ORIGINAL ARTICLE

Psychometric properties of the Turkish version of Illness Management and Recovery Scale-Patient form

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Abstract

Purpose: The aim of this study was to provide the Turkish version of the Illness Management and Recovery Scale-Patient (IMRS-P) form and to determine its psychometric properties.

Design and Methods: This is a descriptive and correlation study. The sample of this study consisted of 75 people with schizophrenia. Translation and content validity, confirmatory factor analyses were used to test the validity and reliability of the scales.

Results: The content validity index was found to be 0.93. The scale had a three-factor structure, which subscales were 0.69 for recovery, 0.69 for management, and 0.35 for substance. The Cronbach's alpha was determined as 0.76.

Practice Implications: The Turkish version of the IMRS-P form is a valid and reliable scale for Turkish patients.

KEYWORDS
illness management, recovery, reliability, scale, schizophrenia, validity

1 | INTRODUCTION

Mental illnesses are characterized by impairments in various areas of functionality such as personal care, social relationships, family and environmental communication, professional life, and leisure activities.[1,2] Recovery occurs among individuals with mental disorders when they discover their strengths and abilities and determine their personal goals.[3,4]

Recovery refers not only to the disappearance of the symptoms but also to a process that involves developing personal and social skills and identifying the meaning of recovery for the individual, which typically includes hopefulness, having a say, self-acceptance, and collaboration with healthcare professionals.[5,6]

It is important for patients to manage their illness in the recovery process because equipping patients with skills enables them to be more proactive, to control their illness, and to recover by advancing towards a more functional life.[1,6] Thus, by reducing the symptoms of illness and managing relapses and recovery helps the individual to achieve and maintain their personal goals.[4,7]

Previous studies have claimed that in addition to giving medication to individuals with mental disorders, the implementation of psychosocial intervention programs including cognitive-behavioral psychotherapy, psycho-education, social skills, and family interventions help the patient recover and increase their functionality.[1,4]

Although it is important to evaluate these programs after implementation to determine the effectiveness of the program, many of these programs do not have an evaluation scale.[8,9] One program that has an evaluation scale is the Illness Management and Recovery (IMR) program, which focuses on managing the illness and recovery of individuals with mental disorders, preventing relapses, and achieving long-term remission. The program, which requires the cooperation of healthcare professionals, the patient, and the patient's relatives, is an evidence-based rehabilitation program that is carried out individually or in groups using structured, curriculum-based psychosocial interventions.[3,7,10-12]

The IMR Scale (IMRS), was developed to monitor patients' progress towards recovery and better illness management. Previous studies of the scale have proved its validity and reliability for patients with mental disorders.[12-15] The scale was adapted to English[13,16], Swedish,[14] Dutch, (Goossens et al, 2017)[12] Hebrew languages. However, the scale has not been adapted for people in Turkey, who have a different language and culture, of the scale (Hasson-Ohayon et al, 2007).[12,15-17]

Also, illness management and recovery are important for psychiatric patients and many psychosocial programs do not have an assessment and evaluation scale. IMRS is important as it will objectively determine the illness management and recovery levels of individuals with mental disorders. At the same time, healthcare professionals implementing this program will have the opportunity to determine the effectiveness of their training. This scale also adapted to Turkish, which will allow evidence for the effectiveness of the studies planned for the illness management and recovery of patients with mental disorders. Therefore, it is important to provide an assessment instrument that can be used to evaluate the effectiveness of the IMR program in patients diagnosed with schizophrenia in Turkey. Also, it will be useful to determine the factor structure by comparing the scale with those used for other cultures (Hasson-Ohayon et al, 2007).[12,15-17]

The aim of this study was to adapt the Illness Management and Recovery Scale-Patient (IMRS-P) form to the Turkish language and to determine its psychometric properties. The study's research question is determined as follows:

What are the psychometric properties of the IMRS-P?

2 | METHODS

2.1 | Study design

This study was conducted using a descriptive and correlational study design.

