

## Illness Perception Mediates the Effect of Illness Course on the Quality of Life of Mexican Patients with Psychosis

By: Lizzette Gómez-de-Regil, [Thomas R. Kwapil](#), Neus Barrantes-Vidal

Gómez-de-Regil, L., Kwapil, T.R., & Barrantes-Vidal, N. (2014). Illness perception and functioning mediate the effect of illness course on the quality of life of psychosis patients. *Applied Research in Quality of Life*, 9(1), 99-112. doi: 10.1007/s11482-013-9211-4

The final publication is available at Springer via <http://dx.doi.org/10.1007/s11482-013-9211-4>

**\*\*\*© Springer. Reprinted with permission. No further reproduction is authorized without written permission from Springer. This version of the document is not the version of record. Figures and/or pictures may be missing from this format of the document. \*\*\***

### **Abstract:**

Learning about possible factors influencing, positively or negatively, the Quality of Life (QoL) of patients with psychosis is an important task for both, research and treatment. The study examined the association of illness course with QoL in a sample of Mexican patients with psychosis. It was hypothesized that illness perception would mediate the relation of illness course to QoL. Sixty-one (56 % female) patients were interviewed and assessed for illness course (relapses, residual symptoms, and diagnosis), QoL, and illness perception. Mediation analyses (simple and multiple) with bootstrapping procedures were applied, including residual symptoms as the predictor of QoL, and illness perception dimensions as candidate mediators. Residual symptoms, rather than a relapsing course or a diagnosis of schizophrenia, have a diminishing effect in the subjective QoL. This effect is fully mediated by illness perception, particularly by the cognitive and the emotional representations. Results underscore the importance that patients' beliefs have on their perceived QoL, encouraging further research and development of interventions targeting illness perceptions.

**Keywords:** Psychosis | Illness perception | Quality of life | Illness course | Mexican

### **Article:**

#### **Introduction**

Patients' quality of life (QoL) has become an important issue in patient care and, in consequence, in research, reflecting a re-emerging biopsychosocial perspective of health. The concept of QoL has long been applied in medical conditions, and more recently expanded to psychiatric disorders (Awad and Voruganti 2000).

Even though schizophrenia spectrum psychoses can be considered as the most disabling of all mental disturbances, advances in treatment approaches, including antipsychotic medication, have

made clinical stability achievable for patients and meant that QoL is a feasible aim in the patient's process of reintegration to family and community life. Despite some methodological limitations (Browne et al. 2000; Gladis et al. 1999), research indicates that people with schizophrenia suffer significantly poorer QoL (Pinikahana et al. 2002). Moreover, impaired QoL has been observed in patients with a first-episode of psychosis (Bechdolf et al. 2005; Browne et al. 2000; Theodore et al. 2011), prodromal (Bechdolf et al. 2005; Ruhrmann et al. 2008) and even psychosis-vulnerable subjects (Svirskis et al. 2007). Nevertheless, follow-up studies have shown that after a first psychotic episode is treated, QoL might plateau (Górna et al. 2008) and even improve (Foldemo and Bogren 2002; Malla et al. 2001; Ritsner et al. 2003).

Various sociodemographic (Pinikahana et al. 2002), clinical (Gaite et al. 2002; Malla and Payne 2005; Ritsner et al. 2003), social (Caron et al. 2005; Gaite et al. 2002; Ritsner et al. 2003) and treatment factors (Pinikahana et al. 2002) have been identified as reliable predictors of QoL, although their effect might be influenced by cultural issues (Gaite et al. 2002; Pinikahana et al. 2002). The course of psychotic illness might be an important factor related to QoL. Although not all evidence concurs (Almond et al. 2004), a relapsing course might lead to functional deterioration and diminished stability in employment and relationships (Nasrallah and Lasser 2006), in turn affecting QoL. Also, residual psychopathology might diminish QoL (Malla and Payne 2005; Savilla et al. 2008; Thorup et al. 2010), disrupting functioning and causing distress (Rudnick 2001); particularly negative symptoms (Hirschberg 2006; Narvaez et al. 2008; Pinikahana et al. 2002). In regard to diagnostic course, although schizophrenic psychoses show a poorer global outcome (Möller et al. 2000; Ritsner et al. 2000), they do not seem to differ from other psychoses in regard to QoL (Ritsner et al. 2003). Improving our understanding of factors mediating the effect of illness course on the QoL of patients with psychosis should improve patient care and increase the likelihood of satisfactory recovery beyond symptom remission.

The concept of "illness perception" or "illness appraisal" (Leventhal et al. 1984) has attempted to explain how people create a private representation of their illness in order to make sense of and respond adequately to the situation. Attribution and perception of mental illness might prompt or delay help-seeking, determine pathways to mental health care and affect prognosis (Burns et al. 2011). Whether seen as an illness or otherwise, the experience of psychosis raises individual's beliefs involving not only the acknowledgement of health status, but also the appraisal of personal and social consequences (Watson et al. 2006). Among mental health patients, it is not unusual to find partial awareness of their illness that might be addressed as "personal difficulties," "stress" or "nervousness." This might be due to denial, a limited educational level, or even to mildness of symptoms. Illness perception does not require acknowledging the condition as a disorder; thus, patients can recognize being affected (or not) regardless of their comprehension of and insight into mental illness. Illness perceptions involve cognitive and emotional representations (Broadbent et al. 2006; Leventhal et al. 1984; Moss-Morris et al. 2002) that have been related to QoL in various medical conditions (Miglioretti et al. 2008; Scharloo et al. 2007) and in psychosis as well (Lobban et al. 2004; Stainsby et al. 2010; Theodore et al. 2011;

