Original Article

Validity and reliability of the Persian version of the interactive observation scale for psychiatric inpatients

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Abstract

Context: The utilization of interactive observation scales can improve the quality of care.

Aims: The aim of this study was to validation and reliability of the Persian version of the Interactive Observation Scale for Psychiatric Inpatients (IOSPI).

Settings and Design: This methodological study was done in the two educational hospitals in Tehran.

Materials and Methods: Translation of the IOSPI into Persian followed the stepwise, iterative procedures developed by the International Quality of Life Assessment project approach. The validity and reliability of the IOSPI were evaluated by using a total of 300 sets of ratings accomplished by psychiatric nurses on 40 adult psychiatric inpatients observed daily for 1 month by 6 nurses; they were interviewed by two psychologists who filled in separately the Brief Psychiatric Rating Scale (BPRS).

Statistical Analysis Used: Data were analyzed by SPSS version 22 and using exploratory factor analysis and the internal consistency and test–retest.

Results: The total scores of the IOSPI showed a significant correlation with total scores of the BPRS ($r = 0.69$), meeting the criteria of concurrent validity. Exploratory factor analysis of 16 IOSPI items revealed four distinct clusters of items that represented higher-order increased psychomotricity, social interest, self-reliance, and psychotic status. Four factors of eigenvalues are >1, which explains 70.13% of the total variance. There was also good reliability estimated by an (intraclass correlation coefficient = 0.86) of the IOSPI.

Conclusions: The results showed a favorable validity and reliability for the Persian version of the IOSPI for the psychiatric patients. It was confirmed as an efficient tool to use for therapeutic care by the psychiatric nursing staff.

Keywords: Interactive learning, Nurse, Psychiatric, Inpatients, Reliability, Validity

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INTRODUCTION

A successful nursing care is happen by the effective interpersonal relationship.[1] The most important feature of therapeutic contact that often occurs informally in the mental health care is nurse–patient interaction.[2] The nurses who are patient, imaginative, and empathetic are usually appreciated by patients.[3,4] Despite the importance of the therapeutic role of nurse–patient interaction in the mental health care, it is unfortunately not realized as deserved.[2,5] Some of the studies report the challenges in nursing care situation of inpatients[6-9] such as distraction from the values and principles of recovery and a lack of collaboration, communication, and engagement between the inpatients and staff in a psychiatric setting.[3]

Nurse and patient interaction defined as verbal and nonverbal behaviors communicated by both of them that have an effect on the interpersonal relationship.[10] The utilization of interactive observation scales can be helpful in the psychiatric ward by increasing the nurse–patient interaction time as it also causes to improve the quality of care in inpatients.[11] Among the observational nursing scales such as Nurses' Observation Scale for Inpatient Evaluation 30 items (NOSIE-30) and the Staff Observation Aggression Scale, the Interactive Observation Scale for Psychiatric Inpatients (IOSPI) is calculated by the necessity of interaction between the assessor and the patient during the evaluation process.[12]

The IOSPI requires that the raters not only observe but also use interaction to achieve the related information for rating each of the items. In the IOSPI, the desirable behavior description has 10 items and this scale includes three response choices: spontaneous happening (Grade 0), happening after stimulation by the nursing staff (Grade 1), and nonhappening even when stimulated (Grade 2). In the items pertaining to deficient behaviors, assessment stimulates encounter of these behaviors or the observation of environmental variables that favor their happening. In these items, the response alternatives are absence of behavior (Grade 0), presence of behavior in particular conditions or behavior susceptible to encounter (Grade 1), and fixed presence of behaviors unbending to encounter (Grade 2).[12]

This instrument was designed to prepare an assessment tool as well as to promote therapeutic perceptions.[13] It has been previously found that the IOSPI applied by psychiatric nurses with research training has significant inter-rater reliability and interaclass correlation coefficient (ICC) of the total score. The total scores for the IOSPI demonstrate a significant correlation with the total scores for the Brief Psychiatric Rating Scale (BPRS) filled out by psychiatrists (Pearson correlation coefficient), suitable the standard for concurrent validity. The standard for predictive validity is also appropriate, since the scores can properly reflect changes in functioning over time and can also separate the patients in need of further inpatient remedy from those about to be discharged. The factorial construct of the IOSPI was similar to that of the Nurses' Observation Scale for Inpatient Evaluation,[14] except for items on depressive mood.[12] This scale was validated in the some countries such as Brazil[12,13] and Turkey.[11] It also was employed in the study about spiritual practices in an institution for mentally disabled in Brazil.[15]

The making native of this scale is due to the lack of standard instruments for evaluating the interactive observation at the psychiatric ward in Iran, and unfortunately, these cases are recorded separately and traditional by nurses in the daily report, by which research exploitation and scientific interpretation are not very possible.