2.2 | Setting, time, and sample

This study was carried out between January and March 2017 with schizophrenia patients who presented in the Psychiatric and Neurological Disorders Education and Research Hospital. In this study, we planned at least five participants for each item in the scale.[18] This study recruited 75 patients with schizophrenia that met the inclusion criteria:

- Aged 18 to 65.
- Diagnosed with schizophrenia according to the DSM-V criteria.
- Literate.
- Not visually and hearing impaired.
- Maintenance drug treatment period.
- Inpatient.
- No psychotic acute attack, learning disabilities, organic brain diseases, hearing, and impairment, or alcohol or substance effect.

2.3 | Instruments

The *Sociodemographic information form*, IMRS–P was used to collect the data.

2.3.1 | Sociodemographic information form

The *Sociodemographic information form* consisted of questions designed to determine the demographic and obtain characteristics of the patient and their illness. The form includes questions on age, sex, educational status, marital status, occupational status, social security, the people they live in, alcohol, and substance use.

2.3.2 | IMRS-P

The scale, originally developed by Mueser et al[19] was used to identify the patient's progress towards their personal goals and to address various aspects of their illness management and recovery. There are two versions of the scale, one for employees and one for patients. We used the patient version in this study. The scale comprises a 15-item survey, which is measured using a five-point Likert-type scale a high score that indicates a good recovery.[15,19] Following McGuire et al's[17] factor analysis, the scale used in this study consists of three sub-dimensions: Recovery (items 1, 2, 4, 8, and 12), Management (items 6, 7, 9, 10, and 11), and Biology (items 13, 14, 15). Recovery sub-dimension was determined by personal goals, knowledge of the mental illness, contact with people outside of the family, relapse prevention planning, involvement with self-help activities. Management subdimension was determined symptom distress, impaired functioning, relapse of symptoms, psychiatric hospitalizations, coping. Biology sub-dimension was determined using medication effectively, use of drugs and alcohol. Previous psychometric studies have reported a moderate and strong internal reliability for the patient version with a range of 0.55 to 0.82.[12,13,15,16]

2.4 | Translation process of IMRS-P

In the adaptation of the IMRS to Turkish, we first performed a language equivalence study. The three experts made three separate translations and then authors discussed, compared, and combined their translations to create one single translation the scale was then translated back into the original language by a separate language specialist who knew both languages and cultures, using the back-translation technique. We then compared the translated Turkish scale and the original IMRS and made minor corrections with the help of the language specialist.

2.5 | Content validity of IMRS-P

The translated scale was presented to experts for content validity (content validity index [CVI]).[20] The expert panel consisted of 10 nurse academicians and a psychiatric nurse. The Davis[21] technique was used to evaluate the CVI. The experts were asked to rate each scale item on a four-point Likert scale ranging from 1 (unsuitable) to 4 (very favorable).[22] The first CVI value was 0.80, and the final CVI value, which was

finalized in line with the experts' opinions, was determined to be 0.93. This score reflects high content validity (Table 1).

2.6 | Data collection process and ethical considerations

Before conducting the research, we obtained a permit to use the scale from Kim Mueser by mail. The research was approved by the Ethics Committee of Erenkoy Mental Health and Neurological Diseases Training and Research Hospital (Date: 5 December 2016; number: 8). In addition, written permission was obtained from the Erenkoy Mental Health and Neurological Diseases Training and Research Hospital Education Planned Comission (Date: 30 November 2016; number 11 478). The patients and family members who participated in the study were informed about anonymity and confidentiality according to the Helsinki Declaration, and their written and verbal consent was obtained. The patients who agreed to participate in the study were informed of the purpose of the study. We collected the data through face-to-face interviews; each one took about 15 minutes on average.

2.7 | Data analysis

The data analysis was conducted using Statistical Package for the Social Sciences (SPSS) version 20 and LISREL data analysis software. The Davis[21] technique was used for the scope validity of the scale. Confirmatory factor analysis (CFA) was performed to evaluate the validity of the three-factor structure. The reliability of the scale was calculated using item-total score correlation and internal consistency analysis. The data of the demographic and professional characteristics of the

participants were analyzed using mean, standard deviation, and frequency distributions from the descriptive statistics.

