Research Paper: Translation, Reliability Assessment, and Validation of the Persian Version of MedRisk Instrument for Measuring Patient Satisfaction With Physical Therapy Care (20-Item MRPS)

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ABSTRACT

Introduction: This study aimed to evaluate the reliability and validity of the Persian version of the 20-item versionof the MedRisk.

Materials and Methods: In our study, we used a cross-sectional and prospective validation study design. This research was a test development study involving 297 outpatients with musculoskeletal disorders from the physiotherapy centers in Kerman City, Iran, in 2017. All patients completed the MedRisk instrument for measuring patient satisfaction with physical therapy care. Participants also answered a demographic questionnaire, visual analog score, and global rating of change. Internal consistency and reproducibility were investigated, too. To determine test-retest reliability, 40 randomly selected patients completed the MedRisk instrument again 5-7 days after their treatment. Factor analysis, divergent validity, convergent validity, and the floor and ceiling effects were tested, too. The Ethics Committee of the University of Social Welfare and Rehabilitation Sciences, Tehran, Iran, reviewed and approved this research project. The SPSS software-24 was used for statistical analysis.

Results: Dimension of MedRisk demonstrated a high internal consistency (the Cronbach alpha=0.82). Reproducibility was also satisfactory (intraclass correlation coefficient=0.76). The standard error of measurement, minimal detectable changes, and coefficients of variation indices were respectively 0.63, 1.76, and 0.13 for the total score. In factor analysis, the 4-factor solution has emerged. The external validity testing revealed that the MedRisk instrument score correlated negatively with the visual analog scale (r=-0.18, P=0.002) and global rating of change (r=-0.19, P=0.001). Eighteen individual items of MedRisk were positively correlated with global satisfaction. The results showed that items 5 and 7 had a floor effect, and all other items except items 4, 5, and 7 had a ceiling effect.

Conclusion: The Persian version of the MedRisk instrument is a valid and reliable instrument for measuring patient satisfaction with physical therapy and can be used in a clinical setting.

Keywords: Patient satisfaction, Physiotherapy, Reliability, Validity

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1. Introduction

S cholarly attention to patient satisfaction has increased significantly in the last few years [1, 2] because of its role in assessing the quality of treatments [3, 4]. Patient satisfaction is a multidimensional phenomenon [4-6] (so it cannot be evaluated directly but is often assessed through indirect methods such as patient's reports) [7, 8]. In particular, the use of questionnaires, due to their ease of application, reproducibility, and low cost, is common in previous studies [9, 10].

Other studies have revealed a lack of evaluation of the psychometric properties of patient satisfaction measurement tools [3, 11, 12]. In recent years, due to the increasing number of physiotherapy centers, patients have a wide range of options, so ensuring patient satisfaction is considered necessary [8]. Physiotherapy covers many different aspects that affect patient satisfaction, such as patient and therapist interactions and patients' collaboration in physiotherapy compared with the average visit to a doctor. Therefore, the questionnaires that are used in the medical sphere are not appropriate for use in physiotherapy [13]. Also, cultural contexts and socioeconomic status affect satisfaction because, logically, people in different countries and cultures have very different expectations and priorities associated with satisfaction [14].

Each of the several tools that have been developed to measure patient satisfaction in physiotherapy captures various aspects of patient satisfaction [15]. An apparent lack of agreement on the number and context of the factors is present between these different tools [16].

The Physical Therapy Patient Satisfaction Questionnaire (PTPSQ) is one of the instruments with 26 items that measures 5 dimensions (access, administrative-technical management, clinical-technical management, interpersonal management, and continuity of care) [17]. Another tool that was translated into Persian is the Physical Therapy Outpatient Satisfaction Survey (PTOPS) [18]. It has 34 items with 4 subscales of enhancers, detractors, location, and cost, which all demonstrated the different domains [1, 19]. A 14-item questionnaire that was developed by Monnin and Perneger [13] is one of the other tools that was translated into Persian [20]. It assessed three aspects of treatment, admission, and logistics in different clinical settings [13].