Watson et al. 2006). Patients with psychosis are undeniably in risk of temporary or chronic deterioration; however, focus must be placed not only on the mere amelioration of symptoms and prevention of relapses, but also on the achievement of satisfactory levels of QoL. Learning about possible factors influencing, positively or negatively, the QoL of patients with psychosis is an important task for both, research and treatment. Reports of patients with psychosis from Mexico are limited; data from this population might not only help to corroborate or refute the findings of previous research from other countries, but would also provide valuable clues in regard to predictive and mediating variables of QoL that might be proper to this culture. The present study examined the association of illness course with QoL in a sample of Mexican patients with psychosis. Although both illness course and illness perception have been reported to have a significant effect on the QoL of patients with psychosis, to the best of our knowledge these two variables have not been yet simultaneously studied. The present study undertakes this task and further proposes a model where illness perception might play a mediating role between illness course and its effect on QoL.

## **Methods**

### **Sample**

Participants for this study were patients who have received mental health care in the adult service of the Hospital Psiquiatrico Yucatan in Mexico. This hospital does not have a delimited catchment area as it offers attention for mental health to all in need regardless of residence and availability of medical insurance. Sampling was restricted to the inhabitants of the city of Merida, where the hospital is located. After obtaining formal authorization and ethical approval from the Hospital Committee, clinical files were reviewed in search of patients who would meet the following criteria: i) occurrence of a first episode of psychosis between 1999 and 2005; ii) age at onset 16–45 years; and iii) a primary current DSM-IV-TR (American Psychiatric Association—APA 2000) diagnosis of schizophrenia or other schizophrenia-spectrum psychotic disorder. Exclusion criteria were: i) a DSM-IV-TR diagnosis of psychosis of affective, organic, or toxic type (APA 2000), ii) an evident intellectual disorder, and iii) inadequate contact information.

From a total of 158 potential cases, 55 had moved away and could not be located. From the remaining 103, 66 (64 %) agreed to be interviewed (with no economic compensation involved) signing informed consent. Five participants were unable to provide reliable data due to high symptom severity; thus, the final sample included 61 patients (56 % female). Thirty-four (56 %) participants had secondary or lower education (up to 9th grade) and the remaining 27 (44 %) had partial/complete medium or higher education. At the time of the assessment, no participant was hospitalized. In terms of current DSM-IV-TR diagnoses, 41 patients had schizophrenia (14 paranoid, 2 disorganized, and 25 residual) and 20 patients had other types of schizophrenia-spectrum psychoses (8 schizoaffective, 7 delusional, 2 schizophreniform, 2 brief, and 1 not otherwise specified). Mean illness course was 6.7 years (SD = 1.9, range 3.8–11.2). Current

mean age was 35.9 years (SD = 10.0). Mean age at onset was 29.1 years (SD = 9.8); although an atypical value it is consistent with previous studies in Mexican samples (Apiquián et al. 1997). There were no significant sex differences for either current ( $t_{(59)} = -1.06, p = 0.29$ ) or onset ( $t_{(59)} = -1.01, p = 0.32$ ) age. Gender, educational level, current and onset age were not significantly related to QoL. Of the total sample, 25 patients (41 %) were not currently receiving outpatient treatment. Four of them (2 with brief psychosis and 2 with schizophreniform disorder), had received medical discharge. The remaining 21 had dropped out from regular outpatient follow-up. However, these 21 patients did not show any difference in our outcome variable, QoL, compared to the 36 who followed out-patient treatment (CSCV-Favorable,  $t_{(55)} = -1.37$ ; CSCV-Disfavorable,  $t_{(55)} = 1.21$ ). Therefore, current treatment status was not considered for the analyses.

## Measures

Based on both, information from clinical files and SCID-I (Structured Clinical Interview for DSM-IV-TR Axis I Disorders; (First et al. 1995) interviews with patients, the illness course of each patient at the time of assessment was established for three dichotomously scored criteria: i) any recorded relapse (i.e. exacerbation of psychotic symptoms requiring hospitalization and/or increase in medication (Rosen and Garety 2005) in the time period from the first episode to participation in the study), ii) the current presence of residual symptoms (only negative symptoms or two or more positive symptoms present in an attenuated form (APA 2000)) and, iii) the current primary psychotic diagnosis according to the DSM-IV-TR criteria (APA 2000; First et al. 1995). Even though the complexity of illness course is undeniable, simplifying it into two categories for research purposes has provided significant results (Altamura et al. 2001; Gómez-de-Regil et al. 2010; Rosen and Garety 2005; Vázquez-Barquero et al. 1999).

QoL was assessed with the Sevilla Quality of Life Questionnaire (CSCV, Cuestionario Sevilla de Calidad de Vida), a 59-item self-rated questionnaire developed in Spanish for patients with schizophrenia (Giner et al. 1997). This questionnaire has two subjective QoL scales: the Favorable-aspect scale (CSCV-Favorable) composed of vital satisfaction, self-esteem and harmony factors; and the Disfavorable-aspect scale (CSCV-Disfavorable) composed of lack of cognitive apprehension, loss of energy, lack of inner control, difficulty with emotional expression, difficulty with cognitive expression, oddness, fear of losing control, restrained hostility, and automatism factors. The instrument has satisfactory levels of reliability and validity (Ibañez et al. 1997) that have been replicated in samples from Latin America (Alvarado and Muñoz 2006).