The advantage of the instrument is that it can determine the patient's therapeutic needs. The routine use of this instrument at the psychiatric setting can inform the nurse of the standard interaction in all areas and also can change the attitude of nurses about mental illness. In this way, as the interaction with patients increases, nurse's knowledge is also significantly promoted by training in the field of scale using and regularly observing and examining of inpatients.[12] Given that being the effectiveness of utilization, the IOSPI in treatment process of inpatients, the purpose of this study was to evaluate the validity and reliability of the Persian version of the IOSPI in Iran.

MATERIALS AND METHODS

We carried out a cross-sectional design and methodological study to evaluate the validity and reliability of the IOSPI in two educational hospitals in Tehran. The IOSPI includes 16 items to be rated on a clearly defined 3-point scale indicating increasing order of inadequacy. For each item, we choose the grade (0, 1, or 2) which best described what we could observe during this period. If this classification was not possible and/or new situations appeared and/or the patient presented physical limitations that interfered with the execution of items 1, 2, 3, and 4, we chose nonevaluated and wrote down the reason overleaf.[12]

The assessment of psychiatric symptoms, with a stable factor structure, has been widely done by the BPRS over various patient groups.[16] The instrument was Bech *et al*.[17] version of the BPRS, which adds key points and reduces the severity to five levels.

After obtaining the required permission from Professor Zuardi (scale developer), a standard translation of the 16-item perceived stress scale into Persian was performed by two native translators. The second step was to combine and integrate the initial translations into one unified entity. During this step, the first translated versions were carefully revised by another translator who was an expert in both the Persian and English languages. Then, the initially translated versions were compared with one another and the existing differences and contradictions were corrected. Ultimately, the final version of the scale in Persian was obtained by integrating the initial ones. The third step was to translate the final version from Persian to English, and then, as the fourth step, the English version was submitted to the scale designer for confirmation. Finally, the Persian version of the scale was revised grammatically by the expert translators and presented for the evaluation of psychometric properties [Figure 1].

Face validity was determined in a qualitative manner, and the IOSPI was presented to ten psychiatric nurses with cognitive interview. This step was essential to ensuring the scale's quality and obtaining the appropriate feedback from them. In addition, the content validity of the scale was determined qualitatively by the ten expert specialists.

To determine the construct validity in exploratory factor analysis, convenience sampling was performed for 300 patients. Subjects were adult patients hospitalized to the psychiatric wards of two hospitals Educational and Therapeutic Center. The exploratory factor analysis was performed using the principal axis factoring (PAF) and varimax rotation. The minimum factor load of 0.4 was considered.

The convergent validity of the IOSPI was evaluated by comparing the correlation between the weekly scores of the BPRS and the average total scores of the IOSPI on the same day using the Pearson correlation coefficient.

The predictive validity of the instrument was calculated when patients in a condition were medically discharged. The study of the interaction time was affected by using data from 6 psychiatric nurses, as the study had been carried out under the psychiatric unit's usual conditions of operation and, consequently, only they were present in the shifts in which the recorded activities were performed before as well as during the use of the scale.