There is no universal gold standard tool to measure patient satisfaction in the physical therapy field [21];

thus, the measurement properties assessment of the most commonly used tools is valuable for both researchers and health care providers to choose the best measurement tool [18].

Among the widely used patient satisfaction questionnaires in physical therapy, the MedRisk instrument for Measuring Patient Satisfaction with physical therapy care (MRPS) is one of the widely-used and studied tools on satisfaction with physical therapy care. It consists of 2 factors; one related to external factors, like clinical environment, and the other related to the internal factors such as the patient-therapist interaction [8, 21]. We selected this questionnaire because of its good psychometric properties in assessing the satisfaction of physiotherapy patients, also its easy application and administration [22]. The MRPS has been translated into several languages [22-27]. The original version of the MRPS questionnaire contained 20 items [22]. Another version of the MRPS questionnaire is the 12-item tool which shares some similarities in methodology and content with the original version but also differs in some aspects [22].

Nakhostin Ansari et al. validated the Persian version of 12-item MRPS [21]. In the present study, the 20-item version of the MedRisk instrument was used because it provides the capability to evaluate a broader range of items than the 12-item version [8, 22]. Also, when reviewing the psychometric properties of the Persian version, decisions about what items will remain and what items will be removed are much clearer. In many other studies, the 20-item version has also been used [22, 23, 28, 29].

This study aims to translate and cross-culturally adapt the MedRisk instrument (20-item MRPS) for use in the Iranian population. We also try to provide information regarding the validity and reliability of the Persian version of the MRPS in Iranian-speaking patients receiving physical therapy.

2. Materials and Methods

This study investigates the psychometric properties of the Persian version of the MedRisk instrument.

MedRisk Instrument (MRPS)

Beattie et al. developed the MedRisk instrument in 2005 [16]. MedRisk consists of 18 items on care-related aspects and two items related to global satisfaction [22, 23]. The questions have a Likert-type scale scored from 1 (strongly disagree) to 5 (strongly agree). Items 4, 6, 8, and 13 are negatively-worded to decrease the possibility

94

Abdolalizadeh M, et al. Translation, Reliability Assessment, and Validation of the Persian Version of MedRisk Instrument. JMR. 2021; 15(2):93-104.

of a person scoring equally all of the items, but these items will eventually be recorded as positive. The total score of the questionnaire ranges from 20 to 100. A higher score indicates more satisfaction and vice versa. This questionnaire contains demographic information such as age, sex, and treatment conditions [22].

Study participants

The participants with musculoskeletal disorders, who were over 18 years old and could read and write in the Persian language, completed the scales. Those who had a Mini-Mental State Examination (MMSE) score of less than 23 were excluded from the study [30]. All participants' rights were protected, and all patients signed the consent form. Names and identifying information were not required. The sample size for this study was calculated based on 10 samples for each variable [31]. Therefore, 300 patients referred to the public outpatient centers of physiotherapy in Kerman City, Iran, were selected using a simple non-probability sampling method.

Then, to assess reliability, 40 patients receiving physiotherapy were selected to complete the Persian version of the questionnaire, 5 to 7 days after the first assessment, for a second time [22]. The SPSS v. 24 software was used for statistical analysis.

Ethical approval

This research project was reviewed and approved by the Ethics Committee of the University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

Study procedures

Translation and cross-cultural adaptation

The guidelines for the process of cross-cultural adaptation of self-report measures were used in this study [32]. After obtaining permission from the questionnaire developer, the translation process was performed. To assess linguistic validity using a forward translation method, two fluent translators in Persian and English separately translated the English questionnaire into Persian. Then the translated versions were presented to a group meeting of English language professors and physiotherapists, where they edited and approved the translation. A backward translation from Persian to English was conducted by two translators fluent in Persian and English separately [33]. They were not aware of the original version. These new translations were also presented at a subsequent group meeting of the same English profes-

sors and physiotherapists, and then after editing, the final version was prepared. This translation was then sent to the original questionnaire developer, and he was asked to declare his opinion on it and its conformity with the original version [25].