Illness perception was measured with the Brief Illness Perception Questionnaire (Brief-IPQ) (Broadbent et al. 2006). This 8-item self-report scale assesses three dimensions of illness perception: cognitive representation (beliefs about illness' severity, consequences, and duration, personal control over illness and usefulness of treatment), emotional representation (negative emotions about illness) and comprehensibility (understanding of the disorder). Higher scores of

cognitive and emotional representations indicate a negative perception of illness, whereas higher scores on comprehensibility indicate a favorable perception. The instrument has shown good levels of validity and reliability (Broadbent et al. 2006) and although it is not exclusive for people with a mental illness, it has been satisfactorily applied to patients with psychosis (Broadbent et al. 2008). All scales were presented in a 4-point scale.

### Statistical Analysis

First, the QoL of groups defined by the dichotomous illness course criteria (relapses, residual symptoms, and diagnosis) were compared with t-tests and the association of QoL with illness perception was estimated with Pearson correlations. Next, bivariate and partial correlations were applied to observe the direct and mediated effect (controlling for illness perception dimensions) of illness course on QoL. Following Preacher and Hayes (2004), simple mediation bootstrapping procedures were used to determine the significance of each mediator individually. Finally, following Preacher and Hayes (2008), the resulting significant mediators were entered simultaneously to confirm their effect.

### Results

Regarding QoL levels, 82 % ( $n = 50$ ) of participants scored in average above the 2.5 midpoint value (possible score range: 1 to 4) for CSCV-Favorable and up to 85 % ( $n = 52$ ) below 2.5 for CSCV-Disfavorable. Descriptive data for illness perception and QoL measures are presented in Table 1. No significant differences by sex or educational level were found on any variable so the values are presented for the total sample. Onset and current age were not significantly correlated with any of the described variables. Cognitive representation was significantly correlated with the emotional representation ( $r = 0.50, p \leq 0.001$ ).

**Table 1** Mean and standard deviation of illness perception and quality of life scores ( $n = 61$ )

Scales	Mean (SD)	Range
Illness perception (Brief-IPQ)		
Cognitive representation	10.7 (2.9)	5.0 – 17.0
Emotional representation	5.0 (2.1)	2.0 – 8.0
Comprehensibility	2.9 (1.1)	1.0 – 4.0
Quality of life (CSCV)		
Favorable	3.0 (0.7)	1.5 – 4.0
Disfavorable	1.7 (0.6)	1.0 – 3.4

Possible score range for cognitive representation: 5.0 – 20.0; for emotional representation: 2.0 – 8.0; for comprehensibility: 1.0 – 4.0

*Brief-IPQ* Brief Illness Perception Questionnaire; *CSCV* Cuestionario Sevilla de Calidad de Vida (Sevilla Quality of Life Questionnaire)

Data for illness course and its effect on QoL are presented in Table 2. Following Cohen (1992), a d-value of .2 indicates a small effect, .5 a medium effect, and .8 a large effect size. As it can be seen, the presence of residual symptoms was robustly associated with impaired QoL.

**Table 2** Differences in quality of life according to illness course ( $n = 61$ )

Quality of life subscales (CSCV) mean (SD)	Relapses				Residual symptoms				Diagnosis			
	Any relapse $n = 37$	Single-episode $n = 24$	$t(59)$	Cohen's d	Present $n = 30$	Absent $n = 31$	$t(59)$	Cohen's d	Schizophrenian = 41	Other psychoses $n = 20$	$t(59)$	Cohen's d
Favorable	2.9 (0.7)	3.2 (0.6)	-1.33	0.46	2.8 (0.7)	3.3 (0.6)	-2.99**	<b>0.77</b>	2.9 (0.7)	3.2 (0.5)	-1.59	0.49
Disfavorable	1.8 (0.6)	1.6 (0.5)	1.29	0.36	1.9 (0.7)	1.5 (0.4)	<b>2.90**</b>	<b>0.70</b>	1.7 (0.6)	1.7 (0.7)	-0.19	0.00

Medium effect sizes in bold

CSCV Cuestionario Sevilla de Calidad de Vida (Sevilla Quality of Life Questionnaire)

\* $p \leq 0.05$ ; \*\* $p \leq 0.01$ ; \*\*\* $p \leq 0.001$

Data for the association of QoL with illness perception are presented in Table 3. Overall, negative cognitive and emotional representations were significantly related to poorer QoL, whereas higher understanding of illness was related only to the favorable QoL score. Following Cohen (1992), a correlation of .10 represents a small effect, .3 a medium effect, and .5 a large effect.

**Table 3** Pearson correlations of quality of life with illness perception ( $n = 61$ )

Quality of life subscales (CSCV)	Illness perception (Brief-IPQ)		
	Cognitive representation	Emotional representation	Comprehensibility
Favorable	<b>-0.59***</b>	<b>-0.42***</b>	<b>0.30*</b>
Disfavorable	<b>0.62***</b>	<b>0.45***</b>	-0.18

Significant results in bold

Brief-IPQ Brief Illness Perception Questionnaire; GAF-F Global Assessment of Functioning Scale, Functioning Score; CSCV Cuestionario Sevilla de Calidad de Vida (Sevilla Quality of Life Questionnaire)

$p \leq 0.05$ ; \*\* $p \leq 0.01$ ; \*\*\* $p \leq 0.001$

The residual symptom criterion was selected as the most reliable predictor of poor QoL, above diagnosis and relapses. Therefore, the final mediation analysis included residual symptoms as the predictor of QoL (CSCV-Favorable and CSCV-Disfavorable), and illness perception dimensions

as candidate mediators. Results are shown in Table 4. A significant direct effect of residual symptoms on both QoL dimensions can be observed by bivariate correlations. However, the effect seemed fully mediated by the negative emotional representation of illness, as it was no longer significant when this mediator was entered in partial correlations. Negative cognitive representation and comprehension of illness failed to partially mediate the effect of residual symptoms on either QoL measure. Nevertheless, following Preacher and Hayes (2004), bootstrapping procedures revealed that both cognitive and emotional representation were individually significant mediators. Finally, by bootstrapping multiple mediation analysis (Preacher and Hayes 2008), only the statistically significant mediation effect of cognitive representation was corroborated.

