
TESTING A BRIEF INDEX OF SUBJECTIVE WELL- BEING IN PATIENTS DIAGNOSED WITH CHRONIC ILLNESSES

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Abstract

Chronic medical condition refers to a long-lasting illness or syndrome which causes significant impairments in personal, occupational, and social functioning of the patient. A chronic illness is often associated with decreased subjective well-being and quality of life in patients. It is therefore necessary to conduct an economical assessment of the psychological condition associated with a chronic illness. In the present study, we tested a generic index of subjective well-being. This index was based on two psychometrically sound instruments: Beck Depression Inventory-Fast Screen (BDI-FS; k = 7 items) and Satisfaction with Life Scale (SWLS; k = 5 items). Seventy-three patients diagnosed with C-type hepatitis completed the BDI-FS, SWLS and Rosenberg Self-Esteem Scale (RSES). A metric hypothetical model with two intercorrelated latent factors (i.e., severity of depression and overall satisfaction with life) was tested. Confirmatory factor analysis with AMOS 20.00 yielded a model with good statistical fit. For BDI-FS and SWLS, Cronbach's alphas were .78 and .92. Participants scored moderately high on SWLS, while BDI-FS score was at the lower end of the scoring range. As expected, females scored significantly higher than males

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on depression. Compared to patients who have completed the treatment with interferon, those who still pursued this specific intervention reported lower levels of satisfaction with life. Correlational analysis revealed a positive association between SWLS score and self-esteem in the patients who participated in the study, while the association between BDI-FS score and self-esteem was negative. The implications for assessment of psychological functioning in patients with chronic illnesses are discussed.

Keywords: chronic illness; hepatitis C; subjective well-being; satisfaction with life; depression; measurement

Introduction

The structure of subjective well-being has been conceptualized by two main components: affective component and cognitive component or the judgments a person makes about his/her own life (Diener et al., 1999). Life satisfaction is based on an individual set of subjective assessments, meaning that a person uses certain standards to determine what is good in his life. Life satisfaction has to be distinguished from quality of life (Kulczycki et al., 2010). On the other hand, researches on balanced emotional functioning use the notion of well-being that corresponds to the popular term of happiness, to denominate the prevalence of positive affects in relation to the negative ones (Diener et al., 1999).

Especially in case of multiple medical conditions, patients diagnosed with chronic diseases tend to report (Jelicic & Kempen, 1999; Stewart et al., 1989; Wikman et al., 2011): a) a poorer physical and social functioning; b) more mental health problems; c) deterioration of emotional well-being (e.g., anxiety, depression, diminished sense of self-worth, etc.); d) lower levels of satisfaction with life. The impact of chronic diseases on physical and mental health and on well-being must be interpreted taking into account the difficulties faced by the patients while adjusting to the disease status and lifestyle changes required by the disease (Chen & Chang, 2012; Heckman, 2003).

Viral hepatitis C is a disease with a significant global impact. The World Health Organization estimates that currently hepatitis C virus affects more than 130-150 million people worldwide, representing approximately 2-2.5% of the world population (Boesecke & Wasmuth, 2015). Also, it is

estimated that about 3.4 million new cases occur each year. With a rate of 3.23%, Romania has the highest prevalence of hepatitis C in Europe (European Liver Patients Association, 2015). Most commonly, HCV infection is detected during routine investigations or based on a polymorphic symptomatology determined by late complications. In rare cases, the infection is detected based on the suggestive symptoms. Approximately 80% of patients found to have HCV infection are asymptomatic.

