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Adaptation of the Questionnaire of Hahn, Cella, Bode, and Hanrahan in Spanish Patients Affected by Asbestos Poisoning

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Abstract. The purpose of this study was to assess whether or not the questionnaire developed by Hahn, Cella, Bode, and Hanharan (2010) for use with cancer patients accurately measures the social well-being of individuals suffering from chronic illnesses associated with asbestos poisoning. One hundred ten male patients with asbestos poisoning were age-matched in blocks to a comparison group of 70 "healthy" controls, all of whom were current or retired employees of the largest naval company in Spain. The results indicate very high reliability of the Hahn et al. (2010) test to assess social well-being in these chronically ill patients, and a high concurrent validity of the measured outcomes with regard to results of the SCL-90 Derogatis questionnaire, especially on the social well-being dimensions of negative emotional support, negative social companionship, and satisfaction. Limitations of the study and possible future directions are discussed.

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"Asbestos" refers to a set of six silicate minerals that are naturally found in rock formations, which have been classified into two general classes: serpentine and amphibole. Asbestos fibers are very resistant to heat, sound, abrasion, and traction, and these properties of insulation and strength, along with the low cost of this highly durable mineral product, lead to the widespread use of asbestos in commercially available products and in the manufacturing and construction industries, such as components of façades, walls, rooftops, blankets, and fabrics. Asbestos fibers are actually comprised of bundles (aggregates) of thousands of elementary fibers, and these fiber bundles can easily be separated further and further, down to the microscopic level. Products containing asbestos pose no health risks when the fibers are allowed to remain in their natural bundles. However, asbestos fibers are weakened when separated and become harmful if the elementary fibers break, are released into the environment, and then inhaled. Billions of these fibers may be present in the air. Currently the use of asbestos is banned in most industrialized countries; however, many of the buildings and industrial elements constructed prior to the ban still contain asbestos. Some developing countries have not yet banned the use asbestos.

Asbestos exposure may be occupational, domestic, or environmental (Luis et al., 2009). Occupational exposure is the most common, primarily affecting individuals of the construction, shipbuilding, railway, glass, aerospace, chemical, textile, and automobile industries (Losilla, 2010). Estimates suggest that the individuals most affected belong to the naval sector; therefore, the present work will focus on these individuals. The primary diseases associated with asbestos exposure are mesothelioma, lung cancer, and asbestosis (Ferrer & Cruz, 2008). The International Agency for Research on Cancer has classified all asbestos fibers as "carcinogenic to humans". There is no known level of exposure that is considered safe. Because the latency periods for these diseases are protracted, it is difficult to prove that the root cause was asbestos exposure. However, once these diseases develop, quality of life for the patients becomes the primary cause for concern.

The World Health Organization currently defines quality of life as "the perception of an individual of their position in life, in the context of their culture and value system in which they live, and in relation to their goals, expectations, and interests" (Savio, 2008). However, the concept of "quality of life" has existed since time immemorial, going back at least as far as the writings of Plato and Aristotle, who reflected on what constitutes "welfare" and "happiness". Moreno and Ximénez (1996) note that quality of life was related to health care for the Egyptian, Hebrew, Greek, and

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Roman civilizations, especially with regard to nutrition and personal hygiene. In the late Middle Ages, quality of life became a concern with respect to public health and hygiene, gaining ground in social and political fields in the 19th Century in the human labor and civic rights arenas.

Scientific use of the term originated in the '60s following concerns for human welfare with regard to consequences of the industrialization of society (Arostegui, 1998). However, in the late '60s and '70s, the concept of quality of life changed from being purely objective to including a subjective perspective on life satisfaction. This new profile gave the term "quality of life" a separate entity, apart from social indicators, and emphasized an individual's perception regarding their life and the objective conditions of their existence. This definitional change was supported by the development and improvement of social indicators in the mid '70s and early '80s. As a result, the term has since been transformed into an inclusive concept (multidimensional) that refers to all areas of life, including aspects of culture, health status, physical functioning, physical well-being (symptoms), social adjustment, general welfare, life satisfaction, and happiness (Fernández-López, Fernández-Fidalgo, & Cieza, 2010; Gómez-Vela & Sabeh, 2009; Martínez, Graña, & Trujillo, 2010; Ustun, Chatterji, Bickenhach, Kostanjsek, & Schneider, 2003), and is comprised of both objective and subjective dimensions. The objective dimension refers to the living conditions experienced by the individual and the extent to which those conditions reach observable criteria of a good life (Veenhoven, 1996). The subjective dimension refers to the value an individual places on various aspects of their existence such as wages, safety, and satisfaction with health and education (Oleson, 1990). Previous studies have highlighted the importance of the second dimension to quality of life (Brantley, Huebner, & Nagle, 2002; Reid & Renwick, 2001).