**Table 4** Tests of mediation of the association of residual symptoms and quality of life by illness perception dimensions

Predictor	Outcome	Direct effect	Mediator	Mediated effect	Simple mediation Bootstrap 95 % CI	Multiple mediation Bootstrap 95 % CI
Residual symptoms	CSCV-Favorable	-.36 **	Cognitive representation	-.27*	-.39 – -.00	-.38 – -.02
			Emotional representation	-.25	-.32 – -.37	-.19 – .06
			Comprehensibility	-.32*	-.18 – .02	–
	CSCV-Disfavorable	.35 **	Cognitive representation	.26*	.00 – .34	.02–.35
			Emotional representation	.23	.04 – .32	-.04 – .19
			Comprehensibility	.33*	-.05 – .14	–

Direct effect is the bivariate correlation of Residual Symptom rating with the outcome measure; Mediated effect is the same correlation with the mediator partialled out. Simple mediation indicates the significance of mediation analyzed individually. Multiple mediation indicates the significance of mediation with the mediators entered simultaneously. Significant results in bold

CSCV Cuestionario Sevilla de Calidad de Vida (Sevilla Quality of Life Questionnaire)

\* $p \leq 0.05$ ; \*\* $p \leq 0.01$ ; \*\*\* $p \leq 0.001$

## Discussion

This is the first study not only reporting on the QoL of mental health patients from a particular Mexican population, but also analyzing the mediating role of illness perception between illness course and QoL. Our results not only corroborate the association between residual psychopathology and poor QoL (Jabs et al. 2004; Malla and Payne 2005; Rudnick 2001; Theodore et al. 2011), but also provide a clear picture of the impact of residual symptoms above

that of relapsing course and diagnosis. Additionally, the study also replicates the evidence in favor of an association between a diminished QoL and illness perception (Lobban et al. 2004; Stainsby et al. 2010; Theodore et al. 2011).

The major finding of this study was that cognitive and emotional representations of illness, rather than comprehensibility, fully mediate the effect that residual symptoms have on the QoL of patients with psychosis. These results converge with Theodore et al. (2011) who found, in a sample of patients with early psychosis, that illness perception was significantly associated with QoL, particularly the cognitive (treatment control, negative consequences) and emotional dimensions; and that the former was the strongest predictor of QoL over and above symptomatology. Patients conceiving their illness as severe and long-lasting, unmanageable by treatment or personal control, and seriously affecting their lives, experience a diminished QoL. An illness perceived as uncontrollable and highly intrusive might compromise QoL by reducing gratification from psychologically valued activities and, by diminishing personal control as the ability to obtain positive outcomes and/or to avoid negative ones becomes limited (Devins 2010). The adversity of psychopathology comes not only from the psychological distress it causes, but also, and mainly, from how it affects the social dimension, by limiting the attainment of “personal projects” (Shahar and Davidson 2009). Evidence supports that family and social dimensions of life, which might provide attachment and reassurance of worth, are very important to patients’ QoL (Caqueo-Urizar and Lemos-Giráldez 2008; Caron et al. 2005; Lundberg et al. 2008; Pitkänen et al. 2009) and might even reduce the risk of suicide in patients with schizophrenia (Kao et al. 2011). Patients’ sense of recovery does not unfold in isolation, but within a social and interpersonal context (Harvey et al. 2007; Ng et al. 2008; Schön et al. 2009; Topor et al. 2011). The reintegration of patients’ to their daily family and community roles might be hindered by persistent and intrusive residual symptoms and the resulting negative cognitive perception of illness, restringing their opportunities to obtain social reinforcement and improve QoL. Although this possibility cannot be directly drawn from our results, it is an idea worth of further study.

The emotional representation (concerns and emotions) of illness is also an important mediator of the effect of residual symptoms on the QoL. Illness perception has been related to positive and negative symptoms (Lobban et al. 2005) as well as anxiety and depression (Huppert and Smith 2001; Priebe et al. 2000) in patients with schizophrenia; yet studies suggest that the ability to cope with symptoms (Ritsner et al. 2003) and the associated distress (Lasalvia et al. 2002; Ritsner et al. 2003), substantially contribute to QoL in schizophrenia, even more than symptom severity (Lasalvia et al. 2002; Ritsner et al. 2003). Therefore, reducing the negative emotional impact of psychosis and enhancing abilities to emotionally cope with illness may be at least as important as controlling symptoms (Stainsby et al. 2010).

The link between the illness perception and QoL comes forward as a compelling target for research, and an important factor to be considered in clinical interventions. Learning how illness perceptions of a mental health problem relate to psychological and treatment outcomes would



improve our understanding of behavior in patients with psychological disorders, leading to new applications and approaches to facilitate patients' adjustment to their illness. Interventions addressing illness perceptions may encourage adherence to therapy, reduce inappropriate service use, and improve family and significant other relationships through analysis and therapy around aligning illness perceptions (Petrie et al. 2008). Likewise, targeting beliefs of young adults, in risk of or with mental health problems, about mental illness may prompt timely help-seeking (Vanheusden et al. 2009) reducing the gap between illness onset and treatment, in favor of outcome.