In the international literature, the association between HCV infection and decreased health-related quality of life indicators is well documented (Strauss & Dias Teixeira, 2006). The negative effects include symptoms of depression, poor quality of life reported by patients, marked fatigue, and abdominal pain (Bailey et al., 2009). A number of psychosocial factors (e.g. negative reaction related to diagnosis, awareness of diagnosis, sense of stigma, less social relationships, reduced work capacity and income, etc.) contribute to the relatively high rate of affective disorders and lower quality of life among HCV-infected patients (Butt Paterson & McGuinness, 2008; Rodger et al., 1999; Wilson et al., 2010). On the other hand, treatment with interferon is associated with a number of adverse effects in terms of the psycho-physiological and mental functioning, including asthenia, fatigue, sleep disorders, irritability, depression, cognitive disorders, and even psychotic manifestations (Schaefer & Mauss, 2015). During the first two months of treatment with interferon, anxiety occurs in 30-45% of patients, and moderate depression, accompanied by lower self-esteem, anhedonia, loss of interest in pleasurable activities and decreased libido in 30-60%. Moderate to severe depressive episodes occur in 20-30% of the patients treated with interferon (Schaefer & Mauss, 2015).

Objectives

This study aimed to test psychometrically an index of subjective well-being among patients diagnosed with viral hepatitis C. Evaluation of subjective well-being among patients diagnosed with chronic diseases is important because: a) in patient care and health care it is considered that patients' view of their medical and psychological condition plays a central role in monitoring the quality of outcomes from healthcare interventions (Ware, 1990); b) the purpose

of health care is to achieve a more effective life (McDermott, 1981) and preserve personal and social functioning and well-being (Ellwood, 1988).

Despite the significant progress in understanding the prevalence, natural history and effectiveness of antiviral therapy, few studies have addressed the issue of subjective well-being (i.e., satisfaction with life and/or emotional status) in Romanian patients diagnosed with chronic viral hepatitis (Pojoga et al., 2006, 2004). These studies have focused on emotional well-being (general mental health status) in patients with chronic viral hepatitis using a non-specific standardized measure, i.e. the 36-item Short-Form Health Survey (SF-36; Ware & Sherbourne, 1992). The SF-36 is the most common measure of quality of life in patients diagnosed with a chronic illness, but does not contain a component for capturing satisfaction with life as an evaluative dimension of subjective well-being.

Method

Participants

Seventy-three patients (31 women, 42 men) diagnosed with hepatitis C treated and followed-up at the Institute of Gastroenterology and Hepatology of the "Sf. Spiridon" Emergency Hospital from Iasi (Romania) completed a protocol of six standardized questionnaires as part of a study aimed to assess the psycho-affective dimension of the patients diagnosed with hepatitis C undergoing interferon treatment. The patients were aged 23 to 66 years ($M=47.95$; $SD=11.20$). Distribution of patients by level of education was as follows: 16.4% - 8 years, 57.5% - secondary education - 26.1% higher education. At the time of data collection, the majority of patients were married (81%). At the time of the study, about 48% of the investigated patients presented, in addition to hepatitis C, other conditions that had been diagnosed in the past and for which they underwent or were undergoing treatment. Comorbidities included cardiovascular diseases, diabetes, kidney disorders or gastric ulcer etc.

Measures

Beck Depression Inventory-Fast Screen. In clinical practice and for research purposes a variety of standardized tools are used for assessing the intensity of depressive symptoms (Sharp & Lipsky, 2002). The original *Beck Depression Inventory* (BDI) and its subsequent versions (BDI-IA, BDI-II and BDI-FS/*Beck Depression Inventory-Fast Screen* formerly known as the BDI-PC/*Beck Depression Inventory for Primary Care*) are among the most consistently used measures to assess the presence of depressive symptoms. The BDI-FS is a short standardized instrument which enables clinicians to rapidly assess the severity of depressive symptoms corresponding to the psychological (non-somatic) criteria for diagnosing major depressive disorders listed in DSM-IV-TR (2001). The BDI-FS was developed for measuring depression in medical patients who present somatic-vegetative complaints or patients with substance abuse problems (Beck et al., 2000). It consists of seven items that measure the severity of the following symptoms of depression: sadness (item 1), pessimism (item 2), feelings of personal failure (item 3), loss of pleasure in things and common tasks (item 4), self-depreciation (item 5), feelings of guilt (item 6), and suicidal ideation (item 7). Each item is a list of four statements arranged in increasing severity of symptoms (from 0 - *no symptoms* to 3 - *significant presence of symptoms*). Total score indicates the severity of depressive symptoms and is obtained by summing the item scores (possible range: 0-21).