The developer submitted his corrective suggestions. Finally, in a group meeting with English professors and physiotherapists, required corrections were made to the translated questionnaire. The relevancy of the questions and the consistency of the Persian sentences to the original questionnaire were checked. In the next step, to assess the face validity, 30 subjects were randomly asked for their opinions regarding the questionnaire.

All patients were asked to tell us the meaning of each question in their language. The patients' responses were recorded, and the accuracy of their comprehension was evaluated based on the 10-degree scale ("0" means "I do not understand" and "10" means "I have completely understood"). Scores below 7 were considered conceptually problematic [33]. Two translators whose native language was Persian and who had sufficient experience and proficiency in the translation of English were asked for possible revisions during this process. Since we did not deal with any incomprehensible questions, the Persian version of the MedRisk instrument was prepared without changing the translation of any questions.

Reliability

To test internal consistency, the Cronbach alpha coefficient equal to or higher than 0.7 was considered the acceptable reliability level [22, 34]. To evaluate the relative reliability, the Intraclass Correlation Coefficient (ICC) was used. The different values of the ICC were interpreted as follows: values less than 0.40 were considered low reliability, values ranging from 0.41 to 0.75 had moderate reliability, and values ranging from 0.75 to 0.90 had good reliability with values greater than 0.90 had excellent reliability [22, 35].

To measure absolute reliability, Standard Error of Measurement (SEM), Minimal Detectable Changes (MDC), and Coefficient of Variation (CV) indices were calculated. SEM shows the error rate of the instrument [36, 37]. The SEM was calculated by using the Equation SD $\sqrt{(1-ICC}$ [24]. The MDC represents the minimum change in the test between the test and the retest. It was necessary to remove the marginal errors with a predefined confidence level [22, 38]. The MDC was calculated using 1.96 SEM $\sqrt{2}$, and CV was calculated using $\frac{SD}{\mu}$ [38].

Abdolalizadeh M, et al. Translation, Reliability Assessment, and Validation of the Persian Version of MedRisk Instrument. JMR. 2021; 15(2):93-104.

95

Validity

To assess the validity of the scores of the Persian version of the MedRisk questionnaire, a sample of 297 Iranian physiotherapy patients completed the questionnaire.

Factor structure

Exploratory factor analysis based on the principal components analysis with varimax rotation was performed on the 18 items of the MedRisk Instrument. The eigenvalues greater than 1 were used for factorial analysis [22]. Those items that rotated the load factor matrix over 0.60 in one factor and less than 0.40 in other factors were retained [25, 39]. The Cronbach alpha was calculated for each factor.

Divergent validity

Patients also completed the Visual Analog Scale (VAS) in a range of 0 to 10, as well as a 9-point (1-9) Global Rating of Change (GRC) for divergent validity. The Pearson correlation coefficients were investigated between the Persian MedRisk score with VAS score and GRC. Values of the correlation coefficient of ≥ 0.70 were very strong; between 0.50 and 0.69 strong; between 0.30 and 0.49 moderate; between 0.10 and 0.29 weak; and between 0.01–0.09 means no or negligible relationship [40].

Convergent validity

The correlations (Pearson r) between 18 individual items and each of the two items of this instrument about global measures of patient›s satisfaction were investigated for convergent validity. The correlation coefficients were interpreted as follows: The values of 0 to 0.20 were considered low correlations, the values between 0.20 and 0.40, moderate correlation; the values of 0.41 to 0.61, good correlation, and the values greater than 0.80 excellent correlations [34].

Ceiling and floor effects

The ceiling and floor effects were also evaluated by calculating the percentage of patients who had the maximum and minimum scores on the questionnaire, respectively. If this percentage was more than 15% at a maximum or a minimum score, it was respectively considered ceiling or floor effect [38].