Regardless of the limitations in mental health provision, our sample did not show markedly poor levels of QoL. This might well, at first, call into question the validity of the results; however, from a more positive approach towards psychotic illness other arguments must be considered. Results from the World Health Organization International Study of Schizophrenia (Jablensky et al. 1992) revealed that although the outcome of patients in the developing countries was not uniformly better as compared to the outcome in developed countries, high rates of complete clinical remission were significantly more common in the former. Furthermore, patients in developing countries experienced significantly longer periods of unimpaired functioning in the community, although only a small proportion (16 %) of them were on continuous antipsychotic medication (Jablensky et al. 1992; Jablensky and Sartorius 2008). For our sample, enrollment in treatment at the time of assessment did not have any significant impact on QoL. However, it must be underlined the fact that all patients had, at some point in time, received treatment; therefore, concluding that treatment makes no difference in terms of QoL would be erroneous. Moreover, the sample included not only schizophrenia cases but also those who have experienced milder types of psychoses (e.g. brief, delusional) and participation was not limited to patients still in need of treatment, but also cases that have achieved a satisfactory level of recovery. As our study did not focus exclusively on patients with an overall poor clinical status, results might well reflect the possibility of achieving a satisfactory level of recovery.

The cultural background of the sample is an important factor to consider in relation to outcome, as data from Mexican general population have shown social- rather than monetary-oriented indicators to be core domains of QoL (Felix and Garcia-Vega 2012). Despite access to costly biomedical treatment, high rates of disability are more likely in high income countries, suggesting that the highly competitive standards common in these cultures might diminish social support and negatively affect patients' outcome (Jablensky and Sartorius 2008). Caregivers of Mexican origin seem particularly accepting of their relative's psychotic illness, showing non-blaming and low aversive responses to patient's behavior (Dorian et al. 2008). These conditions might play a core role in the patients' functional reintegration and perception of QoL; thus, the social factors favoring satisfactory levels of outcome in this culture (e.g. family attitudes) come forward as an important focus of future research.

The uniqueness of our sample and the restrictive selection criteria may be of concern when discussing the implications of our results. Nevertheless, research with not well-known

populations might well contribute to replicate previous findings from other countries and to cue on particular characteristics of patients that might be highly influenced by culture.

Including patients with other types of psychoses and even other mental disorders, as well as patients from other locations would enrich future studies. A prospective design would strengthen the reliable assessment and control of important outcome predictors to be considered such as treatment compliance, medication adherence and substance abuse. Furthermore, the measurement of a more ample number of potential sociodemographic, clinical, social and treatment factors previously associated with QoL, must be considered.

## **Conclusions**

Residual symptoms, rather than a relapsing course or diagnosis of schizophrenia, have a diminishing effect in the subjective QoL of Mexican patients with psychosis. This effect is fully mediated by illness perception, particularly by negative cognitive and emotional representations. Results underscore the importance that patients' beliefs have on their perceived QoL, encouraging further research and development of interventions targeting illness perceptions.

## **Acknowledgments**

LGR thanks the Consejo Nacional de Ciencia y Tecnología (CONACyT), Mexico, for funding number 187498. NBV and TRK are supported by the Spanish Ministry of Science and Innovation (PSI2008-04178), the Generalitat de Catalunya, Suport als Grups de Recerca (SGR2009672), and La Fundació La Marató de TV3 (091110). We thank the Hospital Psiquiátrico Yucatán (México) for its support and all who kindly took part as participants.

## *Conflict of interest*

All authors declare that they have no conflicts of interest.

## **References**

- Almond, S., Knapp, M., Francios, C., Toumi, M., & Brugha, T. (2004). Relapse in schizophrenia: costs, clinical outcomes and quality of life. *The British Journal of Psychiatry*, *184*(4), 346–351. doi:10.1192/bjp.184.4.346.
- Altamura, A. C., Bassetti, R., Sassella, F., Salvadori, D., & Mundo, E. (2001). Duration of untreated psychosis as a predictor of outcome in first-episode schizophrenia: a retrospective study. *Schizophrenia Research*, *52*(1), 29–36. doi:10.1016/S0920-9964(00)00187-0.
- Alvarado, R., & Muñoz, K. (2006). Estudio psicométrico del Cuestionario Sevilla para valorar la calidad de vida en personas con trastornos mentales severos, en una muestra Chilena. *Revista Chilena de Neuro-Psiquiatría*, *44*(4), 249–257. doi:10.4067/S0717-92272006000400003.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders (4th ed., text revision)*. Washington: Author.

Apiquián, R., Páez, F., Loyzaga, C., Cruz, E., Gutiérrez, D., Suárez, J. A., et al. (1997). Estudio Mexicano sobre el primer episodio psicótico: resultados preliminares, características sociodemográficas y clínicas. *Salud Mental, 20*, 1–7.

Awad, A. G., & Voruganti, L. N. P. (2000). Intervention research in psychosis: issues related to the assessment of quality of life. *Schizophrenia Bulletin, 26*(3), 557–564.

Bechdolf, A., Pukrop, R., Köhn, D., Tschinkel, S., Veith, V., Schultze-Lutter, F., et al. (2005). Subjective quality of life in subjects at risk for a first episode of psychosis: a comparison with first episode schizophrenia patients and healthy controls. *Schizophrenia Research, 79*(1), 137–143. doi:10.1016/j.schres.2005.06.008.