Several studies have reported acceptable psychometric properties of the BDI-FS. In a study of 49 patients surviving a stroke an acceptable value ($r=.63$, $p<.001$) for test-retest reliability of the BDI-FS was reported (Healey et al., 2008). The studies aimed at estimating the validity of BDI-FS inventory confirmed its ability to discriminate between depressed and non-depressed patients with various medical conditions (Benedict et al., 2003; Healey et al., 2008; Pietsch et al., 2012; Steer et al., 1999; Wilhelm et al., 2004; Winter et al., 1999).

In Romania, BDI-FS was tested in two clinical samples (Robu & Gotcă, 2014) including: a) 176 patients with various medical complaints or diagnosed conditions; all patients had been referred for outpatient psychiatric consultation, 58 of them meeting the criteria for major depressive episode listed in DSM-IV-TR; b) 105 patients (mostly women) with endocrinological complaints or disorders. For both patient samples confirmatory factor analysis data showed a

satisfactory statistical adequacy of the metric model with a single latent factor (i.e., severity of depression). For both these samples, the values of internal consistency (Cronbach's α) were .70 and .78, respectively. Patients meeting the diagnostic criteria for major depressive episode reported a significantly higher average score ($d=1.21$) than the patients who did not meet the criteria for major depressive episode. For a score ≥ 10 , BDI-FS gave equal sensitivity and specificity, .75, and .70, respectively, and an area under the ROC curve of .83. These results suggest that the BDI-FS score with acceptable accuracy allows the differentiation of depressive patients.

Satisfaction with Life Scale. There are a variety of multidimensional measures of satisfaction with life based on self-reporting (for comprehensive reviews see Diener, 1984; Weber et al., 2015). One of widely and intensively used scales for assessing global life satisfaction is the *Satisfaction with Life Scale* (Diener et al., 1985). The scale has only five items (e.g., “The conditions of my life are excellent”, “If I could live my life over, I would change almost nothing”) and measures only the cognitive dimension of subjective well-being. The items were thus formulated as to be generally understandable, enabling respondents to estimate the global level of satisfaction with their own lives. Respondents are asked to rate across a seven-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) how much they are satisfied with their own life. For each item, the score can range from 1 to 7, depending on the response variant chosen by a subject. Total score is obtained by summing the item scores and can range from 5 to 35. A high score indicates a high level of satisfaction with all the aspects of life.

Until the early 1990s, studies evaluating the psychometric properties of SWLS were performed on non-clinical samples including young adults or elderly people (Diener et al., 1985; Pavot et al., 1991). In 1991, Arrindell and his colleagues published a first study aimed at assessing the reliability and validity of SWLS. They used a clinical sample consisting of 107 Dutch medical patients treated in an outpatient unit for back or pelvic pain. The results of exploratory factor analysis revealed that a single factor accounted for 67% of the total variance of the items. For the analyzed sample, a high internal consistency ($\alpha=.87$) was reported. Construct validity of SWLS was proved by: a) negative correlations moderate in magnitude with other measures of the general health status and emotional well-being (e.g., anxiety, depression,

somatization, general psychological distress); b) positive correlations with indicators of health locus of control.

In Romania, several psychometric testing of the SWLS have been conducted. Based on a heterogeneous sample of 391 subjects, Marian (2007) reported a one-factor structure of Romanian version of the SWLS. The extracted factor accounted for 63.3% of the total variance. In the study conducted by Marian (2007), internal consistency of the SWLS was .85 and test-retest reliability .69 (retest was conducted after two months). In another study, Marcu (2013) administered the SWLS to a number of 285 healthy subjects. Using confirmatory factor analysis, Marcu (2013) reproduced the one-factor structure. Internal consistency was .81 and test-retest reliability .67 (retest was conducted after a month). Stevens and his colleagues (2012) administered SWLS together with other measures of self-esteem, anxiety and depression to a number of 73 Romanian youth and adults. Exploratory factor analysis revealed that a single factor accounted for 64.18% of the total variance of the items. The Romanian version of SWLS showed a satisfactory internal consistency ($\alpha=.82$). Construct validity was proven by the positive correlation with state self-esteem and negative correlations with anxiety and measures of depression.