3 | RESULTS

3.1 | Sample characteristics

The average age of the participants was 41.6 10.9 years (18-65 years) and 60% (n = 45) were male. Of the participants, 60% (n = 45) were never married, 52% (n = 39) were primary school graduates, 72% (n = 54) received social security benefits' and 50.7% (n = 38) lived with their parents. Of the patients, 2.7% (n = 2) were alcohol and 4% (n = 3) were substance users (Table 2).

3.2 | Validity analysis

3.2.1 | CFA

The construct validity of the scale was tested using CFA. The analysis showed that model adaptive values were not obtained within the desired limits (CMIN/DF = 2.006; RMSEA = 0.117; GFI = 0.805; CFI = 0.831).

Figures 1 and 2 show the nonstandardized and standardized path coefficients of the first analysis.

As a result of the first analysis, we examined model correction indices and presented a covariance proposal between the error term belonging to S10 and the error terms belonging to items S14 and S15. The significance of the path coefficients of S10 was not statistically significant (β = 0.424; P = .083). As a result of the required correction index, the relevant variable was excluded from the model and analyzed. Similarly,

TABLE 1 Content validity index (CVI) of IMRS client

| Expert | IMRS Item | | | | | | | | | | | | | | | Proportion relevant |
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1
2	✓	✓	✓	✓	...	✓	✓	✓	✓	✓	✓	✓	✓	...	...	0.8
3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1
4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	...	...	0.86
5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0.93
6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1
7	✓	✓	✓	✓	...	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0.93
8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1
9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	...	✓	✓	✓	0.93
10	✓	...	✓	✓	✓	✓	✓	✓	✓	...	✓	✓	✓	✓	✓	0.86
Number on agreement	10	9	10	10	8	10	10	10	10	9	10	9	10	8	8	Mean expert proportion:0.84
I-CVI	1	0.9	1	1	0.8	1	1	0.9	1	0.9	1	0.9	1	0.8	0.8	Mean I-CVI: 0.93

Abbreviation: IMRS, Illness Management and Recovery Scale.

TABLE 2 Individual characteristics of participants

Characteristics		Mean ± SD	Min-Max
Age		41.6 ± 10.9	18-65
Illness duration		12.1 ± 10.4	1-40
Hospitalization number		4.6 ± 4	1-18
		n	%
Gender	Female	30	40.0
	Male	45	60.0
Education	Primary school	39	52.0
	High school	21	28.0
	University	15	20.0
Marital Status	Single	45	60.0
	Married	30	40.0
Social security	Yes	54	72.0
	No	21	28.0
Living status	Alone	9	12.0
	Partner-children	28	37.3
	Mother-father	38	50.7
Alcohol Use	Yes	2	2.7
	No	73	97.3
Substance use	Yes	3	4.0
	No	72	96.0

the path coefficient of item 13 was also not statistically significant ($\beta = 0.776$; $P = .073$).

Figures 3 and 4 present the nonstandardized and standardized solutions for the final analysis.

After items 10 and 13 were excluded from the scale following the CFA, the path coefficients of all items were found to be statistically significant, indicating that all items have a positive effect on the model. For factor 1, item 8 obtained the highest effect with a path coefficient of 0.75; under factor 2, item 7 obtained the highest effect with a path coefficient of 0.799; and under factor 3, item 15 obtained the highest effect with a path coefficient of 1.016 (Table 3).

Table 4 shows the standardized factor loadings of scale and Cronbach's alpha for the three factors. Factor 1 was 'Recovery' (*iyileşme* in Turkish); factor 2 was 'Management' (*yönetim* in Turkish) and factor 3 'Substance' (*madde* in Turkish).