Broadbent, E., Petrie, K. J., Main, J., & Weinman, J. (2006). The Brief Illness Perception Questionnaire. *Journal of Psychosomatic Research, 60*(6), 631–637. doi:10.1016/j.jpsychores.2005.10.020.

Broadbent, E., Kydd, R., Sanders, D., & Vanderpyl, J. (2008). Unmet needs and treatment seeking in high users of mental health services: the role of illness perceptions. *The Australian and New Zealand Journal of Psychiatry, 42*, 147–153. doi:10.1080/00048670701787503.

Browne, S., Clarke, M., Gervin, M., Waddington, J. L., Larkin, C., & O'Callaghan, E. (2000). Determinants of quality of life at first presentation with schizophrenia. *The British Journal of Psychiatry, 176*(2), 173–176. doi:10.1192/bjp.176.2.173.

Burns, J. K., Jhazbhay, K., & Emsley, R. A. (2011). Causal attributions, pathway to care and clinical features of first-episode psychosis: a South African perspective. *The International Journal of Social Psychiatry, 57*(5), 538–545. doi:10.1177/0020764010390199.

Caqueo-Urizar, A., & Lemos-Giráldez, S. (2008). Calidad de vida y funcionamiento familiar de pacientes con esquizofrenia en una comunidad latinoamericana. *Psicothema, 20*(4), 577–582.

Caron, J., Lecomte, Y., Stip, E., & Renaud, S. (2005). Predictors of quality of life in schizophrenia. *Community Mental Health Journal, 41*(4), 399–417. doi:10.1007/s10597-005-5077-8.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155–159.

Devins, G. M. (2010). Using the Illness Intrusiveness Ratings Scale to understand health-related quality of life in chronic disease. *Journal of Psychosomatic Research, 68*(6), 591–602. doi:10.1016/j.jpsychores.2009.05.006.

- Dorian, M., Ramírez-García, J. I., López, S. R., & Hernández, B. (2008). Acceptance and expressed emotion in Mexican American caregivers of relatives with schizophrenia. *Family Process, 47*(2), 215–228. doi:10.1111/j.1545-5300.2008.00249.x.
- Felix, R., & Garcia-Vega, J. (2012). Quality of life in Mexico: a formative measurement approach. *Applied Research in Quality of Life, 7*, 223–238.
- First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (1995). *Structured clinical interview for the DSM-IV axis I disorders (SCID)*. New York: New York State Psychiatric Institute, Biometrics Research.
- Foldemo, A., & Bogren, L. (2002). Need assessment and quality of life in outpatients with schizophrenia: a 5-year follow-up study. *Scandinavian Journal of Caring Sciences, 16*(4), 393–398. doi:10.1046/j.1471-6712.2002.00107.x.
- Gaite, L., Vázquez-Barquero, J. L., Borra, C., Ballesteros, J., Schene, A., Welcher, B., et al. (2002). Quality of life in patients with schizophrenia in five European countries: the EPSILON study. *Acta Psychiatrica Scandinavica, 105*(4), 283–292. doi:10.1034/j.1600-0447.2002.1169.x.
- Giner, J., Ibañez, E., Baca, E., Bobes, J., Leal, C., & Cervera, S. (1997). Desarrollo del Cuestionario Sevilla de Calidad de Vida (CSCV). *Actas Luso-Españolas de Neurología y Psiquiatría, 25*(supl. 2), 11–23.
- Gladis, M. M., Gosch, E. A., Dishuk, N. M., & Crits-Christoph, P. (1999). Quality of life: expanding the scope of clinical significance. *Journal of Consulting and Clinical Psychology, 67*(3), 320–331. doi:10.1037/0022-006X.67.3.320.
- Gómez-de-Regil, L., Kwapil, T. R., Blanqué, J. M., Vainer, E., Montoro, M., & Barrantes-Vidal, N. (2010). Predictors of outcome in the early course of first-episode psychosis. *The European Journal of Psychiatry, 24*(2), 87–97.
- Górna, K., Jaracz, K., Rybakowski, F., & Rybakowski, J. (2008). Determinants of objective and subjective quality of life in first-time-admission schizophrenic patients in Poland: a longitudinal study. *Quality of Life Research, 17*(2), 237–247. doi:10.1007/s11136-007-9296-z.
- Harvey, C. A., Jeffreys, S. E., McNaught, A. S., Blizard, R. A., & King, M. B. (2007). The Camden Schizophrenia Surveys III: five-year outcome of a sample of individuals from a prevalence survey and the importance of social relationships. *The International Journal of Social Psychiatry, 53*(4), 340–356. doi:10.1177/0020764006074529.
- Hirschberg, S. (2006). Quality of life and symptomatology in people with schizophrenia. (ProQuest information & learning). *Dissertation Abstracts International: Section B: The Sciences and Engineering, 66*(10-B), 5682.