To estimate the construct validity of the subjective wellbeing index among the surveyed patients the Romanian version of RSES was administered (Rosenberg 1965). RSES is one of the most commonly used tools for measuring global self-esteem (Blascovich & Tomaka, 1991). It is a 10-item scale, five of the items having positively worded statements(e.g., "I think I am a person of worth, at least on an equal plane with others.") and five negatively worded ones (e.g. "Sometimes, I think I am no good at all."). The total score is obtained by summing the item scores (possible range: 10-40). High scores indicate high levels of global self-esteem. The RSES has a reported reproducibility coefficient of .92. Internal consistency ranges from .77 to .88. RSES was used in several studies focused on the factors that contribute to psychological adjustment and well-being among patients with chronic diseases (Hegarty & Wall, 2014; Juth et al., 2008). For two samples of patients with asthma and rheumatoid arthritis, internal consistencies were .88 and .90 (Juth et al., 2008). For the current sample of patients with hepatitis C, internal consistency was: total sample - .81, females - .83, males - .75.

Procedure

Patients completed the questionnaires during some individual meetings with an average duration of 20-25 minutes. Responses were anonymous to encourage honesty. The study received approval from the Ethics Committee of the hospital participant were recruited from. Data collection was conducted with the consent of the Head of the Gastroenterology and Hepatology Institute from Iasi. Patients were interviewed after signing a written informed consent providing all pertinent information on the purpose of the study, the task they had to do, risks and rights.

Statistical Analysis

Quantitative processing of raw data were performed using SPSS for Windows 21.00 and AMOS 20.00. A two-factor metric model (labeled *Severity of Depression* and *Level of Life Satisfaction*) was tested using the covariance matrix between item scores on the BDI-FS and SWLS (observed variables). Unstandardized and standardized values of measurement parameters, value of structural parameter corresponding to the correlation between the two latent factors, and the values of statistical adequacy indicators were estimated using the maximum likelihood method. This technique is popular among researchers because it is considered more robust against the violation of normality assumptions concerning the distribution of the observed variables (Byrne, 2010).

The score distributions for every item on the BDI-FS and SWLS were checked for normality. This was an important condition for using confirmatory factor analysis technique (Byrne, 2010). Several statistical-mathematical simulations (West et al., 1995) identified significant problems in terms of parameter estimation by maximum likelihood technique when the skewness value for the distribution of an observed variable is ≥ 2.00 , and kurtosis value is ≥ 4.00 (in statistical programs using zero as benchmark).

Statistical adequacy of the metric model relative to the observed data (scores on the BDI-FS and SWLS items) was estimated using the following indicators (Byrne, 2010): χ^2 , degree of freedom (*df*) and threshold of significance (*p*), root mean square residual (RMR), goodness-of-fit index (GFI), comparative fit index (CFI), root mean square error of approximation (RMSEA) and confidence interval (estimated at the threshold of 90%) of RMSEA value. According to the benchmarks suggested in the literature (for a

comprehensive review see Byrne, 2010), the metric model has been considered as having a very good statistical adequacy when: a) χ^2 value was not statistically significant ($p > .05$); b) RMR $< .05$; c) GFI $> .95$; d) CFI $> .95$; e) RMSEA $< .05$, and the lower limit of the confidence interval was close to zero.

For each significant difference by gender, marital status, level of education, treatment with interferon, and the presence of comorbidity, the effect size was estimated using the Cohen's d coefficient (Cohen, 1992). Values around .20 indicate a small effect size, values around .50 indicate a moderate effect size, while values as high as .80 indicate a large effect size.