As already mentioned, concerns over quality of life are particularly important with regard to patients suffering from chronic illness or disease. Ward, Javitz, Smith, and Wham (2002), reported that patients diagnosed with chronic respiratory diseases had significant reductions in earnings due to occupational reasons compared to controls. Lowery et al., (2007) conducted a longitudinal study with 598 individuals in Massachusetts suffering from chronic asthma, assessing quality of life in those patients. The results revealed a clear decrease in quality of life in all areas assessed in the participants with asthma compared to participants not diagnosed with asthma. Similar results were reported by Piirila et al., (2005) for patients suffering from diisocyanate-induced asthma. However, little research has been conducted to determine the most effective method for measuring social well-being in chronically ill patients (Hahn et al., 2010). "Social well-being" refers to a group of factors that define, at least in part, an individual's quality of life. Although social well-being is subjective by nature, it can be directly perceived and is linked to objective factors such as economic wealth. In the field of social psychology, the Symptom Checklist-90 (SCL-90) Derogatis test is almost always the instrument of choice for studying social well-being (see Derogatis, Rickels, & Rock, 1976; Derogatis & Cleary, 1977a, 1977b). Hahn et al. (2010) recently developed a questionnaire that enabled users to assess a particular set of characteristics pertaining to social well-being along several dimensions, which was validated on a population of patients with cancer. The purpose of the present research was to assess whether or not the questionnaire of Hahn et al. (2010) has sufficient psychometric properties to assess the social well-being of chronically-ill Spanish patients suffering from complications due to asbestos poisoning. The results were compared to outcomes measured with the widely used SCL-90 Derogatis questionnaire (Derogatis et al., 1976; Derogatis & Cleary, 1977a, b).

Methods

Participants

Our sample population consisted of 180 participants. There were 110 patients suffering from chronic respiratory diseases resulting from asbestos poisoning and 70 were healthy individuals that were age-matched (in blocks) to the groups of individuals affected by disease. All patients were males (due to a paucity of disease detection in females), between 51 and 79 years (most were already retired), with an average age of 67 years. All participants had been shipyard workers in the area of Ferrol, Galicia (Spain), a region well known for its importance in the shipping industry and reported to have a very high incidence rate of chronic diseases related to asbestos poisoning. Incidental non-probability sampling was used. Of note, several participants passed away within a month of testing due to rapid progression of the disease.

Instruments

Two tests were used to assess social well-being in patients of the present experiment, and the assessment period focused on the 4-week period immediately prior to testing: the Hahn et al. (2010) questionnaire and the SCL-90 Derogatis test. The Hahn et al. (2010) questionnaire assesses social well-being along six different dimensions: instrumental support (10 items, positive), informational support (5 items, positive), emotional support (22 items, positive; 12 items, negative), social

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companionship (6 items, positive; 7 items, negative), limitations (20 items, negative), and satisfaction (9 items, positive). We considered each scale individually (positive vs. negative), for a total of eight dimensions, and used a slightly modified version of the response rating system developed by the original authors. Specifically, the response scale was unified for all of the items using a Likert format, with five choices: never-nothing, rarely-few, sometimes, often-much, always-a lot. We translated the scale using a forward-backward system. Thus, a native English speaker translated the scale into Spanish and this translation was given to a native Spanish speaker to translate back into English. A comparison of the statements of the original English scale were not different in meaning from the statements in the final English translation by the native Spanish speaker. The adaptated and translated version of the scale is available upon request. Of note, our Spanish translation utilized the Spanish language used in Spain so the translation process will have to be repeated when assessing the reliability and validity of the Hahn et al. (2010) questionnaire with patients from other Spanish-speaking countries.

The SCL-90 Derogatis test, which is often used to assess psychosomatic symptoms and has been shown to negatively correlate with measures of social well-being (Bech, 1999; Monzani, Galeazzi, Genovese, Marrara, & Martini, 2008; Reibel, Greeson, Brainard, & Rosenzweig, 2001), was used as our second assessment tool. Due to the rapidly deteriorating health of our participants, we decided to utilize this brief questionnaire rather than subject them to another lengthy questionnaire with numerous test components. The SCL-90 test is widely recognized and it allowed us to identify and assess several psychosomatic dimensions in our participants: somatization, obsession-compulsion, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism, and global severity index (GSI). We utilized the Spanish adaptation of the SCL-90 Derogatis test that was developed and validated by González de Rivera (Derogatis, 2002).