3.3 | Reliability analysis

Reliability was determined based on internal consistency and split-half reliability. Table 5 shows the item total statistics of the IMRS. The alpha coefficient for the internal consistency of the Turkish version of the IMRS (15 items) was 0.76 and the split-half reliability was 0.71.

4 | DISCUSSION

In this study, we created a Turkish version of the IMRS and evaluated its psychometric properties. The forward–backward translation was conducted successfully. A literature review showed that the IMRS has previously been performed in four languages: English,[16] Dutch (Goossens et al, 2017),[12] Hebrew,[15] and Swedish.[14]

Changes were made and finalized in accordance with expert opinion. The CVI of the Turkish version of the IMRS was 0.93, indicating good content validity.

The original IMRS (Mueser et al, 2005)[19] has comprises 15 items. In subsequent studies of the patient and clinician versions, various sub-dimensions were obtained.[12,15-17] We used the sub-dimensions
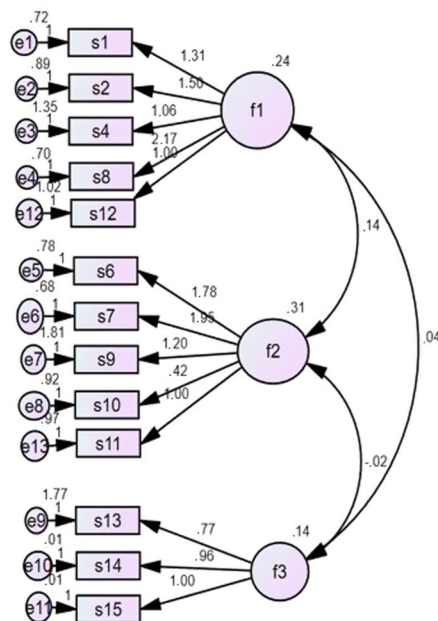
CMIN=124,402; DF=62; P=,000; CMIN/DF=2,006; RMSEA=,117; GFI=,805; CFI=,831

FIGURE 1 Standardized path coefficient [Color figure can be viewed at wileyonlinelibrary.com]

FIGURE 2 Nonstandardized path coefficient [Color figure can be viewed at wileyonlinelibrary.com]
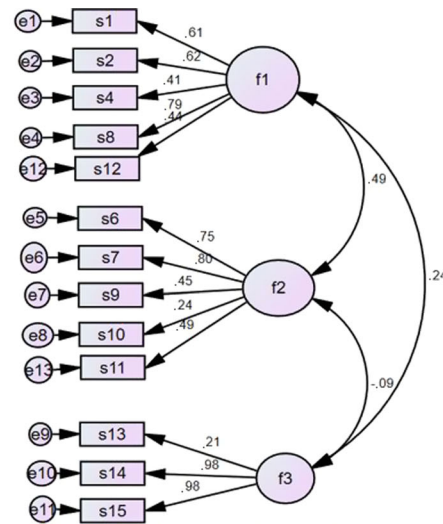
CMIN=124,402; DF=62; P=,000; CMIN/DF=2,006; RMSEA=,117; GFI=,805; CFI=,831

obtained by McGuire et al[17] - "recovery" (items 1, 2, 4 8, 12), "management" (items 6, 7, 9, 10, 11), "biology" (items 13 14, 15) - and the construct validity of the scale was evaluated using CFA. After items 10 and 13 were excluded from the scale following CFA, the path coefficients of all items were found to be statistically significant. Accordingly, items 1, 2, 4, 8, 12 formed the "recovery" subscale, items 6, 7, 9, 11 formed the "management" subscale, and items 14 and 15 formed the "substance" subscale. In addition, unlike the study carried out by McGuire et al[17] we preferred the concept of "substance" because the items in the 'biology' subscale related to legal and illegal substances and therapeutic drug use. By contrast, Hasson-Ohayan et al[15] named the sub-dimensions "coping," "knowledge and goals," and "medication."

