

Assessment of drug attitudes in patients with schizophrenia: psychometric properties of the DAI Spanish version

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Evaluación de actitudes al medicamento en pacientes con esquizofrenia: propiedades psicométricas de la versión en español del DAI

Summary

Introduction. *The aim of the present study was to translate into Spanish and evaluate interrater reliability, internal consistency, and convergent validity with the Insight Treatment Questionnaire (ITAQ) and Buchanan's compliance measure, and their relation with sociodemographic and clinical variables of the Spanish version of the Drug Attitudes Inventory (DAI).*

Methods. *The sample was made up of 80 patients diagnosed of schizophrenia, between 15 and 65 years old, of both genders, who voluntarily accepted to participate in the study and were informed and whose clinical conditions made the evaluation possible. Convergent validity with ITAQ was calculated in a subsample of 60 subjects and interrater reliability was evaluated in 20 cases.*

Results. *The men and all those who received concomitant treatment with anxiolytic and/or antidepressants obtained a higher score on the DAI. Interrater reliability coefficient was 0.61 ($p < 0.001$), and Chronbach's alpha = 0.57. Correlation between DAI and ITAQ was $r = 0.476$, $p < 0.01$, and patients with poor compliance according to Buchanan's classification obtained less score in DAI than those with medium and high treatment compliance.*

Conclusions. *The Spanish version of the DAI demonstrated convergent validity and moderate reliability to evaluate treatment compliance in a Mexican sample of schizophrenic patients.*

Key words: Schizophrenia. Treatment attitudes. Compliance. Measures. DAI.

Resumen

Introducción. *El presente trabajo tuvo por objetivo traducir al español el Inventario de Actitudes al Medicamento (Drug Attitudes Inventory: DAI), determinar su confiabilidad interevaluadora, consistencia interna, validez convergente con el Cuestionario de introspección y actitudes al tratamiento (ITAQ), y con la clasificación de adherencia de Buchanan, así como su relación con diversas variables sociodemográficas y clínicas.*

Métodos. *La muestra se conformó con 80 pacientes con diagnóstico de esquizofrenia, de 15 a 65 años de edad, de ambos sexos, que aceptaron de forma voluntaria e informada participar en el proyecto, y cuyas condiciones clínicas permitieron la cumplimentación de los cuestionarios. Una submuestra de 60 pacientes fue utilizada para determinar la validez convergente entre la versión en español del DAI y el ITAQ; y basándose en una submuestra de 20 se calculó su confiabilidad interevaluador.*

Resultados. *Los hombres y todos los usuarios que recibían tratamiento concomitante con ansiolítico o antidepresivo presentaron mayor puntuación DAI. El índice de confiabilidad interevaluadores fue de 0,61 ($p < 0,001$), y el de consistencia interna de 0,57. La correlación entre DAI e ITAQ fue $r = 0,476$, $p < 0,01$, y los pacientes con bajo apego a tratamiento de acuerdo a Buchanan obtuvieron una menor puntuación DAI, en comparación con aquellos con media y alta adherencia a tratamiento.*

Conclusiones. *La versión en español del DAI mostró validez convergente y moderada confiabilidad para evaluar las actitudes a la medicación de una muestra de pacientes mexicanos con esquizofrenia.*

Palabras clave: Esquizofrenia. Actitudes a tratamiento. Evaluación. Adherencia a tratamiento. DAI.

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INTRODUCTION

The concept of «treatment compliance» refers to the degree in which a patient follows the prescribed medical-health instructions. Most of the studies coincide in placing therapeutic non-compliance of patients with schizophrenia at about 50%¹⁻³.

There is a clear influence of treatment compliance on the course and evolution of schizophrenia. Patients who are good compliers in the last year will have better global functioning, less psychopathology and less hospitalization time. On their part, those who are non-compliers with treatment will have more relapses, more symptoms and, in general, a worse quality of life⁴.

There are many factors related with treatment compliance in schizophrenia⁵⁻¹³, among which subjective, positive and/or negative perception in regards to drug consumption stand out. Their study in Spanish speaking patients undoubtedly requires appropriate methods for their evaluation.