Procedures

Contact with patients affected by asbestos-related illnesses was initially made through local organizations created for these patients. Participants of the comparison sample of "healthy" patients were contacted in cooperation with the Spanish state-owned shipyard, Navantia, and included both retired and non-retired employees. Copies of the two questionnaires and a request for demographic information were attached to an informed consent form that explained the purpose of the study, the requirements for participation, assurances of anonymity, and instructions on how to contact the researchers with any questions or to exercise their right to discontinue participation. No one refused participation. The local support organization arranged for the chronically ill patients to meet in a large room so that the questionnaires could be completed at one time by all participants affected by asbestos-related diseases. Similarly, Navantia arranged a meeting facility on one of their premises for the "healthy" individuals with demographic profiles similar to the chronically ill patients so that these participants cold all complete the questionnaires at the same time. There was no incentive for participating in the study, and all those who attended the meetings did so with the intention of either assisting in the study of asbestos-related illnesses or helping their peers. Questionnaires were checked to verify that all questions had been answered.

Data were subsequently coded, and the means and standard deviations were calculated with SPSS, version 16, software. In order to calculate the magnitude of the group differences, independent of sample size, the value of "eta" to the partial square (ŋ2p) was calculated. This value refers to the proportion of each variable that can be attributed to the group difference. Because the "d" statistic of Cohen (1988) (see also Yost & Eton, 2005) is more commonly used to explain group-related effects with such data, the results will be discussed in terms of both of these statistical measures. However, the calculated statistic (ŋ2p) has been considered to be more appropriate because it avoids the problem of requiring homogeneous variances in both groups. The ŋ2p values smaller than .01 correspond to "d" values less than .20 and reflect small group differences. The ŋ2p values between .01 and .06

Table 1. *Descriptive statistics for the eight dimensions of social well-being assessed*

Dimension and effect sizes (η^2_p)		*M*	*SD*
Instrumental support $\eta^2_p = .014$	Control	3.386	1.314
	Affected	3.491	1.169
Informative support $\eta^2_p = .001$	Control	3.499	1.040
	Affected	3.442	1.317
Positive emotional support	Control	3.740	1.079
$\eta^2_p = .002$	Affected	3.774	1.039
Negative emotional support	Control	2.244	.904
$\eta^2_p = .030$	Affected	2.394	1.091
Positive social companionship	Control	3.319	1.152
$\eta^2_p = .001$	Affected	3.298	1.155
Negative social companionship	Control	1.875	.810
$\eta^2_p = .039$	Affected	2.269	1.160
Limitations $\eta^2_p = .024$	Control	2.941	1.365
	Affected	3.069	1.239
Satisfaction $\eta^2_p = .156$	Control	4.288	.848
	Affected	3.751	1.086

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Table 2. *Comparison of group means on the dimensions of social well-being using t-tests*

Dimensions	*t*	*df*	*p*	Mean Difference	Typical Error Difference
Instrumental support	−.574	170	.567	−.105	.183
Informative support	.351	168.04	.726	.057	.162
Positive emotional support	−.508	157	.612	−.073	.144
Negative emotional support	−1.442	164	.151	−.150	.104
Positive social companionship	.130	176	.897	.0206	.159
Negative social companionship	−3.313	163	.001	−.3936	.118
Limitations	−2.420	153	.017	−.2540	.104
Satisfaction	4.783	169.788	.001	.5374	.112

correspond to "d" values between .20 and .50 and reflect a moderate group effect. Finally, ŋ2p values larger than .14 correspond to "d" values larger than .80 and reflect large group differences. Data were also assessed using t-tests, as noted. Correlations were calculated using the Pearson Product-Moment Correlation. Cronbach's alpha was subsequently calculated and used to assess the reliability of the Hahn et al. (2010) scale.

Results

Descriptive statistics for the eight dimensions of social well-being assessed in our participants are provided in Table 1.

T-tests revealed significant group-related differences for three of the eight dimensions assessed: negative social companionship, limitations, and satisfaction, with the largest group differences occurring for negative social companionship and satisfaction (Table 2). The two groups of participants did not significantly differ from one another on measures of instrumental support, informational support, emotional support (positive and negative), positive social companionship, or limitations. However, these findings must be interpreted in light of the calculated standard deviations.

