Living Standards Capabilities for Elders scale Six-factor Model. *p*: probability of  $\chi^2$ . SRMR: Standardised Root Mean Square Residual. CFI: Comparative Fit Index. TLI: Tucker–Lewis Index.

### Reliability of LSCAPE

The reliability of LSCAPE was proved since the CR index of each factor was higher than 0.7 (Hair *et al.*, 2010), as shown in Table 3.

### Convergent validity of LSCAPE

Correlations between LSCAPE (total score and its six sub-scales) and SF-12 sub-scales and monthly personal income are reported in Table 5. Spearman's correlations found that LSCAPE is significantly related to both self-reported measures, especially in the case of SF-12 sub-scales (>0.60). LSCAPE total score, as well as the social integration and contribution sub-scales of LSCAPE, showed moderate to strong relationships with the SF-12 Physical Health and Mental Health sub-scales (>0.60 in all cases). However, a low correlation between LSCAPE and monthly personal income was found for the total score and the sub-scales.

### Discussion

The present study was intended to analyse, for the first time, the psychometric properties of LSCAPE in a sample of Spanish older adults (>65 years), a population for whom living standards capabilities are particularly relevant due to its influence on healthy ageing.

The CFA of the 25-item LSCAPE revealed that the six-factor model fitted well to the data and the scale items loaded on the same factors as in the solution found by the authors of the scale (Breheny *et al.*, 2016). Therefore, our findings support the original six-factor structure of LSCAPE.

Reliability results indicated excellent internal consistency of LSCAPE as found in the original study (Breheny *et al.*, 2016). This means that our Spanish-validated version of the LSCAPE offers an accurate, reproducible and consistent measure of living standards.

Moreover, LSCAPE has been shown to be a reliable and valid instrument to assess living standards. Regarding convergent validity, positive correlations have been shown between the LSCALE total score and SF-12 sub-scales (Physical Health and Mental Health). According to McGregor and Goldsmith (1998), both concepts, living standards and quality of life, are inherently related to the other; thus, quality of life would be one's perception of and satisfaction with one's reality and living standards would reflect one's actual reality. Following this trend, similar results have been shown by other authors. Increased capabilities (measured by LSCAPE) were associated with greater subjective wellbeing among a sample of older people (Yeung and Breheny, 2016). Also, capabilities – together with purpose

**Table 3.** Analysis of dimensionality, convergent validity and reliability of the Living Standards Capabilities for Elders scale (LSCAPE)

LSCAPE items	Factor loading	<i>p</i>	Cronbach's alpha
<b>Health care (AVE = 0.808; CR = 0.944):</b>			
I can afford anything I need to remain well	0.94	0.000	0.888
I can afford all that I need to be healthy	0.96	0.000	
I can afford to go to a medical specialist if I need to	0.85	0.000	
I can get all the health care I need	0.84	0.000	
<b>Social integration (AVE = 0.823; CR = 0.949):</b>			
I am able to visit people whenever I wish	0.90	0.000	0.911
I am able to travel as much as I would like	0.89	0.000	
I am able to take part in any regular activities I want to	0.91	0.000	
I am able to go on special outings	0.93	0.000	
<b>Contribution (AVE = 0.765; CR = 0.928):</b>			
I am able to give to others as much as I want	0.82	0.000	0.718
I can provide for others when I wish	0.95	0.000	
I can help people whenever I want	0.92	0.000	
I can give as much as I like to charity or the church	0.80	0.000	
<b>Enjoyment (AVE = 0.725; CR = 0.913):</b>			
I am able to follow my interests	0.88	0.000	0.845
I am able to do all the things I love	0.88	0.000	
I can have everything I need to be happy	0.75	0.000	
I can have regular treats	0.89	0.000	
<b>Security (AVE = 0.757; CR = 0.925):</b>			
I expect to have enough money to last my lifetime	0.87	0.000	0.842
I expect a future without money problems	0.85	0.000	
I have enough money to feel secure about the future	0.88	0.000	
I have enough money for unexpected costs	0.88	0.000	
<b>Restriction (AVE = 0.681; CR = 0.914):</b>			
My choices are limited by money	0.89	0.000	0.882
I have to be careful with spending	0.76	0.000	
Lack of money stops me from doing things	0.92	0.000	
More money would make my life easier	0.73	0.000	
There are things I would like to buy but cannot afford	0.81	0.000	

Notes: AVE: Average Variance Extracted. CR: Composite Reliability.



**Table 4.** Discriminant validity of the Living Standards Capabilities for Elders scale (LSCAPE)

	Health care	Social integration	Contribution	Enjoyment	Security	Restriction
Health care	0.90					
Social integration	0.45**	0.91				
Contribution	0.62**	0.68**	0.87			
Enjoyment	0.58**	0.89**	0.78**	0.85		
Security	0.64**	0.40**	0.67**	0.53**	0.87	
Restriction	0.47**	0.39**	0.62**	0.53**	0.67**	0.83

Notes: Diagonal: square root of Average Variance Extracted (AVE); below the diagonal: correlation estimated between the factors. Discriminant validity = square root of AVE greater than inter-construct correlations.

