

VALIDITY AND RELIABILITY OF ARABIC-LANGUAGE VERSION OF MEDRISK QUESTIONNAIRE IN ASSESSING PATIENT SATISFACTION WITH PHYSIOTHERAPY SERVICES FOR LOW BACK PAIN

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ABSTRACT

Background: Patient satisfaction can be one indicator of quality of care. Patient satisfaction continues to receive attention as a measure of the outcome of physical therapy intervention. Quality of care continues to be a major concern for health care providers and a major focus for health services research. Equally important is the satisfaction of patients because they expect value for their money, time and effort to attend for treatment. **Aim:** To test face validity, content validity, factor analysis, feasibility, internal consistency reliability, and test retest reliability of Arabic-language version of MedRisk questionnaire. **Subjects:** Three hundred participants from both sexes with LBP (mechanical or discogenic) were recruited, their age ranged from 18-60 years. **Methods:** A cross-sectional study assessed patient's satisfaction by Arabic-language version of MedRisk Questionnaire. **Results:** Face validity was 74.17% in the 1st expert panel and 97.5% in the 2nd expert panel. The content validity was excellent (97.5%) according to experts' opinions. The questionnaire was found to have a single factorial structure constitutes 61.1% of the total variance. Internal consistency reliability was measured by Cronbach α . The Cronbach α was decreased from 0.939 to 0.937. The Arabic version of the MedRisk questionnaire has high test-retest results and needed an average 5.33 minutes (SD \pm 1.04) to be answered. There was no significant in floor or ceiling effects. **Conclusion:** The Arabic version of MRPS is short, easy-to-apply, need short time to complete and comprehensive scale. So it may be considered as a preferable scale for clinical assessment of Arabic speaking patients with low back pain.

Keywords: Validity, Reliability, Arabic version of MedRisk questionnaire, Patient satisfaction, Physical therapy services, Low back pain.

I-INTRODUCTION

Low back pain (LBP) is a public health problem worldwide. It is a common cause of work related disorder among health care workers, especially in the nursing profession [1]. Low back pain is considered chronic when it persists for 12 weeks or more. It is generally accepted that only a minority of patients report persistent pain after an acute episode [2]. It has a prevalence of 60-85% during an individual's lifetime. Most cases (90%) are nonspecific and occur in all age groups [3].

LBP results also from occupational ergonomic factors related to heavy physical work, repetitive actions due to occupational requirements [4]; as well as sports activities or sports-related injuries [5]; sedentary lifestyle, prolonged sitting or inactivity and lack of exercises [6]; post operation or surgery-induced [7]; poor trunk control and postural impairment [8]; psychosocial and behavior-related factors from smoking, alcohol abuse, obesity, depression and stress [9]; socio-economic factors [10]; and ageing [11].

Physiotherapeutic interventions within multimodal treatment programs are recommended in rehabilitation of subacute and chronic LBP. Thereby, the aims are to analyze strength, flexibility, coordination and endurance as well as to restore physical function and activity [12].

Patient satisfaction in relation to health care can be defined as “an experience of an individual receiving examination and treatment in a given environment during a specific time period.” [13]. For example, there are several questionnaires related to patient satisfaction that are specific to certain conditions such as cancer [14]; likewise, there are satisfaction questionnaires in the fields of nursing [15].

Patient satisfaction is positively correlated with convenient treatment outcome and patient therapist interactions, leading to the patient or their family members seeking additional care at the same facility when required, and also complying with advice provided by the therapist [16]. Satisfaction is influenced by patient characteristics including age, sex, education, work status, race, number of previous treatments, and the duration of the illness [17].

A new instrument, MRPS (MedRisk instrument for measuring Patient Satisfaction), was developed to investigate the variables associated with the global satisfaction of patients receiving physiotherapy care for musculoskeletal conditions in public or private sectors. This instrument was previously translated and transculturally adapted into Brazilian Portuguese and has already been used in some countries such as the United States of America and Australia, facilitating possible international comparisons [18]. The English version was tested for measurement properties and was reduced to 12 items, which were represented by 2 factors, internal and external [19].

After the application of a patient satisfaction questionnaire, it is possible to map the levels of patient satisfaction with the service provided. This action can be useful for planning new strategies of management and marketing, which may improve the overall care patients receive [20].

- **Purpose of the study:**

To test face validity, content validity, factor analysis, feasibility, internal consistency reliability, and test retest reliability of Arabic-language version of MedRisk questionnaire.

II- MATERIALS & METHODS

The study population included all the adult patients receiving physiotherapy at the out clinics for their LBP in selected hospitals in Dakahlia Governorate.