The reliability of the scale was determined by assessing the internal consistency (Cronbach's alpha), and it was evaluated on the basis of the ICC of the total scores independently obtained by the morning, afternoon, and night rotation nurses. In order to determine whether the reliability indices varied accordingly to the rater, the same procedure was used to compare each nurse's scores with the scores of all the others who had evaluated the same patient during other periods of the day. When the training was successfully completed, 6 patients of the psychiatric unit were evaluated daily from Saturday to Thursday by 3 psychiatric nurses during the morning shift and another 3 psychiatric nurses during the afternoon and night shift in a rotation system. Each psychiatric nurse observed 3 patients per shift, filling in the IOSPI by the end of the shift, and the filled forms were analyzed at the end of the study. Whenever a patient was discharged, the one admitted to the same bed was included in the study. In a period of 1 month, 40 patients were included in the

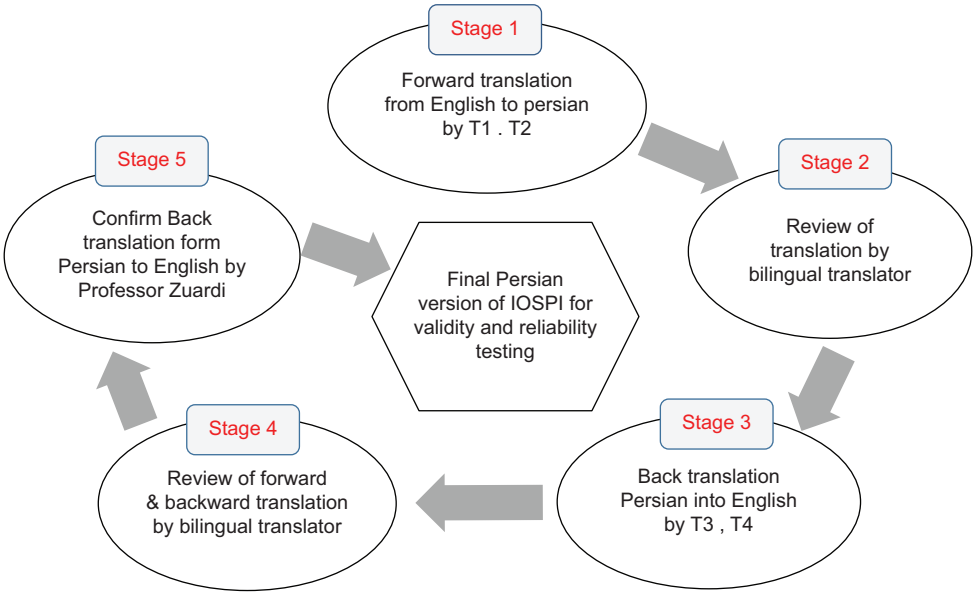

Figure 1: Forward and back translations of the Interactive Observation Scale for Psychiatric Inpatients

study, producing a total of 3000 instances of observations. This allowed assessment of test–retest reliability as the retest was performed by a different rater, and the interval between test and retest was short (morning and afternoon of the same day); this procedure may be taken as an inter-rater reliability measure.

The psychiatric nurses were trained in the IOSPI by a researcher with experience in the scale application. The training was completed within approximately 20 h (usually distributed over 4 shifts) and calculated the following aspects: (a) reading and discussing the registered protocol and the scale manual with the trainer and (b) joint observation of 1, 2, and 3 patients in three successive shifts by the raters and trainer and independent filling in of the scale, followed by discussion of the results.

Sampling for the validity and reliability of the IOSPI was evaluated by using a total of 300 sets of ratings accomplished by psychiatric nurses on 40 adult psychiatric inpatients submitted to weekly evaluations during the hospitalization. The patients were observed daily for 1 month by six nurses during the morning, afternoon, and night shifts. Furthermore, in the afternoon of the same day, they were interviewed by 2 psychiatrists who separately filled in the BPRS.

Fourteen inpatients admitted to the psychiatric unit of two university hospitals for a period of 1 month were included in this study. They were interviewed by a psychologist trained in the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, IV Text Revision,[18] and the following diagnoses were made: schizophrenia (5 patients), bipolar affective disorder (8 patients), major depression (2 patients), and organic psychoses (2 patients).

After the data were gathered, the descriptive analysis, validity, and reliability were analyzed by SPSS software (version 22). In this study, exploratory factor analysis was performed using the Kaiser–Meyer–Olkin (KMO) sampling test, Bartlett's tests, and analysis of the main elements, scree plot, and varimax rotation. The minimum factorial load of 0.4 was considered. To determine the relationship between demographic variables and a patient's stress level, ICC, Pearson's correlation coefficient, and Chi-square tests were used. Reliability of the tool was also determined by assessing the internal consistency (calculation of Cronbach's alpha) and test–retest.