One of the instruments used most to assess subjective responses to the medication in patients with schizophrenia is, unquestionably, the Drug Attitude Inventory (DAI)¹⁴. This instrument examines the negative and/or unpleasant subjective responses that commonly occur when antipsychotic drugs are taken. The DAI is made up of 10 items that consist in brief statements that the patient answers with «true» or «false».

The studies on the psychometric properties of the original English version show that it is a reliable and valid scale. Internal consistency (Cronbach's alpha = 0.81) as well as test-retest reliability (intraclass correlation coefficient = 0.82) were high¹⁴. In addition, the correlations between this instrument and the ROMI measure were 0.56 for the «reasons for compliance» scale and -0.47 for the «reasons for non-compliance»⁶; and the correlations between DAI and the Neuroleptic Dysphoria Scale¹⁵ was 0.76 when antipsychotic medication is begun and 0.74 at 48 hours of having taken it. Finally, Hogan et al. (1983 and 1992) demonstrated the DAI capacity to predict treatment compliance in patients with schizophrenia and the response to treatment with antipsychotics (measured with BPRS: $r = -0.75$; and with GAF: $r = 0.68$).

The present study aimed to translate the Drug Attitude Inventory (DAI) into Spanish, determine its interrater reliability, internal consistency, convergent validity with the Insight and Treatment Attitudes questionnaire (ITAQ) and with evaluation of Buchanan's treatment compliance and to establish its relationship with sociodemographic variables (age, gender, occupation and place of origin) and clinical variables (onset age of suffering, evolution time, relapse number, concomitant use of antipsychotics, anxiolytics, antidepressants and/or psychotherapy, and substance use).

METHOD

Subjects

The total sample for the study of internal consistency, convergent validity with the Buchanan compliance measure and relationship with sociodemographic and clinical variables was made up of 80 patients diagnosed of schizophrenia, from 15 to 65 years of age, of both genders, who voluntarily accepted to participate in the pro-

ject and were informed, whose clinical conditions made it possible to fill out the questionnaires. A subsample of 60 patients was used to determine the convergent validity between the Spanish version of the DAI and the Insight Treatment Attitude measurement (ITAQ): finally, based on a subsample of 20 patients, the interrelater reliability of the instruments being studied was calculated.

VARIABLES AND INSTRUMENTS

Introspection to treatment

Insight or introspection to the treatment in schizophrenia was evaluated with ITAQ: (Insight treatment attitudes questionnaire)¹⁶. This inventory was designed to measure the knowledge of the disease and degree of introspection regarding the need for treatment in patients with schizophrenia. It is made up of eleven items in which 0 = no introspection; 1 = partial introspection, and 2 = good introspection. The Spanish version of the instrument has demonstrated high reliability and validity in the Mexican population¹⁷.

Treatment compliance

This variable was assessed following Buchanan criteria (1992), who proposed its valid and reliable classification (by the treating clinician) into 3 categories: less than 25%, between 25 and 75% and more than 75%¹⁸.

PROCEDURE AND STATISTICAL ANALYSIS

In the first place, the original version of the Drug Attitude Inventory (DAI) was translated into Spanish. After, a fourth year psychiatry resident completed a form ad hoc for sociodemographic and clinical variables, performed the evaluation of treatment compliance, and administered the Spanish version of the DAI in 80 consecutive patients from the hospitalization service of the Short Stay Integral Care Center of the Jalisciense Institute of Mental Health, diagnosed of schizophrenia according to the DSM IV criteria. Another interviewer and psychiatry resident performed a second application of the DAI to a subgroup of 20 patients to obtain the interrater reliability, by means of the Pearson correlation. Internal consistency of the DAI was calculated by Cronbach's alpha, convergent validity based on the Pearson correlation index between it and the ITAQ, and with analysis of one-way variance with Bonferroni correction for the different categories of Buchanan's treatment compliance. Finally, Pearson tests were performed to determine the relationship between the total DAI score and the continuous clinical and sociodemographic variables and the total DAI score and student's t tests or one-way variance analysis with Bonferroni correction in the case of the categories.