Comparing demographic characteristics in relation to patient satisfaction

Demographic data such as age, sex, weight, duration of the disease, the length of time to reach the physiotherapy clinic, employment status, treatment area, education level, and health center were collected. Considering that having cognitive problems was one of our exclusion criteria, the MMSE was used to examine this issue [41-43].

3. Results

Frequency distributions of qualitative and quantitative variables are presented in Table 1 and Table 2. The MedRisk forms contained missing question responses that were removed from the statistical analysis [25]. The participants in this study included 297 patients with musculoskeletal problems who were referred to public physiotherapy centers in Kerman City, Iran. The opinions of the 30 participants who were randomly selected to examine face validity were reviewed [44]. After reviewing the responses, we did not deal with any questions that were not comprehensible. Therefore, without changing the original meanings, the Persian translation of this questionnaire was prepared.

Summary of item responses

Of the total subjects, 249 (83.83%) had scores of 70 and above. The distribution of individual items is presented in Table 3. For reasons such as changing the patient's health condition, incomplete filling out of the questionnaire, and changing the patient's opinion when re-filling out the questionnaire, eventually, 40 patients participated in the retest. The Mean±SD of the total MedRisk score in the test and retest were 79.300±8.73 and 76.67±10.09, respectively. According to the central limited theorem, since the sample size is over 30, the sampling distribution is considered approximately normal; thus, we used parametric tests in this study.

Reliability

The Cronbach alpha coefficient for the overall score of the Persian MedRisk was 0.82. The ICC for a MedRisk total score was 0.76, and for the items ranged between 0.7 and 0.81. The SEM, MDC, and CV were 0.63, 1.76, and 0.13, respectively, for the total score. SEM scores ranged between 0.34 and 0.98 for individual items, and MDC scores varied between 0.65 and 2.74 for individual items.

Factor structure

In factor analysis, a 4-factor solution emerged. The total variance of factors was 64.91%. The first factor was the therapist's interaction, which included items 9, 10, 11, 12, 14, 15, and 18 (25.91% variance). The second factor was the organization that included items 4, 6, 7, 8, and 13 (17.78% of variance). The third factor was the facilities and included items 3, 5, 16, and 17 (12.44% of variance). The fourth factor was the registration process

Table 1. Characteristics of the study participants (qualitative variables) (N=297)

Variables		No. (%)	Missing No. (%)
Sex	Men	129 (43.4)	7 (2.4)
	Women	161 (54.2)	
Employment status	Employed	137 (46.1)	17 (5.7)
	Unemployed	5 (1.7)	
	Housekeeper	102 (34.3)	
	Student	11 (3.7)	
	Retired	25 (8.4)	
Education status	Undergradguate	102 (35)	3 (1)
	Diploma	105 (36)	
	University educated	87 30 ()	
Location of Symptoms	Neck	36 (12.1)	15 (5.1)
	Back	76 (25.6)	
	Arm	16 (5.4)	
	Foot	56 (18.9)	
	Ankle	19 (6.4)	
	Hand/wrist	23 (7.7)	
	Knee	40 (13.5)	
	Other	16 (5.4)	
Time in the clinic	<15 min	104 (35)	7 (2.4)
	16 to 30 min	147 (49.5)	
	31 to 60 min	28 (9.4)	
	>60 min	11 (3.7)	

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and included items 1 and 2 (8.76% of variance) (Table 4). The Cronbach alpha coefficients for these factors were 0.87, 0.16, 0.63, and 0.75, respectively.

Divergent validity

The Pearson correlation coefficients between the Persian MedRisk score with VAS score and GRC were estimated at -0.18 (P=0.002) and -0.19 (P=0.001), respectively. The results of this analysis indicate a significantly negative and low correlation. It was determined that higher scores on the MedRisk scale are correlated

with lower pain scores and better patient health conditions and vice versa for lower scores.

Convergent validity

The Pearson correlations between the global satisfaction and individual items were significantly positive and about moderate to good. Overall, these correlations were not strong. Items 10, 11, 12, 14, 15, and 18 (related to therapist›s interactions and patient›s satisfaction factor) and 16 and 17 (related to facility factor) correlated pretty well with global satisfaction (Table 5).