In this study, item 10 related to "psychiatric hospitalization" and its item-total correlation is the lowest. However, we did not exclude this item from the scale because it did not significantly affect the

total Cronbach's alpha value. Cronbach's alpha values of item 14 (alcohol use) and item 15 (substance use) were also low but they were not excluded from the scale since they did not significantly affect the internal consistency of the scale. The reason for the low correlation of items 14 and 15 may relate to the answers given to these questions by patients who do not use alcohol or substances.

Goossens et al[12] obtained a Cronbach's alpha of $\alpha = 0.61$ for the internal reliability of all items of the IMRS. When excluding item 13 from the analysis, they obtained an internal reliability Cronbach's alpha of 0.69; they, therefore, suggested that Article 13 should be excluded from the scale.[12]

In the current study, the total Cronbach's alpha value was found to be 0.76. Nunnally[23] stated that the reliability coefficient should be 0.60 for pilot studies, 0.80 for basic research, and 0.90 to 0.95 for clinical studies. The internal consistency of the Turkish IMRS is thus
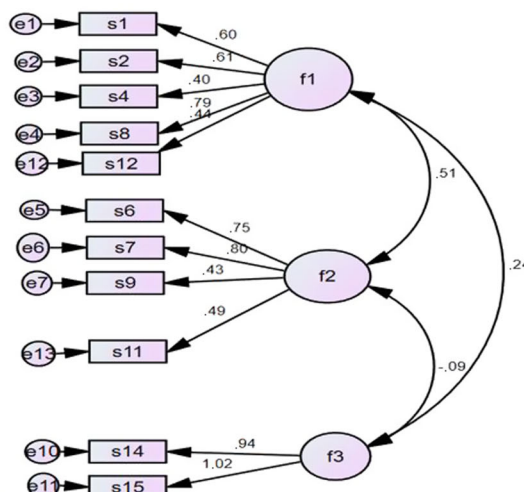
CMIN=56,457; DF=41; P=,055; CMIN/DF=1,377; RMSEA=,071; GFI=,883; CFI=,951

FIGURE 3 Final standardized path coefficient [Color figure can be viewed at wileyonlinelibrary.com]
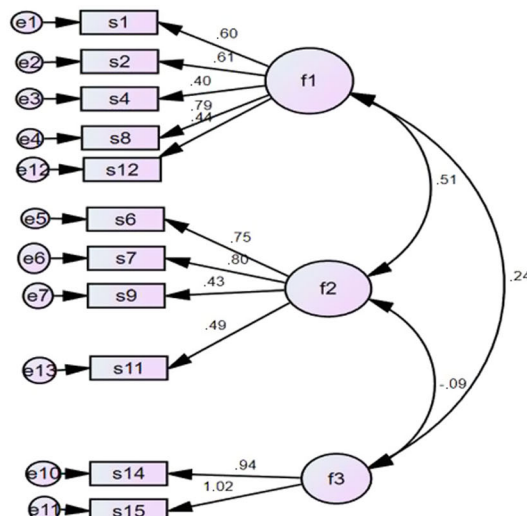
CMIN=56,457; DF=41; P=,055; CMIN/DF=1,377; RMSEA=,071; GFI=,883; CFI=,951

FIGURE 4 Final nonstandardized path coefficient [Color figure can be viewed at wileyonlinelibrary.com]

considered satisfactory. Other research obtained Cronbach's alphas ranging from 0.55 to 0.82 for the IMRS.[12,14,15] The findings of the current study suggest that cultural differences are effective in the reliability of the scale and it is appropriate to use the scale with different cultures. In addition, repeating the study with large sample groups would increase the reliability of the scale.