RESULTS

This study was carried out based on different sample sizes, according to its specific objectives. The sociodemographic and clinical characteristics of all the sample ($n = 80$) as well as the subsamples of 20 and 60 patients used for the different study analyses are described in [table 1](#).

Reliability of the DAI Spanish version

The interrater reliability index was $r = 0.61$ ($p < 0.001$) and Cronbach's alpha for the DAI total was 0.57.

Convergent validity of the DAI Spanish version

Pearson's correlation index between the total DAI score and measurement of insight to ITAQ treatment was 0.47 ($p < 0.01$).

In addition, statistically significant differences were found between the total DAI score and Buchanan treatment compliance categories. Patients with low treatment compliance obtained a lower score on the DAI in comparison with those with middle and high compliance.

[Table 2](#) shows the DAI central tendency and dispersion measurements for the different Buchanan treatment compliance categories and the results of the corresponding variance analysis.

Relationship between sociodemographic and clinical variables and the DAI

Statistically significant differences were found in the total DAI score by gender. Men presented a greater DAI score in comparison with women (DAI men: 6.42 ± 1.96 , DAI women: 5.18 ± 2.78 ; $t = -2.05$, $gl = 78$, $p = 0.04$).

TABLE 1. Description of the sample and subsample of the study

<i>Characteristic</i>	<i>n = 20</i>	<i>Descriptive mean (%, average, range)</i>	<i>n = 60</i>	<i>Descriptive mean (%, average, range)</i>	<i>n = 80</i>	<i>Descriptive mean (%, average, range)</i>
Gender						
Male	15	75%	49	81.7	64	80%
Female	5	25%	11	18.3	16	20%
Age	20	36.25 ± 9.87 (20-65)	20	32.82 ± 10.39 (15-56)	80	33.68 ± 10.29 (15-65)
Occupation						
Unemployed	16	80%	49	81.7%	65	81.3%
Subemployed	4	20%	11	18.3%	15	18.8%
Origin						
Urban	18	90%	32	53.3%	50	62.5%
Rural	2	10%	28	46.7%	30	37.5%
Schizophrenia type						
Paranoid	15	75%	39	65%	54	67.5%
Undifferentiated	4	20%	14	23.3%	17	21.3%
Disorganized	1	5%	4	6.7%	6	7.5%
Catatonic	0	0	3	5%	3	3.8%
Treatment						
Antipsychotics	20	100%	60	100%	80	100%
Anxiolytics	14	70%	44	73.3%	50	62.5%
Antidepressants	17	85%	31	51.7%	34	42.5%
Psychotherapy	0	0	6	10%	6	7.5%
Treatment compliance						
Category 1	9	45%	22	36.7%	31	38.8%
Category 2	10	50%	34	56.7%	44	55.0%
Category 3	1	5%	4	6.7%	5	6.3%
Relapses	20	6.05 ± 4.61 (1-20)	60	4.47 ± 3.09 (1-5)	80	4.86 ± 3.57 (1-20)
Age of onset	20	24.0 ± 6.69 (14-40)	60	32.82 ± 10.39 (15-56)	80	21.80 ± 5.89 (13-44)
Consumption use						
Positive	10	50%	26	43.3%	36	45%
Negative	10	50%	34	56.7%	44	55%

TABLE 2. Comparison of DAI scores for the Buchanan treatment compliance categories

<i>Buchanan compliance</i>	<i>Low compliance</i> 1	<i>Middle compliance</i> 2	<i>High compliance</i> 3	<i>Significant comparisons</i> (<i>Bonferroni correction</i>)	<i>F</i>	<i>p</i>
DAI	5.41 ± 1.85	6.65 ± 2.37	6.6 ± 1.14	1 < 2 1 < 3	3.17	0.047

Finally, those patients who took anxiolytics and/or antidepressants as concomitant treatment obtained higher DAI score in comparison with those who only took antipsychotics (anxiolytic DAI: 6.70 ± 2.23 , non-anxiolytic DAI: 5.30 ± 1.84 ; $t = -2.89$, $gl = 78$, $p = 0.005$. Antidepressive DAI: 7.64 ± 1.59 , non-antidepressive DAI: 5.08 ± 1.93 ; $t = -6.30$, $gl = 78$, $p = 0.000$).