The Ethics Committee of the University of Medical Sciences approved the research proposal with No. IR.BMSU.REC.1396.268. Furthermore, the protocol was approved by the hospital's Ethics Committee. Psychiatric nurses and patients agreed to participate in the study. Furthermore, the maintenance of participants' rights and the principle of confidentiality in the dissemination of information were respected.

RESULTS

There were 20 males and 20 females aged on average 33 (standard deviation [SD] = 12.4) years. The IOSPI was applied by 6 psychiatric nurses aged on average 39.2 (SD = 6.4) years.

All raters had at least 6-year work experience in the psychiatric ward, and voluntarily agreed to participate in the study.

The face validity of the scale was qualitatively evaluated and patients had no difficulty with the questionnaire items. Content validity was qualitatively assessed by several specialists and was found to be at an appropriate level. The construct validity of the scale items was assessed by exploratory factor analysis. The KMO was 0.73, and Bartlett's test of sphericity was significant ($P < 0.001$), indicating that the data were proper to factors analyzed.

PAF showed that the IOSPI scale had a four-factor structure that accounted for 70.12% of the variance. Kaiser's criterion and the scree plot [Figure 2] supported four-factor solution. The factor loadings for all items ranged from 0.507 to 0.824 [Table 1].

There was a statistically significant correlation between the severity of symptoms and duration of hospitalization [Table 2].

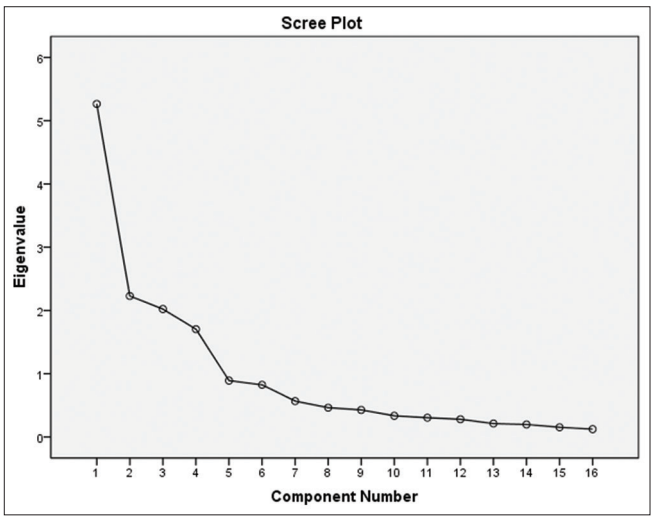

Figure 2: Scree plot

The ICC value for the IOSPI total scores was 0.86 ($P < 0.001$). The ICC values, obtained by comparing each psychiatric nurses' assessment with those of all others who assessed the same patients, ranged from 0.69 to 0.89, all of them being statistically significant ($P < 0.05$). A significant correlation was found between the average total score of pairs of observations of IOSPI and BPRS ($r = 0.69$, $P < 0.01$), as shown in Table 3. Exploratory factor analysis of 16 IOSPI items revealed four distinct clusters of items, which represented higher-order increased psychomotor, social interest, self-reliance, and psychotic status [Tables 2 and 3].

DISCUSSION

The main purpose of this study was to assess the validity and reliability of the Persian version of the scale in the psychiatric wards of Tehran hospitals. The IOSPI reliability has been determined as an experimental tool and has been retained during routine work by the nursing team of two hospitals psychiatric wards.[12] Under these situations, the IOSPI retained concurrent validity standard, since its scores significantly correlated with those obtained after the psychiatric assessment using the BPRS. In other similar studies in Brazil and Turkey, the results were almost the same as our finding.[11,13]

Table 1: Distribution of the Interactive Observation Scale for Psychiatric Inpatients items in 4 factors, according to the higher loading obtained in the factorial analysis

Factors	Items	Loading
Social interest	15. Self-esteem expression	0.852
	3. Participation in routines	0.809
	7. Social interaction	0.808
	6. Verbal communication	0.765
	5. Shows interest	0.721
Increased psychomotricity	16. Unusual behavior	0.881
	14. Acceptance of limits	0.822
	12. Accelerated verbal activity	0.796
	13. Irritability	0.740
	11. Increased psychomotricity	0.688
Self-reliance	4. Performs occupational activities	0.881
	2. Leaves the bed	0.851
	1. Self-care	0.841
Psychotic status	8. Reference to unreal facts	0.875
	9. Hallucinations	0.845
	10. Orientation	0.812