Abdolalizadeh M, et al. Translation, Reliability Assessment, and Validation of the Persian Version of MedRisk Instrument. JMR. 2021; 15(2):93-104.

97

Table 2. Characteristics of the study participants (quantitative variables) (N=297)

Variables	Mean±SD	Median	Minimum	Maximum
Age (y)	38.75±14.62	36.00	18	80
Weight (kg)	73.66±15.74	72.00	40	175
Duration of illness (mo)	27.98±60.89	4.00	1	480
VAS	4.03±1.34	4.00	0	7
MMES	29.39±2.10	30.00	24	60
Score of MedRisk	78.97±10.65	80.00	33	100
GRC	2.88±1.11	3.00	0	9

VAS: Visual Analog Scale; MMES: Mini-Mental State Examination; GRC: Global Rating of Change

JMR

Ceiling and Floor Effects

In studying the floor and ceiling effects, the results showed that items 5 and 7 had a floor effect, and all other items except items 4, 5, and 7 had a ceiling effect. The total score of the scale had no floor and ceiling effects.

Comparing demographic characteristics in relation to patient's satisfaction

The Pearson correlation coefficient between total MedRisk score and age and also the duration of disease showed a low negative significant correlation between MedRisk score and these variables, which are as follows: -0.16 (P=0.008), -0.17 (P=0.004) respectively. The Independent Samples t test showed that the mean score of MedRisk was not significantly different between men and women.

4. Discussion

This study aimed to assess the cross-cultural adaptation and translation of the MedRisk instrument (20-item MRPS) into Persian. In the present study, 83.83% of the subjects received a score of 70 or higher from the MedRisk instrument (mean score was 78.97), indicating that the majority of patients were satisfied or were very satisfied with physiotherapy services. These results are consistent with other studies [9, 22].

Reliability

At first, face validity was achieved. The Cronbach alpha coefficient showed that this questionnaire had an acceptable internal consistency (the Cronbach alpha=0.82). The Cronbach alpha coefficient of the questionnaire factors (except the second factor) had satisfactory internal consistency. Since the Cronbach alpha of the second factor was

low, it is suggested that these questions be used cautiously. These study results are consistent with the previous studies that high alpha values demonstrate internal consistency [9, 21, 22, 25, 27, 29]. It is also consistent with the results of the internal consistency of the 12-item version of MedRisk [16, 21]. Ultimately, it can be said that the Persian version of MedRisk is consistent with the original version that high alpha values demonstrate internal consistency [16].

Regarding the reliability assessment (ICC=0.76, SEM=0.63, MDC=1.76 and CV=0.13), they are consistent with the results from the reliability assessment of the Turkish version (ICC=0.67-0.97, SEM=0.34-2.61, MDC=0.48-1.34) [27], and the Brazilian Portuguese version, (ICC=0.64-0.79, SEM=0.86-1.75) [22]. In a study in chiropractic care, SEM values for the internal and external factors were 0.20 and 0.17, respectively [9], and in the assessment of the Spanish-language version, those values were 0.16 and 0.25, respectively [25]. In the study of the 12-item Persian MRPS, the smallest detectable change was between 2.7 and 5.93, and the SEM was between 0.97 and 2.14 [21].

Our study concludes that the 20-item Persian version of the MedRisk instrument has acceptable relative reliability according to the ICC value. Low SEM values supported the individual-level reliability suggesting a low degree of error in measurement consistent with previous studies. The MDC value shows how much the minimum change in tests and retests should be considered a real change and acceptable. The findings of our study are consistent with the Turkish version [27].

Factor structure

In the current study, exploratory factor analysis was revealed a 4-factor model with a total variance of 64.89%.