- **Design of the study:** Quantitative research method (cross-sectional study).

I. Participant: 300 patients from both sexes were recruited from 18 public hospitals at Dakahlia Governorate. Their age ranged from 18-60 years. Participants with (mechanical or discogenic) low back pain at any stage. Exclusion Criteria: Patients with history of bone disease, renal, liver or endocrinal disorders and history of serious pathologies like tumors, tuberculosis were excluded.

All patients were given a full explanation of the protocol of the study and each patient signed a consent form before participation in the study.

II. Instruments:

1- Informed consent form.

It is a process for getting permission before conducting a healthcare intervention on a person, or for disclosing personal information. A health care provider may ask a patient to consent to receive therapy before providing it, or a clinical researcher may ask a research participant before enrolling that person into a clinical trial. Informed consent is collected according to guidelines from the fields of medical ethics and research ethics.

2- MedRisk Questionnaire

The MedRisk instrument for measuring patient satisfaction with physical therapy care (MRPS) was developed specifically for measuring satisfaction in patients who are receiving physical therapy care [21] and it had a good reliability (Cronbach alpha=0.83).

III. Procedures of the study:

1- Informed consent form.

During the process of informed consent, all elements of the Consent Form should be carefully, patiently, and clearly explained to the participants. In addition, we frequently assess the prospective subject's understanding by asking appropriate questions. In addition, data on patients' demographics (age, gender, educational status, occupation) and clinical characteristics (treatment type and duration, pain, recovery) were also collected.

2- Translation of MedRisk questionnaire into Arabic.

MedRisk is a tool developed in English language in the United States specifically to measure satisfaction in patients who have received physiotherapy care [18]. An international collaboration of researchers, supported by the World Confederation of Physiotherapy, has conducted a series of studies aimed at developing versions of the MRPS questionnaire in different languages (German, Mandarin, Arabic, Norwegian, Korean, Indonesian and Brazilian Portuguese) [21]. The patients' satisfaction questionnaire has been translated into Arabic by Arabic language teachers and bilingual staff members of physical therapy department at King Abdul-Aziz University [22]. The MedRisk questionnaire translation and cross-cultural adaptation into Arabic version were done according to the most recent and comprehensive guidelines of Borsa et al. [23] and Sousa and Rojjanasrirat [24].

3- Investigate the validity and reliability of Arabic version of MedRisk questionnaire.

This instrument had the advantage of being succinct and easy to graduate, and provided measurements with evidence of reliability and validity [25]. Questionnaires must be translated, then culturally adapted to our environment in which we will be used. In addition, evaluation of questionnaire psychometric properties should be done to ensure that this tool has the original version characteristics, validity, and reliability [26]. Creation of questionnaires in Arabic language must pass through many steps to translate, culturally adapt, validate, and test the reliability of the MRPS Arabic version.

• **Step 1: Forward translation**

Arabic language translation of MedRisk Questionnaire English scale was done by two independent native Arabic language translators and resulted into two forward-translated versions of the scale (A1 and A2). One translator was knowledgeable about health terminology and the content area of the construct of the tool in the Arabic, and the other translator was knowledgeable about the cultural and linguistic nuances of the Arabic language.

• **Step 2: Synthesis of Versions A1 and A2 into A1, 2**

A1 and A2 versions were compared and merged by the researchers and research committee of basic science for physical therapy. Some of the faculty members at the faculty of physical therapy were asked for help in resolving ambiguities and discrepancies. This stage led to the development of the preliminary initial translated Arabic version (A1, 2).

• **Step 3: Blind back translation**

The preliminary initial translated Arabic version (A1, 2) of the scale was translated into English to produce two back-translated versions (B1 and B2). Two translators independently participated in the back translation, and they were blinded to the original English version of the MedRisk Questionnaire during this process. The two translators had distinct backgrounds; one translator was knowledgeable about health terminology and the content area of the construct of the tool in the English, and the other translator was knowledgeable about the cultural and linguistic nuances of the English.

• **Step 4: Expert committee**

The committee consisted of researchers, health professionals, translators, and a language professional. The committee compared back translation of the scale B1 with B2, and also compared both B1 and B2 with the original English scale regarding instructions, items, response format, wording, sentence structure, meaning, and relevance. The committee reviewed all the translations (A1 and A2, A1, 2, B1 and B2) and the written report comparing the back translations with the forward-translation A1,2. Based on those translations, the preliminary initial translated Arabic version was considered to be the prefinal Arabic version of the scale.