Results and Discussion

Confirmatory Factor Analysis

Preliminary analyses revealed non-significant problems in terms of normality of item score distributions on the BDI-FS and SWLS. Thus, for the distributions of the BDI-FS items, the absolute values of skewness ranged from .62 to 4.72 (median=1.08) and those of kurtosis from .25 to 2.86 (median=.91). Only item 7 (the presence of suicidal ideation) had a skewness > 2.00 . For the distributions of SWLS item scores, the absolute values of skewness ranged from .04 to .62 (median=.45) and those of kurtosis from .66 to 1.42 (median=.91).

Data of confirmatory factor analysis performed by using AMOS revealed a metric model with a good statistical adequacy: $\chi^2=60.53$, $df=53$, $p=.222$, RMR=.042, GFI=.885, CFI=.984, RMSEA=.044 (90% CI=.000-.090). For BDI-FS, saturation of items in hypothetical factor (Figure 1) had standardized values ranging from .31 to .84 (median=.59). For the SWLS items, the saturations in hypothetical factor had standardized values ranging from .74 to .93 (median=.89). All saturations were statistically significant ($p < .001$). The correlation between the two latent factors (i.e., severity of depressive symptoms and level of satisfaction with life) had a moderate size ($r = -.64$, $p < .001$).

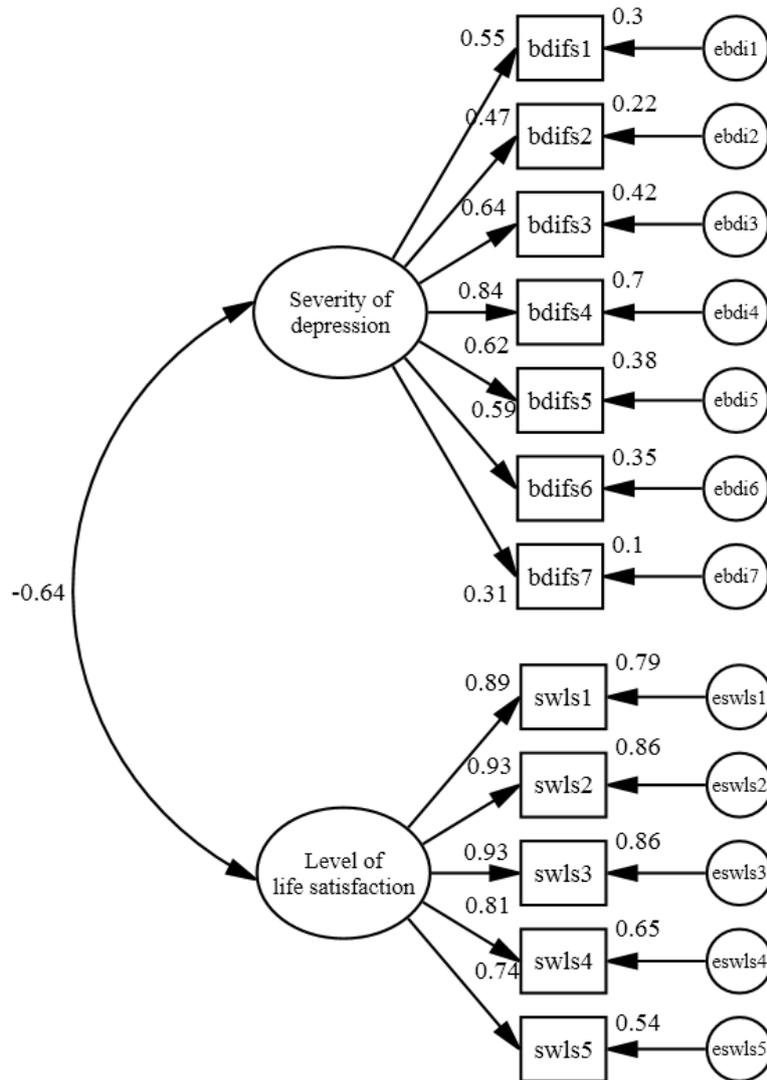


Figure 1. The final metric model for the index of subjective well-being in patients with hepatitis C

Reliability Analysis

For BDI-FS, the value of internal consistency was: total sample - .77, females - .81, males - .71. For SWLS, we obtained the following values of

internal consistency: total sample - .92, females - .93, males - .91. The corrected item-total correlations (Table 1) ranged from .29 to .69 (median=.53) for BDI-FS, and from .71 to .88 (median=.84) for SWLS. For both BDI-FS and SWLS the removal of each item did not result in substantial variations of coefficient α .