Table 3. Distribution of individual items (N=297)

Individual Items	NO. (%)				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The office receptionist was courteous.	1 (0.3)	-	3 (1.0)	108 (36.4)	182 (61.3)
The registration process was appropriate.	7 (2.4)	-	12 (4.0)	122 (41.1)	151 (50.8)
The waiting area was comfortable (lighting, temperature, furnishings).	1 (0.3)	19 (6.4)	24 (8.1)	153 (51.5)	93 (31.3)
The office location was not convenient.	21 (7.1)	55 (18.5)	42 (14.1)	123 (41.4)	42 (14.1)
This office provided a convenient parking lot.	63 (21.2)	51 (17.2)	70 (23.6)	43 (14.5)	29 (9.8)
I waited too long to see my therapist.	13 (4.4)	24 (8.1)	27 (9.1)	123 (41.4)	93 (31.3)
The office hours were convenient for me.	74 (24.9)	127 (42.8)	23 (7.7)	41 (31.8)	21 (7.1)
My therapist did not spend enough time with me.	14 (4.7)	20 (6.7)	14 (4.7)	125 (42.1)	116 (39.1)
My therapist thoroughly explained the treatment(s) I received.	4 (1.3)	20 (6.7)	15 (5.1)	105 (35.4)	146 (49.2)
My therapist treated me respectfully.	-	1 (0.3)	-	97 (32.7)	196 (66.0)
The office staff was respectful.	-	-	2 (2.0)	114 (38.4)	173 (58.2)
The therapist's assistant/aide was respectful.	1 (0.3)	-	8 (2.7)	111 (37.4)	161 (54.2)
My therapist did not listen to my concerns.	14 (4.7)	12 (4.0)	39 (13.1)	123 (41.4)	93 (31.3)
My therapist answered all my questions.	1 (0.3)	3 (1.0)	13 (4.4)	120 (40.4)	148 (49.8)
My therapist advised me on ways to avoid future problems.	-	8 (2.7)	14 (4.7)	117 (39.4)	144 (48.5)
The office and its facilities were clean.	2 (0.7)	6 (2.0)	17 (5.7)	155 (52.2)	11 (37.4)
The office used up-to-date equipment.	2 (0.7)	14 (4.7)	61 (20.5)	132 (44.4)	77 (25.9)
My therapist gave me detailed instructions regarding my home program.	1 (0.3)	10 (3.4)	14 (4.7)	122 (41.4)	140 (47.1)
Overall, I am completely satisfied with the services I received.	-	2 (0.7)	6 (2.0)	133 (44.8)	151 (50.8)
I would return to this office for future care.	-	3 (1.0)	28 (9.4)	126 (42.4)	133 (44.8)

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The Cronbach's alpha of these 4 factors illustrates good internal consistency (except the second factor).

In terms of the factor structure, the distribution of the observed changes (more than 50% variance) indicates the acceptable validity of the questionnaire's structure. These findings have similarities to some previous studies [22, 23, 28, 29]. In our research, the factorial analysis determined that the 4-factor model included one dimension related to an internal factor (therapist's interaction) and 3 dimensions related to external factors (organization, facility, registration process). So there was no need for item reduction. Consequently, the Persian version of the MedRisk has 20 items (18 individual items and 2 global measures of satisfaction), with a total score ranging from 20 to 100. In terms of the factor structure, our findings are different from the Brazilian version [22], the Turkish version, the Beattie's studies [9, 27], and the 12-item Persian MRPS [21]. These differences suggest that factor analysis depends on the unique characteristics of the studied community and the factor structure of each instrument depends on the cultural differences between each country, while it is also influenced by how the terms are expressed. Therefore, the factor structure of each questionnaire may vary differently across different populations and countries [16, 22]. Understanding the main factors which provide higher patient satisfaction is essential to health care providers. It helps them incor-

Abdolalizadeh M, et al. Translation, Reliability Assessment, and Validation of the Persian Version of MedRisk Instrument. JMR. 2021; 15(2):93-104.

