The impact of self-efficacy and subjective cognitive complaints on healthcare use among middle-aged adults.

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ABSTRACT

Self-efficacy (SE) refers to one's belief in the ability to do a specific behaviour and has shown to be a remarkable cognitive factor affecting health. Subjective perception of memory and other cognitive failures expressed by individuals are frequently called subjective cognitive complaints (SCCs) and have been associated with self-perception. We studied whether SE is a relevant subjective variable in predicting SCCs in middle-aged adults living in the community (N=438) and explored the role of both SE and SCCs in predicting healthcare use. SE, age and cognitive performance predicted SCCs. SE, age group, cognitive status and SCCs were predictors of healthcare use in univariate logistic regression analysis, although only SE, age group and cognitive status remained significant in multivariate analysis. The influence of SCCs in healthcare use seems to be mediated by subjective estimations like those measured by SE. We suggest that well-implemented health education interventions might contribute to increase SE in middle-aged adults with a subsequent decrease in SCCs which, in turn, would have a relevant effect in reducing the burden of care.

Key Words: self-efficacy, diagnostic self evaluation, health systems plans.

The perception of self-efficacy, usually referred to simply as self-efficacy, denotes a process that influences the performance of behaviour (Bandura, 1989). The expectation of self-efficacy is one's personal estimation of being capable of carrying out a specific behaviour (Bandura, 1977, 2004). The concept was initially used to refer to expected self-efficacy, (Bandura 1977, 1992, 2004) which focuses on feeling confident in one's capability to manage life stressors, but a further general meaning of self-efficacy embraces a sense of mastery of the demands of life overall. Since both facing life events in general and, specifically, managing health-related matters, involve the maintenance of a healthier lifestyle, (Smith, Wallston & Smith, 1995; Gebhardt, Van Der Doef & Paul, 2001). Self-efficacy is a key component of health promotion programs. Individuals with high-perceived self-efficacy are considered more likely to initiate preventive healthcare, and to seek for an earlier treatment (Grembowsky et al., 1993; Olivari & Urra, 2007).

Subjective perception of memory and other cognitive failures expressed by individuals are frequently called cognitive complaints. Subjective cognitive complaints have been related to objective cognitive performance, but also to perceived health status and affective state (Hill et al., 2016). Assessment of subjective cognitive complaints is currently gaining growing attention, since it has been related to both perceived health and objective cognitive status (Montejo et al., 2014) and emerging diagnostic categories in the field of cognitive health includes it as a key diagnostic criterion (Jessen et al., 2014). There is also a growing recognition of the importance of SE in regulating cognitive health and applying successful cognitive strategies (West, Bagwell & Dark-Freudeman, 2008). A close association has been established between subjective cognitive complaints and affective factors, including subclinical symptoms of depression, anxiety and personality traits (Amarigilio et al., 2012; Balash et al., 2013), although the role of dementia in cognitive performance and SCCs remains to be fully explained (Garcia-Ptacek et al 2016). According to the relationship

between both self-perception and subjective cognitive complaints in perceived health, and the potential link between the subjective nature of memory complaints and the perception of self-efficacy, the objectives of this study are: (1) to study whether self-efficacy is a relevant subjective variable in predicting subjective cognitive complaints in middle-aged and old adults living in the community, and (2) to the explore the role of both self-efficacy and subjective cognitive complaints in predicting healthcare use in this population.

MATERIALS & METHODS

Study design

A cross-sectional observational and correlational study was conducted with data collected between January and May 2018, with questionnaires administered in the homes of each study participant. The study was approved by the Ethical Committee of XXX (reference 2018/620).

Questionnaire and variables

The questionnaire included self-efficacy, cognitive (both objective and subjective) and sociodemographic variables, as well as items asking about the use of healthcare resources. To study SE, the assessment protocol included a coping self-efficacy scale of Health problems applied to health (SEH), which contains 10 items referring specifically to health issues with a 4-point, Likert-type response format: totally disagree, disagree, agree, and totally agree (Gandoy-Crego et al., 2016). To assess cognitive status, the Montreal Cognitive Assessment (MoCA) was used. The MoCA is a time-effective test comprising 22 items, widely used to screen patients with suspected mild cognitive impairment (MCI) (Nasreddine et al., 2005). Regional normative scores considering age and educational level (Pereiro et al., 2017) were followed to construct three cognitive status groups (normal, possible MCI and possible dementia). The Memory Failures of Everyday (MFE) test (Sunderland, Harris, & Gleave, 1984) was used to assess memory and cognitive failures in daily life. Different studies have