Significance level: \*\*  $p < 0.01$ .

in life – were highlighted as the most important predictors of quality of life among older people diagnosed with a disability (Yeung and Breheny, 2019).

Furthermore, moderate relationships between the LSCAPE and monthly income values have been reported, which is line with results obtained by the authors of the scale (Breheny *et al.*, 2016), especially in the case of restriction and security sub-scales, which contain items about economic issues in comparison to the other four sub-scales. This outcome is in line with other authors in the literature. For instance, Jensen *et al.* (2006) found that living standards of older people from New Zealand were not significantly associated with their income. In the same line, living standards and quality of life values did not consider monetary indicators in a huge comparative study across 170 African countries using Sen's Capability Approach (Bérenger and Verdier-Chouchane, 2007). Additionally, economic living standards did not contribute significantly to wellbeing values among the oldest older participants of a study performed using the Capability Approach (Yeung and Breheny, 2016). The lack of strong association between living standards and income found in our study can be explained by the 'adaption hypotheses' as older people, on average, need less income to achieve a given living standard in comparison to younger people. Thus, older people adapt their preferences and needs to their economic situation with a decreased perception of financial hardship (Berthoud *et al.*, 2006, 2009). In line with this, Hansen *et al.* (2008) showed that older people tend to report higher financial satisfaction (even in cases of very low incomes) in comparison to younger people, whose financial satisfaction used to depend more on their income levels. Older people tend to adapt to their financial situation through establishing new goals (active coping) and adjusting aspirations to the given situation (passive coping).

Some limitations should be stated. To date, only the original study on the development and validation of LSCAPE (Breheny *et al.*, 2016) has analysed this scale which makes it difficult to compare our results with previous findings. On the other hand, although the sample size was adequate for carrying out psychometric analysis of LSCAPE, the sample population was collected from a specific Spanish region which does not permit the results to be generalised for the

**Table 5.** Correlations between the Living Standards Capabilities for Elders scale (LSCAPE), Short-Form Health Survey (SF-12) and monthly personal income

	Health care	Social integration	Contribution	Enjoyment	Security	Restriction	Global LSCAPE
SF-12 Physical Health	0.249**	0.705**	0.623**	0.431**	0.254**	0.273**	0.622**
SF-12 Mental Health	0.287**	0.698**	0.653**	0.441**	0.299**	0.311**	0.636**
Monthly personal income	0.270**	0.207*	0.211*	0.329**	0.371**	0.372**	0.304**

Significance level: \*\*  $p < 0.01$ .

whole Spanish population and it may be biased in terms of participants' health status because of recruitment through health-care centres. In this regard and as future recommendations, the authors of this study suggest conducting replication and extension studies on the validity of the Spanish version of LSCAPE in other Spanish regions.

## Conclusion

To our knowledge, this is the first study that uses LSCAPE among a Spanish population. These results led to the conclusion that LSCAPE had an acceptable fit in the 25-item six-factor model in the Spanish population, demonstrating that LSCAPE is a reliable and valid instrument to assess living standards capabilities among the Spanish older population.

In sum, outcomes of this paper, besides the validation of LSCAPE among the Spanish older population, provide evidence on how living standards are related to both physical and mental wellbeing. Using measurement tools based on Sen's concept of capabilities that include a quality-of-life approach not only centred on the person but also on the interaction with his or her context (social, material and environmental factors), offers relevant information about the opportunities of older people to access resources, services or assets that impact on their wellbeing. Thus, LSCAPE provides a comprehensive output that could be interesting to Spanish decision and/or policy makers to take into consideration what is important for older people when designing social policies (*i.e.* revision of pensions, more services and infrastructures adapted to older people's needs, more in-kind services, *etc.*).

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**Author contributions.** The authors have contributed to the manuscript as follows: TA-B in the conception and design of the study, in the analysis and interpretation of data, and drafting the manuscript; AD-M in the analysis and interpretation of data, and drafting the manuscript; and JG-F in the conception of the study and critically reviewing the content of the manuscript. Finally, all authors explicitly approved the final version of the manuscript.

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**Conflict of interest.** The authors declare no conflicts of interest.

**Ethical standards.** The study cited in this article has been performed according to ethical guidelines and legal requirements at the Spanish level assuring confidentiality, privacy and security of data processed. Moreover, the study was approved by the Ethics Committee of Consorcio Hospital General Universitario, Valencia on 30 April 2015 and the Ethics Committee of Hospital Universitari i Politècnic La Fe, Valencia on 7 November 2016.

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