99

Table 4. Principal component analysis of the Persian version of MedRisk instrument (297 subjects)

Individual Items	Component			
	Factor 1 (Therapist's Interaction)	Factor 2 (Organization)	Factor 3 (Facility)	Factor 4 (Registration Process)
The office receptionist was courteous.	0.257	0.195	0.119	**0.826**
The registration process was appropriate.	0.313	0.158	0.237	**0.779**
The waiting area was comfortable (lighting, temperature, furnishings).	0.262	0.094	**0.728**	0.042
The office location was not convenient.	0.041	**0.725**	0.100	-0.046
This office provided a convenient parking lot.	-0.097	-0.139	**0.614**	0.203
I waited too long to see my therapist.	0.073	**0.829**	-0.025	0.095
The office hours were convenient for me.	-0.042	**-0.848**	0.005	-0.130
My therapist did not spend enough time with me.	0.099	**0.778**	0.029	0.166
My therapist thoroughly explained the treatment(s) I received.	**0.644**	0.084	0.200	0.150
My therapist treated me respectfully.	**0.806**	0.126	0.015	0.137
The office staff was respectful.	**0.811**	0.146	0.107	0.137
The therapist's assistant/aide was respectful.	**0.797**	0.084	0.010	-0.010
My therapist did not listen to my concerns.	0.284	**0.696**	-0.041	0.064
My therapist answered all my questions.	**0.765**	0.138	0.320	0.110
My therapist advised me on ways to avoid future problems.	**0.722**	0.070	0.238	0.183
The office and its facilities were clean.	0.459	0.056	**0.675**	-0.042
The office used up-to-date equipment.	0.331	0.084	**0.724**	0.160
My therapist gave me detailed instructions regarding my home program.	**0.734**	0.065	0.224	0.235
Varince of component (%)	25.914	17.787	12.445	8.767
Cumulative variance (%)	64.91			

The significant component for each factor is highlighted in bold font.

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porate those into their health services to obtain the best clinical outcomes [15].

Divergent validity

The relationships between the total MedRisk score and VAS (r=-0.18, P=0.002) and GRC (r=-0.19, P=0.001) were significantly low negative correlations. In the study by Medeiros et al., the relationship between MedRisk and Global Perceived Effect (GPE) was moderate (r=-0.31, P<0.001) [36], while in the study by Oliveira, this relation was low and negative [22]. In a Hush study about the intercultural comparison of patient satisfaction with physiotherapy services in Korea and Australia,

there was no significant relationship between the factors obtained from the questionnaire and the GRC [23]. In another study, the relationship between satisfaction and the GRC was low (r=-0.22) [24]. In a study about the relationship between the global rating of change and the patient's satisfaction with physical therapy services, a significant negative relationship between patient's satisfaction and GRC was obtained, and the relationship between the factors of MedRisk score and GRC was low to moderate (-0.18 to -0.30) [45].

In our study, similar to other studies, significant negative correlations were observed between care satisfaction measured by the MedRisk instrument and the satisfaction

Table 5. Pearson correlation coefficients (P-value) between the individual items with Global Satisfaction Items (N=297)

Individual Items	Overall, I Am Completely Satisfied With The Services I Received	I Would Return to This Office for Future Care
The office receptionist was courteous.	0.38 (0.000)	0.33 (0.000)
The registration process was appropriate.	0.43 (0.000)	0.36 (0.000)
The waiting area was comfortable (lighting, temperature, furnishings).	0.48 (0.000)	0.38 (0.000)
The office location was not convenient.	0.15 (0.010)	0.19 (0.001)
This office provided a convenient parking lot.	0.18 (0.002)	0.17 (0.006)
I waited too long to see my therapist.	0.20 (0.001)	0.21 (0.000)
The office hours were convenient for me.	0.15 (0.009)	-0.18 (0.002)
My therapist did not spend enough time with me.	0.27 (0.000)	0.20 (0.000)
My therapist thoroughly explained the treatment(s) I received.	0.54 (0.000)	0.46 (0.000)
My therapist treated me respectfully.	0.54 (0.000)	0.52 (0.000)
The office staff was respectful.	0.60 (0.000)	0.56 (0.000)
The therapist's assistant/aide was respectful.	0.57 (0.000)	0.49 (0.000)
My therapist did not listen to my concerns.	0.28 (0.000)	0.22 (0.000)
My therapist answered all my questions.	0.56 (0.000)	0.60 (0.000)
My therapist advised me on ways to avoid future problems.	0.63 (0.000)	0.51 (0.000)
The office and its facilities were clean.	0.56 (0.000)	0.50 (0.000)
The office used up-to-date equipment.	0.55 (0.000)	0.49 (0.000)
My therapist gave me detailed instructions regarding my home program.	0.65 (0.000)	0.59 (0.000)