Table 1. Corrected item-total correlations and α if item deleted (total sample)

BDI-FS items	Corrected item-total correlation	α if item deleted	SWLS items	Corrected item-total correlation	α if item deleted
1	0.53	0.74	1	0.84	0.90
2	0.44	0.76	2	0.88	0.89
3	0.57	0.73	3	0.87	0.90
4	0.69	0.70	4	0.78	0.91
5	0.46	0.75	5	0.71	0.93
6	0.55	0.74			
7	0.29	0.78			

Construct Validity

For the total sample, the BDI-FS score was negatively and moderately associated with the score on RSES ($r=-.60$; $p<.001$). Also, the RSES score showed a positive and moderately high correlation with the score on SWLS ($r=.52$; $p<.001$). When we controlled for the effect of gender, the correlation between RSES score and BDI-FS score was $-.57$ ($p<.001$), and the correlation between RSES score and SWLS score was $.49$ ($p<.001$). There were no significant correlations between BDI-FS score and age ($r=.14$; $p>.05$). A similar association was also revealed between SWLS score and age ($r=.08$; $p>.05$).

Descriptive and Comparative Statistics

Patients with hepatitis C surveyed in this study tended to report mild or insignificant levels of depression ($M=3.10$; $SD=2.81$). When normative benchmarks suggested by Beck et al. (2000) were used as the standard for comparison, 63% ($n=46$) of our patients were classified with minimal symptoms of depression, 22% ($n=16$) with mild depression, and only 15% ($n=11$) with moderate depression. On the other hand, the interviewed patients were quite satisfied with their lives ($M=24.04$; $SD=7.59$). These results should be interpreted taking into account the possible range of scores on the BDI-FS and SWLS. The distribution of score in BDI-FS was positively skewed

(skewness =.82) and mezokurtic (kurtosis = -.16), while the distribution of score in SWLS showed a slightly negative skew (skewness = -.42) and tended to be platykurtic (kurtosis = -.99).

Compared with men, women had a higher mean score on the BDI-FS ($t=2.98$; $p<.01$; see Table 2). The effect size was moderate ($d=.72$). Although women had a 3.21 points lower mean SWLS score than men, the difference was not statistically significant.

Table 2. Means and standard deviations for total sample, females, and males

Measures	Total sample		Females		Males		t
	M	SD	M	SD	M	SD	
BDI-FS	3.10	2.81	4.19	3.24	2.30	2.14	2.98 **
SWLS	24.04	7.59	22.19	8.33	25.40	6.78	-1.81

Note: ** $p < .01$

Marital status had a significant effect only on SWLS score. Compared with married patients ($n=59$; $M=24.96$; $SD=7.76$), the unmarried patients ($n=14$; $M=20.14$; $SD=5.47$) tended to report a significantly lower level of satisfaction with life ($t=-2.19$; $p<.05$), with a moderate effect size ($d=.66$). For the BDI-FS score, the difference between unmarried and married patients was not statistically significant. Education levels had no significant effects on BDI-FS and SWLS scores.

The presence of comorbidities had a significant effect on the BDI-FS score. Patients without comorbid medical condition ($n=38$; $M=2.07$; $SD=2.21$) displayed a significantly lower mean score ($t=-3.51$; $p<.01$) than patients with comorbid medical conditions ($n=35$; $M=4.22$; $SD=2.99$). The effect size was quite large ($d=.83$). There was no significant difference ($t=1.47$; $p>.05$) in SWLS mean score between patients without comorbid medical condition ($M=25.28$; $SD=7.12$) and those with comorbid illnesses ($M=22.68$; $SD=7.95$).