Table 2: Correlation between severity of symptoms and patient interaction in the fifth week and the day of discharge

Variable	BPRS (fifth week)	IOSPI (morning)	IOSPI (afternoon)	IOSPI (last night)
BPRS (fifth week)	1	0.07	−0.91	−0.37*
IOSPI (morning)	−0.78	1	0.77*	0.42**
IOSPI (afternoon)	−0.09	0.77*	1	0.58**
IOSPI (last night)	−0.03*	0.42*	0.58**	1
Total score of pairs	0.69**			

*$P<0.05$, **$P<0.01$. BPRS: Brief Psychiatric Rating Scale, IOSPI: Interactive Observation Scale for Psychiatric Inpatients

Table 3: Cronbach's alpha and intraclass correlation coefficient amounts for Persian version of Interactive Observation Scale for Psychiatric Inpatients and its subscales

Factors	Number of items	Cronbach's alpha	ICC
Social interest	3, 5, 6, 7, 15	0.87	0.872
Increased psychomotricity	11, 12, 13, 14, 16	0.86	0.861
Self-reliance	1, 2, 4	0.85	0.855
Psychotic status	8, 9, 10	0.82	0.828
Total score	16 items	0.86	0.860

ICC: Intraclass correlation coefficient

These observations permit us to regard the IOSPI as a tool that agrees with the predictive validity standard. The present results indicate that the routine application of the IOSPI focuses on excessive interaction between psychiatric nurses and patients, possibly because the completed scale needed interaction. In addition to the Routine Assessment of Patient Progress[19] which uses interaction in some of its items, the IOSPI is the only nursing scale known to us that uses a standardized interaction in all of its items.

Furthermore, our finding in exploratory factor analysis of 16 IOSPI items revealed 4 distinct clusters of items (social interest, increased psychomotricity, self-reliance, and psychotic status), whereas Zuardi *et al*. at the original scale revealed 5 distinct clusters of items, which represented higher-order constructs of social interest, psychomotor agitation, psychoticism, neatness, and irritability.[12] Furthermore, our results were similar to NOSIE. In another study related to factor structure of the NOSIE,[20] it was found that the 5 factors (social interest, social competence, irritability, psychoticism, and neatness) were consistent with the 4 factors as demonstrated in the IOSPI it was found that the 5 factors (social interest, social competence, irritability, psychoticism, and neatness) were consistent with the 4 factors as demonstrated in the IOSPI.

We found out that the Persian IOSPI has significant inter-rater reliability, estimated by an intraclass correlation coefficient of total score and factor score. It was obtained a significant correlation between the average total score of pairs of observations of IOSPI and BPRS, meeting the criteria of concurrent validity our results were similar to the finding of reliability in the original scale.[12]

The limitation of this research was the lack of motivation and cooperation of some nurses to complete the IOSPI scale, which may cause some cases not to be recorded in different shifts, so try to attract their cooperation with a face-to-face meeting and necessary explanations.

The strength of our study is that we have made native of the standard instrument for evaluating the interactive

observation at the psychiatric ward in Iran. Among the possible explanations for this observation, we recommend increased interaction with the patients and the knowledge prepared by the training in the use of the scale and by the organized observations of the patients.

We suggest that the other studies in order to the evaluation of psychometric properties and better comparison of this scale to be done in other countries and other provinces in our country.

CONCLUSIONS

The IOSPI proved to be a reliable and valid assessment tool, even when applied to daily ward practice. Considering the favorable internal consistency and reliability of the scale as well as the confirmation of its criterion and construct validities, the Persian version can be claimed to match the original scale. The use of the Persian version of this scale is recommended as a valid tool for the assessment of the patients hospitalized in psychiatric wards and in conducting clinical studies. In addition, being an assessment tool, this scale can increase the interaction time between psychiatric nurses and patients.

Conflicts of interest

There are no conflicts of interest.

Authors' contribution

MSN, RKH contributed to supervising and drafting. SFM contributed to data collection. AE contributed to data analysis. RKH contributed to final write up.

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