JMR

of the treatment outcomes that were measured by the GRC variable, thereby demonstrating the possibility of discriminant validity with this structure. Due to the low magnitude of the correlation, patient's satisfaction with healthcare services is different from satisfaction with the outcomes.

This finding is consistent with other studies that applied the MedRisk, and that also showed a low correlation between GRC and the satisfaction items [22, 36]. In terms of concept, care satisfaction refers to the patient's services during treatment, whereas satisfaction with the outcomes relates to the treatment effects on the patient's health. Although these two concepts are potentially interrelated and relevant, they should be considered separately using appropriate tools [16].

Convergent validity

Considering the correlation coefficients between the individual items of MedRisk and global satisfaction, construct validity was established respecting both the magnitude and the direction of the correlation. Some individual items of MedRisk related to the factor of the therapist's interaction, such as "Instructions for the home program" and "advice to avoid future problems" and the "office staff's respectful", were more correlated to global satisfaction.

Overall, these issues did not have strong correlations. In a study in the Turkish population and other studies [8, 17, 21, 27], the patient–physical therapist relationship is more important for satisfaction. In other studies [9, 16, 22, 24-26], the relations between individual items or factors of MedRisk and global satisfaction were examined. They obtained rather moderate to good correlations. Consequently, our results are consistent with other studies.

Abdolalizadeh M, et al. Translation, Reliability Assessment, and Validation of the Persian Version of MedRisk Instrument. JMR. 2021; 15(2):93-104.

101

Ceiling and floor effects

In the current study, the MedRisk score had no floor effect. Items on the questionnaire, except items 4, 5, and 7, had a ceiling effect like 12-item Persian MRPS [21]. In the measurement properties of the Brazilian Portuguese version, the ceiling effect was not indicated, but the total score of 58.10% of subjects was 60 or above [22]. By contrast, in the Turkish version study, no floor or ceiling effects were reported [27]. Our study reported a ceiling effect of a high level. Ceiling effects can be as capable as this instrument in distinguishing satisfied patients from dissatisfied patients [22].

Comparing demographic characteristics in relation to patient's satisfaction

The present study analyzed several factors that can influence satisfaction. Our results showed that whenever the MedRisk scores increased, age and duration of disease decreased. Also, the mean MedRisk score showed no significant difference between men and women. In the study by Medeiros, satisfaction was different between men and women. Men had a higher level of satisfaction [36]. In the Korean-Language version study, the sex difference was only seen on the last factor of these tools (clinic presentation), and in men, the clinical presentation was significantly higher [28]. In the Turkish population, sex was not an essential factor for satisfaction level [27]. In our study, sex did not have any influence on satisfaction, but age influenced satisfaction.

5. Conclusion

The Persian version of 20-item MRPS has acceptable psychometric properties to assess the patients' satisfaction from physiotherapy. It can be considered a valid tool and can be suggested for various medical, clinical, and research fields.

Research limitations

Considering that patients with musculoskeletal problems participated in this study, the generalization to other patients needs more review. Also, the present study was conducted in public clinics, and so studies in private clinics are suggested. Given that the study population was relatively young, it is also recommended that a similar study be conducted on older people, too.

Ethical Considerations

Compliance with ethical guidelines

This research project was reviewed and approved by the Ethics Committee of the University of Social Welfare and Rehabilitation Sciences. All participants' rights were observed, and all patients signed an informed consent form.

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103

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