Interferon-based treatment had a statistically significant effect on the SWLS score (Table 3). Thus, patients who had completed the interferon-based therapy ($n=26$) scored significantly higher ($t=2.82$; $p<.01$) than patients with ongoing interferon-based therapy ($n=47$). For this comparison, the effect size was moderate ($d=.70$). No significant difference in mean BDI-FS score between patients who had completed the interferon-based treatment and patients who were still ongoing this specific therapy was revealed.

Table 3. Means and standard deviations for subsamples differentiated by interferon-based treatment

Measures	Completed interferon-based treatment		Ongoing interferon-based treatment		t
	M	SD	M	SD	
BDI-FS	2.30	2.66	3.55	2.81	-1.84
SWLS	27.26	6.79	22.25	7.48	2.82 **

Note: ** $p < 0.01$

Discussion

Patients diagnosed with chronic diseases experience a deterioration in physical, mental, social and professional functioning (Musich et al., 2006; Stewart et al., 1989; Turner & Kelly, 2000; Wikman et al., 2011). The onset, course, outcomes, and the degree of functional impairment associated with chronic illnesses are key characteristics which contribute to the explanation of variance in degree of adjustment of patients and their families (Rolland, 1987). Hepatitis B and C are chronic diseases which pose a significant socio-economic burden to patients, their families and society (Boesecke & Wasmuth, 2015; European Liver Patients Association, 2015). Chronic hepatitis is associated with lower levels of quality of life indicators (Bailey et al., 2009; Pojoga et al., 2004; Schaefer & Mauss, 2015; Strauss & Dias Teixeira, 2006) as well as with decreased emotional well-being (Dieperink et al., 2000; Kraus et al., 2003; Wilson et al., 2010).

Well-being encompasses the positive outcomes of a person's life, such as positive emotions and satisfaction with life. The Centers for Disease Control and Prevention (CDC) from conceives well-being as a "dynamic and relative state where one maximizes his or her physical, mental, and social functioning in the context of supportive environments, in order to live a full, satisfying, and productive life" (Kobau et al., 2010, p. 274). Understanding the role of subjective well-being and the promotion of other protective factors (e.g., reframing the illness in a positive light or coping style) is a key component of comprehensive program for chronic illnesses prevention and control (Ryff & Singer, 1998). The new view of well-being emphasizes not only the focus on the minimization of illness and risk factors, but also on resistance to illness, resilience, and self-management (Kobau et al., 2010). Well-being integrates both mental and physical health resulting in more holistic approaches to illness prevention and positive health promotion. Therefore, measuring subjective

well-being in patients with chronic illnesses is a crucial step for providing comprehensive care service and assessing its effectiveness.

The aim of the current study was to examine the psychometric properties of a brief index of subjective well-being with a sample of patients diagnosed with chronic illnesses. The proposed index was based on two psychometrically sound measures, i.e., BDI-FS and SWLS. The construct validity of the index was assessed by examining its factor structure. Confirmatory factor analysis yielded an adequate goodness-of-fit for the hypothetical two-factor model. The latent factors were moderately correlated indicating that they are reasonably independent, but conceptually related factors. Good internal consistency ($>.70$) for both BDI-FS and SWLS was found. Further evidence for the construct validity of the proposed index was obtained. Thus, the BDI-FS score was negatively and moderately correlated with the RSES score. Furthermore, the SWLS score was positively and significantly correlated with the RSES score.

In the current sample of patients with hepatitis C, the mean depression score was within the low range ($M=3.10$; median=2). Only 15% of surveyed patients showed a moderate depression (BDI-FS score ranged between 7 and 11). None of the patients was classified with severe depression. This result is consistent with data reported by other studies which were carried out on samples of patients with multiple sclerosis (Benedict et al., 2003), end-stage renal disease (Neitzer et al., 2012), and HIV-infected patients with chronic pain (Krefetz et al., 2004). In our sample, females reported significantly higher levels of depression compared with males. Women are twice as likely to experience depression than men (Kessler, 2006). Moreover, no matter their age, women tend to report more depression (Tibblin et al., 1990). According to Nolen-Hoeksema (2001), women tend to be more vulnerable to the development of depression symptoms as they tend to respond to the demands of life differently. For example, women tend to rate the life events they experience as more negative and less controllable than the men (Matud, 2004).