used the MFE to compare SCCs across different age groups and cognitive status (Montejo-Carrasco, Montenegro-Peña & Sueiro-Abad, 2012a; 2012b). We used the validated Spanish version of the questionnaire, that includes 28 items and a three-point scoring system (0: never-rarely, 1: sometimes - not often, and 2: often-frequently). Finally, questions about healthcare use included the number of times in the last 2 months the person visited: 1) a general practitioner; 2) a medical specialist; 3) a rehabilitation service; 4) a medical diagnostic or analytical test. A dichotomous variable was created, as follows: a) "Without health use" to those participants who did not use any of these health services in the last two months, and b) "With health use" to those participants who used at least one of these health services in the last two months.

Sample and data collection

The study was applied to 438 community-dweller middle-aged adults (247 women, 56.4%). Recruitment of participants was undertaken by investigators from the Nursing School of XXX. Participants were informed of the aims of the study prior to signing an informed consent form. The only two inclusion criteria were to be between 55 and 69 years old and to live in the community. This age range is supported by the International Association of Geriatrics and Gerontology (IAGG) recommendations for cognitive impairment screening (Morley et al., 2015). Exclusion criteria were: (1) diagnosis of dementia, (2) diagnosis of major mental impairment including toxics consumption, (3) injuries or trauma sequels or other health circumstances that prevent the evaluation.

Sociodemographic data of the sample are indicated in table 1. According to their cut-off scores in the MoCA test, participants living in the community were divided into three groups: a) 307 participants were Cognitively Unimpaired (CU) (70.3%); b) 49 participants were at

risk of MCI according to their MoCA scores (11.2%); and c) 81 participants were at risk of dementia according to their MoCA scores (18.5%).

Data analysis

A specific database was created with the statistical program SPSS version 20. For group comparisons the nonparametric Kruskal-Wallis and Mann-Whitney U test were used due to differences in group sizes. The predictive value of self-efficacy, age and cognitive status in cognitive complaints was calculated through linear regression. The predictive value of age, cognitive status, self-efficacy, and subjective cognitive complaints in Not use / Use of health services was calculated through logistic regression, using age and cognitive status as categorical variables (55-59, 60-64, 65-69, and CU, MCI and dementia, respectively) and self-efficacy as well as subjective cognitive complaints as continuous variables.

RESULTS

Descriptive statistics

Table 2 presents data about self-efficacy, objective cognitive performance measured with the MoCA test, subjective cognitive complaints measured with the MFE, and healthcare use in the groups with CU, at risk of MCI and at risk of dementia, as well as in the total sample. As expected, group differences were found in cognitive performance (χ^2=254.08, p<0.01). Significant differences were also found in subjective cognitive complaints (χ^2=11.63, p<0.01), but not in the SE test (χ^2=0.55, p=0.76). Even though percentage of participants without healthcare use in the last two months tends to decrease in the groups with lower cognitive performances, differences did not reach statistical significance (χ^2=4.61, p=0.1).

Role of self-efficacy in predicting subjective cognitive complaints

The linear regression model including subjective cognitive complaints score as dependent variable and self-efficacy, age and cognitive performance as predictors was significant (F=14.45, $p<0.01$), although variance explained was low (corrected $R^2=0.09$). All predictors were significant (self-efficacy t=-3.30, $p<0.01$; age t=2.85, $p<0,01$; cognitive performance t=-3.48, $p<0.01$).

Role of self-efficacy and subjective cognitive complaints in predicting healthcare use

The logistic regression model including Not use / Use of health services as a dichotomous variable predicted by age, cognitive status, self-efficacy and subjective cognitive complaints was significant ($\chi^2=42,41$, $p<0.01$). Cox and Snell's R^2 was 0.09 and Nagelkerke's R^2 was 0.13. In univariate analysis, age 55-59 years (6.83, $p<0.05$), 60-64 (6.69, $p<0.05$), cognitive status MCI (3.81, $p<0.05$), self-efficacy (23.08, $p<0.01$) and self-efficacy (5.34, $p<0.05$) were statistically significant. Multivariate analysis (table 3) showed an increased probability of use of health services in the 60-64 years group compared with the 55-59 years group; in the MCI group compared with the CU group; and an increase of 0.88 for each point decreased in the self-efficacy test. Subjective cognitive complaints scores did not remain as a significant predictor in the multivariate analysis.