Results regarding the reliability of the Hahn et al. (2010) questionnaire for assessing social well-being in chronically ill patients of the present study are presented in Table 3. All correlations were considered "very high", with .861 being the lowest correlation. These findings suggest that the Hahn et al. (2010) questionnaire was reliable when used to assess a Spanish population of chronically ill individuals affected by asbestos poisoning compared to a matched sample of healthy controls. The reliability mean (across all dimensions) was .922 for the chronically ill patients and .931 for the age-matched controls. The overall reliability mean was .926.

Correlations between the measures of social well-being assessed with the Hahn et al. (2010) questionnaire and the symptomatology assessed with the SCL-90

Table 3. *Reliability of the Hahn questionnaire for measuring social well-being, as assessed with Cronbach's Alpha*

Dimension	Group	Alpha
Instrumental support	Control	.962
	Affected	.967
Informative support	Control	.940
	Affected	.946
Positive emotional support	Control	.965
	Affected	.971
Negative emotional support	Control	.892
	Affected	.861
Positive social companionship	Control	.963
	Affected	.944
Negative social companionship	Control	.885
	Affected	.821
Limitations	Control	.966
	Affected	.935
Satisfaction	Control	.878
	Affected	.930

Derogatis questionnaire are presented in Table 4. The results show that all dimensions of the symptomatology scale correlated with negative emotional support (positive correlations), negative social companionship (positive correlation), and satisfaction (negative correlation) in the chronically ill patients. Both instrumental support and positive social companionship correlated with all assessments of symptomatology except for hostility and GSI. Informative support was the social well-being dimension that was least likely to correlate with the measures of symptomatology.

Discussion

The questionnaire by Hahn et al. (2010) was designed to assess social well-being in individuals affected by chronic disease (cancer). However, the scale had a very high reliability not only for participants of the present study affected by asbestos poisoning but also for a comparison sample of unaffected individuals. In fact,

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Table 4. *Correlations between measures of social well-being assessed with the Hahn questionnaire and symptomatology assessed with the SCL-90 Derogatis test in patients with asbestos-related illnesses*

	Instrumental support	Informative support	Positive emotional support	Negative emotional support	Positive social companionship	Negative social companionship	Limitations	Satisfaction
Somatization	.255**	.158	.177*	.339**	.215**	.414**	.310**	−.348**
Obsession Compulsion	.264**	.137	.167*	.378**	.196*	.382**	.180*	−.361**
Interpersonal Sensitivity	.270**	.092	.111	.366**	.197*	.315**	.002	−.421**
Depression	.300**	.235**	.207*	.314**	.278**	.365**	.139	−.445**
Anxiety	.257**	.138	.149	.339**	.213**	.421**	.180*	−.433**
Hostility	.034	−.100	−.104	.394**	−.036	.411**	.199*	−.276**
Phobic Anxiety	.308**	.232**	.237**	.260**	.286**	.333**	.077	−.458**
Paranoid Ideation	.328**	.182*	.230**	.308**	.322**	.308**	.014	−.426**
Psychoticism	.286**	.150	.174*	.353**	.214**	.391**	.130	−.411**
Global Severity Index (GSI)	.182	.056	.073	.415**	.084	.485**	.312**	−.304**

Note: *$p < .05$; **$p < .01$.

the correlations found for each subscale were sometimes higher than those published in the original study. This finding may be due to the homogeneity and small size of our sample populations or to the fact that the original scale contained redundant items. In addition to having high reliability, the Hahn et al. (2010) scale had adequate validity, as demonstrated by the strong correlations with the symptomatology assessed with the SCL-90 Derogatis test, especially with regard to the social well-being dimensions of negative emotional support, negative social companionship, and satisfaction (see Table 4). Similar findings have been published for patients suffering from respiratory diseases (Piirila et al., 2005; Ward et al., 2002) or other chronic diseases (Gadalla, 2008; Hees, Koeter, De Vries, Ooteman, & Schene, 2010; Lowery et al., 2007).

Although the present research appears limited because of the small sample size of each group, our study included approximately 50% of the total patient population affected by asbestos poisoning after working in the Spanish naval shipyard. There was some difficulty obtaining information from some of the individuals affected by asbestos poisoning because they passed away between the date the initial request for information was sent and the date of the group meetings when the data were collected. However, the statistics, even though the sample sizes were small, revealed consistent and strong group differences, showing that the Hahn et al. (2010) scale is reliable and valid for measuring social well-being in patients with chronic illness due to asbestos poisoning. These findings suggest that the Hahn et al. (2010) scale may also be useful for evaluating social well-being in patients suffering from other types of chronic disease. Additional studied are needed and warranted.

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