The patients whom we have questioned tended to be slightly satisfied ($M=24.04$; median=26) with their own life. Only 15% of patients scored below 15 on SWLS. Females scored slightly lower than males, but no significant difference was revealed. This result is consistent with previously reported data using patients with chronic low-back and pelvic pain (Arrindell et al., 1991), patients with Parkinson's disease (Lucas-Carrasco et al., 2014) or patients with

multiple sclerosis (Lucas-Carrasco et al., 2014). Despite the fact that patients living with chronic hepatitis may negatively experience physical, cognitive and social impairment, their effort to find positive meanings for illness they are suffering from and for its implications (Baker & Stern, 1993) could contribute to both positive psychosocial adjustment, and the high levels of life satisfaction. Hope is an other factor that may play a role in fostering life satisfaction and protecting against depression (Raleigh 1992).

In the context of chronic illnesses and physical disabilities, life satisfaction goes far beyond patients' functional competence and satisfaction with perceived health and daily functioning (Büssing et al., 2009). SWLS provide a generic measure of patient's satisfaction with life in general, not solely in relation to disease-related limitations on functioning. This measure of global life satisfaction can be used starting from the premise that overall quality of life encompasses the perception that individuals have of "...their position in life in the context of the culture and value systems in which they live and in relation to his or their goals, expectations, standards and concerns" (World Health Organization Quality of Life Group, 1995, p. 1402).

BDI-FS mean score was also significantly higher in patients with comorbid medical condition than in those without. This result is in line with the significant association between presence of medical comorbidity and severity of depression ($\chi^2 = 9.60$; $p < .01$). Thus, out of 11 patients with moderate depression, nine presented comorbid medical condition. It has been shown that comorbidity of chronic medical conditions is associated with a higher risk for functional impairment in all life domains, including emotional well-being (Thommasen & Zhang, 2006). A cross-sectional Australian study involving more than 7500 patients has found a positive association between the prevalence of probable depression and number of chronic medical conditions (Gunn et al., 2010).

Some studies have found that patients suffering from chronic hepatitis C report a reduced level of health-related quality of life both before and after the treatment with interferon (Bezemer et al., 2012; Pojoga et al., 2006). The antiviral therapy with interferon can cause other severe psychological effects, including depression, irritability, agitation, and confusional states. Thus, it is well documented that depression is a common side effect of the interferon-based treatment in patients with hepatitis C (Lindsay et al., 1996; Schaefer & Mauss, 2015). Depression is a risk factor which may compromise the outcome

of antiviral therapy. Thus, it is imperative to diagnose and treat interferon-induced depression early (Asnis & De la Garza, 2005). The BDI-FS may be a useful tool in identifying patients at risk for treatment-induced depression.

Conclusions

A limitation of the current study was the small number of surveyed patients, and the fact that we had only patients diagnosed with hepatitis C. Thus, through its composition, our sample might not be representative for the general population of people living with chronic illnesses. Another limitation is that we did not estimate the test-retest reliability of BDI-FS and SWLS. Further data are also needed to address the question of the longitudinal construct validity of the brief index that we tested. Longitudinal construct validity (also referred to as sensitivity to change) has been defined as the ability of the measure to detect a true change in health status and its precision in detecting changes of different magnitudes (Liang, 2000). Estimating the longitudinal validity of a brief quantitative tool is also a necessary step to determine its clinical usefulness.

The evaluation of the BDI-FS and SWLS in a sample of patients with chronic hepatitis C revealed that these measures have good psychometric properties (i.e., construct validity and reliability). Taken together, BDI-FS and SWLS are brief and compact measures, and can easily be incorporated as an important additive to existing health-related quality of life instruments. We believe that BDI-FS and SWLS are useful for researchers and health care professionals to capture more generic dimensions that contribute to overall quality of life.

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