In the remaining sociodemographic and clinical variables subject to study, no clinically and/or statistically significant differences were found.

CONCLUSIONS

This study contributes additional evidence regarding reliability and validity of the DAI measurement of attitudes to antipsychotic drugs and presents its translation to Spanish (see appendix) and the first psychometric data in a sample of Mexican patients.

In general terms, and as you could observe, an adequate index of interrater reliability was obtained, comparable at least with that reported for the Chinese Version of the instrument (19). It may be suggested that this index could be increased with more extensive training than that given in the present study. To do so, a training and/or application guide of the instrument, that can be

empirically evaluated for its use with clinical and research objectives, may be useful.

Moderate internal consistency was also demonstrated and data were presented regarding convergent validity of the instrument with measurements of insight and treatment adherence. As expected, the correlations between DAI and ITAQ were moderate, positive and statistically significant, and those with high treatment adherence presented an adequate attitude to the medication (in comparison with those of middle and low compliance).

It can be stated that the DAI may be useful to identify patients with high risk of poor confidence about the prescribed medications, in regards to the subjective response to its use. These patients may be benefited by a change in their medication that may decrease the adverse euphoric effects. Other psychotherapeutic interventions to decrease the risk of non-confidence may also be appropriate.

Nevertheless and as the author himself recognizes²⁰, it is still necessary to make an effort to empirically demonstrate the clinical usefulness of this instrument, as well as to obtain additional information regarding its psychometric properties, especially in regards to its predictive validity.

Finally, and in regards to the relationship of the attitudes to medication and different sociodemographic and clinical variables, significant differences are only reported in regards to gender and the concomitant use of antidepressants and/or anxiolytics. This would lead to findings that add to the controversial evidence regarding: 1) the relationship between treatment adherence and sociodemographic variables, and 2) the usefulness of concomitant pharmacological therapy for the treatment of schizophrenia^{4,21,22}.

In addition, it is possible to suggest certain heuristic value while this information is useful for the planning of programs oriented towards the modification of negative attitudes to medication and increase of treatment compliance in patients with schizophrenia.

APPENDIX. DAI version in english

Instructions: please indicate if each one of the following statements are true or false in your case, crossing out the letter T, if it is true and F if it is false

For example:

Drugs make me feel better: T F
If you consider that the drugs make you feel better, cross out the letter «T» of true.

- | | | |
|---|----------------------------|----------------------------|
| 1. For me, the good things about medication outweigh the bad | <input type="checkbox"/> T | <input type="checkbox"/> F |
| 2. I feel strange, «doped up», on medication | <input type="checkbox"/> T | <input type="checkbox"/> F |
| 3. I take medications of my own free choice | <input type="checkbox"/> T | <input type="checkbox"/> F |
| 4. Medications make me feel more relaxed | <input type="checkbox"/> T | <input type="checkbox"/> F |
| 5. Medication makes me feel tired and sluggish | <input type="checkbox"/> T | <input type="checkbox"/> F |
| 6. I take medication only when I feel ill | <input type="checkbox"/> T | <input type="checkbox"/> F |
| 7. I feel more normal on medication | <input type="checkbox"/> T | <input type="checkbox"/> F |
| 8. It is unnatural for my mind and body to be controlled by medications | <input type="checkbox"/> T | <input type="checkbox"/> F |
| 9. My thoughts are clearer on medication | <input type="checkbox"/> T | <input type="checkbox"/> F |
| 10. Taking medication will prevent me from having a breakdown | <input type="checkbox"/> T | <input type="checkbox"/> F |

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