- Huppert, J. D., & Smith, T. E. (2001). Longitudinal analysis of subjective quality of life in schizophrenia: anxiety as the best symptom predictor. *The Journal of Nervous and Mental Disease*, 189(10), 669–675. doi:10.1097/00005053-200110000-00003.
- Ibañez, E., Giner, J., Cervera, S., Baca, E., Bobes, J., & Leal, C. (1997). El Cuestionario Sevilla de Calidad de Vida: propiedades psicométricas. *Actas Luso-Españolas de Neurología y Psiquiatría*, 25(Supl. 2), 24–31.
- Jablensky, A., & Sartorius, N. (2008). What did the WHO studies really find? *Schizophrenia Bulletin*, 34(2), 253–255. doi:10.1093/schbul/sbm151.
- Jablensky, A., Sartorius, N., Ernberg, G., & Anker, M. (1992). Schizophrenia: manifestations, incidence and course in different cultures: a World Health Organization ten-country study. *Psychological Medicine*, 20, 1–97.
- Jabs, B. E., Krause, U., Althaus, G., Bartsch, A. J., Stöber, G., & Pfuhlmann, B. (2004). Differences in quality of life and course of illness between cycloid and schizophrenic psychoses—a comparative study. *The World Journal of Biological Psychiatry*, 5, 136–142. doi:10.1080/15622970410029925.
- Kao, Y., Liu, Y., Cheng, T., & Chou, M. (2011). Subjective quality of life and suicidal behavior among Taiwanese schizophrenia patients. *Social Psychiatry and Psychiatric Epidemiology*. doi:10.1007/s00127-011-0361-0.
- Lasalvia, A., Ruggeri, M., & Santolini, N. (2002). Subjective quality of life: its relationship with clinician-rated and patient-rated psychopathology. The South-Verona outcome project 6. *Psychotherapy and Psychosomatics*, 71(5), 275–284. doi:10.1159/000064809.
- Leventhal, H., Nerenz, D. R., & Steele, D. J. (1984). Illness representations and coping with health threats. In A. Baum, S. E. Taylor, & J. E. Singer (Eds.), *Handbook of psychology and health, volume IV: Social psychological aspects of health* (pp. 219–252). Hillsdale: Erlbaum.
- Lobban, F., Barrowclough, C., & Jones, S. (2004). The impact of beliefs about mental health problems and coping on outcome in schizophrenia. *Psychological Medicine*, 34(7), 1165–1176. doi:10.1017/S003329170400203X.
- Lobban, F., Barrowclough, C., & Jones, S. (2005). Assessing cognitive representations of mental health problems. I. The Illness Perception Questionnaire for schizophrenia. *British Journal of Clinical Psychology*, 44(2), 147–162. doi:10.1348/014466504X19497.
- Lundberg, B., Hansson, L., Wentz, E., & Björkman, T. (2008). Stigma, discrimination, empowerment and social networks: a preliminary investigation of their influence on subjective quality of life in a Swedish sample. *The International Journal of Social Psychiatry*, 54(1), 47–55. doi:10.1177/0020764007082345.

- Malla, A., & Payne, J. (2005). First-episode psychosis: psychopathology, quality of life, and functional outcome. *Schizophrenia Bulletin*, *31*(3), 650–671. doi:10.1093/schbul/sbi031.
- Malla, A. K., Norman, R. M. G., McLean, T. S., & McIntosh, E. (2001). Impact of phase-specific treatment of first episode of psychosis on Wisconsin Quality of Life Index (client version). *Acta Psychiatrica Scandinavica*, *103*(5), 355–361. doi:10.1034/j.1600-0447.2001.00200.x.
- Miglioretti, M., Mazzini, L., Oggioni, G. D., Testa, L., & Monaco, F. (2008). Illness perceptions, mood and health-related quality of life in patients with amyotrophic lateral sclerosis. *Journal of Psychosomatic Research*, *65*(6), 603–609. doi:10.1016/j.jpsychores.2008.05.012.
- Möller, H., Bottlender, R., Wegner, U., Wittmann, J., & Strauß, A. (2000). Long-term course of schizophrenic, affective and schizoaffective psychosis: focus on negative symptoms and their impact on global indicators of outcome. *Acta Psychiatrica Scandinavica*, *102*, 54–57. doi:10.1034/j.1600-0447.2000.00010.x.
- Moss-Morris, R., Weinman, J., Petrie, K. J., Horne, R., Cameron, L. D., & Buick, D. (2002). The Revised Illness Perception Questionnaire (IPQ-R). *Psychology and Health*, *17*(1), 1–16. doi:10.1080/08870440290001494.
- Narvaez, J. M., Twamley, E. W., McKibbin, C. L., Heaton, R. K., & Patterson, T. L. (2008). Subjective and objective quality of life in schizophrenia. *Schizophrenia Research*, *98*(1–3), 201–208. doi:10.1016/j.schres.2007.09.001.
- Nasrallah, H. A., & Lasser, R. (2006). Improving patient outcomes in schizophrenia: achieving remission. *Journal of Psychopharmacology*, *20*(6), 57–61. doi:10.1177/1359786806071248.
- Ng, R. M. K., Pearson, V., Lam, M., Law, C. W., Chiu, C. P. Y., & Chen, E. Y. H. (2008). What does recovery from schizophrenia mean? Perceptions of long-term patients. *The International Journal of Social Psychiatry*, *54*(2), 118–130. doi:10.1177/0020764007084600.
- Petrie, K. J., Broadbent, E., & Kydd, R. (2008). Illness perceptions in mental health: issues and potential applications. *Journal of Mental Health*, *17*(6), 559–564. doi:10.1080/09638230802523047.
- Pinikahana, J., Happell, B., Hope, J., & Keks, N. A. (2002). Quality of life in schizophrenia: a review of the literature from 1995 to 2000. *International Journal of Mental Health Nursing*, *11*(2), 103–111. doi:10.1046/j.1440-0979.2002.00233.x.
- Pitkänen, A., Hätönen, H., Kuosmanen, L., & Välimäki, M. (2009). Individual quality of life of people with severe mental disorders. *Journal of Psychiatric and Mental Health Nursing*, *16*(1), 3–9. doi:10.1111/j.1365-2850.2008.01308.x.

- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, *4*, 717–731.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*, 879–891.
- Priebe, S., Roeder-Wanner, U. U., & Kaiser, W. (2000). Quality of life in first-admitted schizophrenia patients: a follow-up study. *Psychological Medicine*, *30*(1), 225–230. doi:10.1017/S0033291798008253.
- Ritsner, M., Modai, I., Endicott, J., Rivkin, O., Nechamkin, Y., Barak, P., et al. (2000). Differences in quality of life domains and psychopathologic and psychosocial factors in psychiatric patients. *The Journal of Clinical Psychiatry*, *61*(11), 880–889. Ritsner, M., Kurs, R., Gibel, A., Hirschmann, S., Shinkarenko, E., & Ratner, Y. (2003). Predictors of quality of life in major psychoses: a naturalistic follow-up study. *The Journal of Clinical Psychiatry*, *64*(3), 308–315.
- Rosen, K., & Garety, P. (2005). Predicting recovery from schizophrenia: a retrospective comparison of characteristics at onset of people with single and multiple episodes. *Schizophrenia Bulletin*, *31*(3), 735–750. doi:10.1093/schbul/sbi017.
- Rudnick, A. (2001). The impact of coping on the relation between symptoms and quality of life. *Psychiatry: Interpersonal and Biological Processes*, *64*(4), 304–308. doi:10.1521/psyc.64.4.304.18599.
- Ruhrmann, S., Paruch, J., Bechdolf, A., Pukrop, R., Wagner, M., Berning, J., et al. (2008). Reduced subjective quality of life in persons at risk for psychosis. *Acta Psychiatrica Scandinavica*, *117*(5), 357–368. doi:10.1111/j.1600-0447.2008.01152.x.
- Savilla, K., Kettler, L., & Galletly, C. (2008). Relationships between cognitive deficits, symptoms and quality of life in schizophrenia. *The Australian and New Zealand Journal of Psychiatry*, *42*(6), 496–504. doi:10.1080/00048670802050512.
- Scharloo, M., Kaptein, A. A., Schlösser, M., Pouwels, H., Bel, E. H., Rabe, K. F., et al. (2007). Illness perceptions and quality of life in patients with chronic obstructive pulmonary disease. *The Journal of Asthma*, *44*(7), 575–581. doi:10.1080/02770900701537438.
- Schön, U., Denhov, A., & Topor, A. (2009). Social relationships as a decisive factor in recovering from severe mental illness. *The International Journal of Social Psychiatry*, *55*(4), 336–347. doi:10.1177/0020764008093686.

Shahar, G., & Davidson, L. (2009). Participation-engagement: a philosophically based heuristic for prioritizing clinical interventions in the treatment of comorbid, complex, and chronic psychiatric conditions. *Psychiatry: Interpersonal and Biological Processes*, *72*(2), 154–176. doi:10.1521/psyc.2009.72.2.154.

Stainsby, M., Sapochnik, M., Bledin, K., & Mason, O. J. (2010). Are attitudes and beliefs about symptoms more important than symptom severity in recovery from psychosis? *Psychosis: Psychological, Social and Integrative Approaches*, *2*(1), 41–49. doi:10.1080/17522430903144386.

Svirskis, T., Korkeila, J., Heinimaa, M., Huttunen, J., Ilonen, T., Ristkari, T., et al. (2007). Quality of life and functioning ability in subjects vulnerable to psychosis. *Comprehensive Psychiatry*, *48*(2), 155–160. doi:10.1016/j.comppsy.2006.10.008.

Theodore, K., Johnson, S., Chalmers-Brown, A., Doherty, R., Harrop, C., & Ellett, L. (2011). Quality of life and illness beliefs in individuals with early psychosis. *Social Psychiatry and Psychiatric Epidemiology*. doi:10.1007/s00127-011-0360-1.

Thorup, A., Petersen, L., Jeppesen, P., & Nordentoft, M. (2010). The quality of life among first-episode psychotic patients in the opus trial. *Schizophrenia Research*, *116*(1), 27–34. doi:10.1016/j.schres.2009.10.006.

Topor, A., Borg, M., Di Girolamo, S., & Davidson, L. (2011). Not just an individual journey: social aspects of recovery. *The International Journal of Social Psychiatry*, *57*(1), 90–99. doi:10.1177/0020764010345062.

Vanheusden, K., van der Ende, J., Mulder, C. L., van Lenthe, F. J., Verhulst, F. C., & Mackenbach, J. P. (2009). Beliefs about mental health problems and help-seeking behavior in Dutch young adults. *Social Psychiatry and Psychiatric Epidemiology*, *44*(3), 239–246. doi:10.1007/s00127-008-0428-8.

Vázquez-Barquero, J. L., Cuesta, M. J., Castanedo, S. H., Lastra, I., Herrán, A., & Dunn, G. (1999). Cantabria first-episode schizophrenia study: three-year follow-up. *The British Journal of Psychiatry*, *174*, 141–149. doi:10.1192/bjp.174.2.141.

Watson, P. W. B., Garety, P. A., Weinman, J., Dunn, G., Bbbington, P. E., Fowler, D., et al. (2006). Emotional dysfunction in schizophrenia spectrum psychosis: the role of illness perceptions. *Psychological Medicine: A Journal of Research in Psychiatry and the Allied Sciences*, *36*(6), 761–770. doi:10.1017/S0033291706007458.