Our analysis of the internal consistency values of the sub-dimensions of the IMRS gave a Cronbach's alpha of 0.69 for the "recovery" sub-dimension, 0.69 for the "management" subdimension and 0.35 for the "substance" subdimension. The "recovery" and "management" factors showed moderate internal consistency, while the "substance" factor showed low internal consistency. Hasson-Ohayan et al[15] showed an internal consistency of 0.73 for the items in IMRS "recovery," 0.83 for the items in the IMRS "management" and

0.49 for the items in the IMRS "substance." Goossens et al[12] found that, of the three subscales, only the "management" factor of the IMRS version showed as acceptable (Cronbach's alpha = 0.77). Thus, differences are evident in the internal consistency of the sub-dimension compared with the findings of the current study. However, the "substance" subdimension was found to be low in all studies. Conducting studies with larger sample groups would provide better evidence for the factor structures of the IMRS.

4.1 | Limitations of the study

The present study showed that the Turkish version of the IMRS version is a suitable instrument for measuring the illness

TABLE 3 Confirmatory factor analyses of IMRS client

Item	Factor	Standardized	Nonstandardized	Standard error	Test	P
1	1	0.604	1.307	0.428	3.056	.002
2	1	0.607	1.475	0.481	3.064	.002
4	1	0.404	1.044	0.424	2.465	.014
8	1	0.795	2.188	0.664	3.296	<.001
12	1	0.439	1			
6	2	0.748	1.793	0.488	3.671	<.001
7	2	0.799	1.969	0.533	3.693	<.001
9	2	0.431	1.169	0.425	2.749	.006
11	2	0.489	1			
14	3	0.938	0.884	0.123	7.192	<.001
15	3	1.016	1			

Abbreviation: IMRS, Illness Management and Recovery Scale.

TABLE 4 Item standardized factor loadings of IMR client and Cronbach α three-factor models

IMR items	Cronbach α
Recovery subscale items	0.69
1 Progress towards goals	
2 Knowledge	
4 Contact with people outside of the family	
8 Relapse prevention planning	
12 Involvement with self-help activities	
Management subscale items	0.69
6 Symptom distress	
7 Impairment of functioning	
9 Relapse of symptoms	
11 Coping	
Biology (Substance) subscale items	0.35
14 Alcohol use	
15 Drug use	
Total	0.76

Abbreviation: IMR, Illness Management and Recovery.

TABLE 5 Item total statistics of IMRS client

IMRS client items	Mean	Variance	Item total correlation	Cronbach α
1-Progress towards goals	41.7600	68.455	0.415	0.763
2-Knowledge	41.2800	66.448	0.462	0.758
3-Family/friend involvement in treatment	40.5467	67.251	0.368	0.767
4-Contact with people outside of family	40.9600	67.715	0.361	0.767
5-Time in structured roles	41.2800	68.718	0.327	0.770
6-Symptom distress	41.0133	67.284	0.359	0.768
7-Impairment of functioning	41.0000	64.595	0.474	0.756
8-Relapse prevention planning	41.7067	61.588	0.631	0.740
9-Relapse of symptoms	41.6000	65.432	0.377	0.767
10-Psychiatric hospitalizations	42.5600	73.223	0.183	0.781
11-Coping	41.1200	66.269	0.506	0.755
12-Involvement with self-help activities	42.0400	69.282	0.341	0.769
13-Using medication effectively	39.8933	64.691	0.472	0.757
14-Alcohol use	38.9600	75.390	0.230	0.777
15-Drug use	38.9733	75.486	0.204	0.778

Abbreviation: IMRS, Illness Management and Recovery Scale.

management and recovery in Turkish persons with schizophrenia based on a small size sample. Future research should assess the validity of this version of the IMRS with a larger and more diverse group of people with schizophrenia in Turkey.

5 | CONCLUSION

Our study showed that the Turkish version of IMRS is a suitable tool to measure the illness management and recovery level of Turkish patients with schizophrenia. The IMRS can be used for the routine evaluation of people with schizophrenia in Turkey and in the IMR program.

5.1 | Implications for nursing practice

The Turkish version of the IMRS is a useful measurement tool for determining the recovery level of people with schizophrenia.

Since illness management and recovery are important for psychiatric patients and many psychosocial programs do not have an assessment scale, the IMRS is an important assessment scale for evaluating the psychosocial program (IMR program).

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