DISCUSSION

This study has showed the role of self-efficacy and subjective cognitive complaints as predictors of healthcare use. Both self-efficacy and subjective cognitive complaints are significant predictors in univariate analysis, although only SE remained significant in multivariate. Therefore, the influence of subjective cognitive complaints in healthcare use seems to be mediated by subjective estimations like those measured by self-efficacy. These results are in line with previous interpretations about self-efficacy effects in healthcare use (Gandoy-Crego et al., 2016), such as increased affective symptoms, reduced engagement in a range of activities, as well as more functional problems when compared to individuals without

subjective cognitive impairment (Hill et al., 2017). People with poor expectations tend to have low self-esteem and negative feelings regarding their abilities. The perception of self-efficacy facilitates cognition concerning one's own abilities, with thoughts acting as motivators of action. In this context, people who feel efficacious choose more challenging tasks, set higher goals, and are more persistent. Also of note, if people used adequate coping strategies to overcome health problems, they would be less reliant on health services. Regarding cognitive health, an increase in self-efficacy would contribute to decrease subjective cognitive complaints which, in turn, would lead to reduce the burden of the care, with considerable savings in already overstretched healthcare resources (Morley et al., 2015). Accordingly, the role of SE as a significant predictor of SCCs supports the well-established link between affective factor and subjective, self-reported perceptions about cognitive function (Amariglio et al., 2012; Garcia-Ptacek et al 2016; Mordechovich et al., 2013). In this context, development and implementation of well-designed health education programs can help to improve self-efficacy and health behaviors. Cognitive health programs should emphasize not only the importance of assessing current and baseline cognition according to cognitive assessment tools appropriately normalized and validated (Perry et al., 2018), but also the dynamic link between affective and cognitive factors through old adults' lifespan.

Even though our regression models are significant, the percentage of variance explained is relatively low, 9% in the linear regression model and 9-13% in the logistic regression model. Future studies might include more exhaustive measures of affective state (Hill et al., 2016), subjective perception of health, loneliness or social support. To specify the type and number of subjective cognitive complaints (Amaraglio et al., 2011) as well as the potential role of educative level and other cognitive reserve proxies (Garcia-Ptacek et al., 2016) could also help to better understand this relationship.

CONFLICT OF INTEREST

The authors have no conflicts of interest to report.

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TABLES

Table 1. Sociodemographic characteristics of the total sample (N=438).

	n (%)
Age range (years)	
55-59	188 (42.9)
60-64	117 (26.7)
65-69	133 (30.4)
Educational level	
Primary education	151 (34.5)
Secondary education	169 (38.6)
Higher education	118 (26.9)
Civil status	
Married	328 (74.9)
Divorced	30 (6.8)
Single	28 (6.4)
Widow/widower	4 (0.9)
Other (living as a couple, other situations)	48 (11)
Living arrangement	
In their own house	408 (93.2)
In their family's house	30 (6.8)

TABLES

Table 2. Self-efficacy, cognitive status, SCCs (mean, and standard deviation between brackets) and healthcare use (frequency, and percentage between brackets) in the three groups and in the total sample.

	CU group	MCI group	Dementia group	Total
SEH	28.58 (3.92)	28.24 (4.29)	28.21 (4.56)	28.47 (4.08)
MoCA	26.72 (1.99)	23.10 (0.87)	20.09 (2.38)	25.08 (3.30)
MFE	13.44 (7.81)	16.33 (7.43)	16.26 (9.42)	14.28 (8.17)
Without health use	210 (68.2%)	31 (63.3%)	45 (55.6%)	286 (65.3%)
With health use	98 (31.8%)	18 (36.7%)	36 (44.4%)	152 (34.7%)

Note: MFE: Memory Failures of Everyday test; MoCA: Montreal Cognitive Assessment; SCCs: Subjective cognitive complaints; SEH: Self-Efficiency scale Health.

Table 3. Multivariate logistic regression model

	B	S.E.	Wald χ^2	p values	OR	95% CI
Age						
55-59 years			8.71	0.01		
60-64 years	-0.72	0.27	7.27	0.01	0.49	0.29-0.82
65-69 years	-0.17	0.30	0.32	0.57	0.85	0.47-1.51
Cognitive status			8.97	0.01		
CU	0.83	0.28	8.82	0.03	2.30	1.33-3.99
MCI	0.52	0.40	1.72	0.19	1.68	0.77-3.66
Dementia						
SE	-0.13	0.03	21.76	0.00	0.88	0.83-0.92
SCCs	0.02	0.01	2.62	0.11	1.02	0.00-1.05

Note: CU: Cognitively Unimpaired; MCI: Mild cognitive impairment; SCCs: Subjective Cognitive Complaints; SE: Self-Efficiency.