- **Step 5: Face and content validity**

Three expert panels tested the prefinal Arabic version of the scale for face and content validity. The first expert panel (10 experts) were asked to evaluate each item of the tool for clarity (face validity) and provide suggestions to improve its clarity; dichotomous questions (clear/unclear) is used. According to the suggestions of the first expert panel, slight changes had been made to improve the clarity index to the minimum acceptable value 80%; [23] so that it can be given to the patients. Then the second expert panel reassessed the clarity of modified prefinal Arabic version of the scale. Then the third expert panel (10 experts) was asked to evaluate each item of the modified prefinal Arabic version of the scale for content equivalence (content-related validity) using the following scale: 1 = not relevant; 2 = unable to assess relevance; 3 = relevant but needs minor alteration; 4 = very relevant and succinct and give suggestions to improve its relevance (1 and 2 considered not relevant, 3 and 4 considered relevant). After the modified prefinal version passed expert face and content validity tests, it was named the final version.

- **Step 6: Full psychometric testing**

To establish the initial full psychometric properties of the newly translated, adapted, and cross-validated Arabic version of MedRisk Questionnaire, 300 patients of LBP participated in this study. Patients filled out the Arabic version of MedRisk Questionnaire [27].

- **Data Analysis:**

1. Statistical analysis was performed using SPSS software for Windows, version 22.0 (Chicago, IL, USA).
2. Continuous variables were shown by mean and standard deviation and the categories are demonstrated in frequency and percentage.
3. Feasibility of the MedRisk questionnaire was evaluated by the assessment of the frequency of missing answers per item and administration time.
4. Face validity and content validity were assessed descriptively. The content validity was measured by item content validity index (I-CVI) and scale content validity indices (S-CVI/Ave and S-CVI/UA).
5. Construct validity was assessed by factor analysis and external construct validity.
6. Kaiser Meyer Olkin and Bartlett's tests were used before factor analysis to determine the adequacy and the suitability of the sample.
7. Test-retest and internal consistency analyses were performed to determine the reliability of the MedRisk questionnaire.
8. The internal consistency measures the degree to which items making up the total score are all measuring the same underlying construct. The internal consistency was assessed using Cronbach α and the value was considered excellent for above 0.80 [28].
9. Test-retest reliability of the MedRisk questionnaire was evaluated using the two-way mixed Intra-class Correlation Coefficient (ICC) with 95% confidence intervals (95% CI) Values of ≥ 0.8 were considered as a high level of correlation [29].

III- RESULTS

- **Subjects characteristics:**

300 patients with low back pain, their age ranged from 18 to 60 years (40.5 ± 8.8 years) with 168 males (56%) and 132 females (44%) subjects.

1. **Validity of Arabic-language version of MedRisk questionnaire.**

- Face Validity

Two expert panels participated to test the face validity of Arabic-language version of MedRisk questionnaire. The first expert panel consisted of ten experts with mean experience (15.6 ± 4.5) years, one of them is master's degree and nine of them are PhD holders. The second expert panel consisted of ten experts with mean experience (17.3 ± 3.6) years, two of them are master's degree and eight of them are PhD holders. According to 1st expert panel opinion, the

clarity index for all twelve items was 74.17%, where clarity index was 60% for 2 items, 70% for 4 items, 80% for 5 items, and 90% for 1 item. The modifications from the first experts' panel were applied to the Arabic version of MedRisk questionnaire and sent to the second expert committee (2nd panel). According to 2nd expert panel opinion, the clarity index for all twelve items was 97.5%, where clarity index was 90% for 3 items and 100% (clear) for 9 items as shown in table 1.

Table 1. Item clarity index of the final version by the 1st and 2nd expert panels.

Items	1 st expert panel		2 nd expert panel	
	# of experts agree	Clarity index	# of experts agree	Clarity index
Item 1	7	70%	10	100%
Item 2	8	80%	9	90%
Item 3	7	70%	10	100%
Item 4	8	80%	10	100%
Item 5	7	70%	10	100%
Item 6	6	60%	9	90%
Item 7	8	80%	10	100%
Item 8	7	70%	10	100%
Item 9	9	90%	10	100%
Item 10	8	80%	10	100%
Item 11	6	60%	9	90%
Item 12	8	80%	10	100%
Mean		74.17%		97.5%

▪ Content Validity.

The third expert panel measured the content validity of the Arabic-language version of MedRisk questionnaire. The third expert panel consisted of ten experts with mean experience (16.6±5.2) years, one of them is master's degree and nine of them are PhD holders. Content Validity index (I-ICV) were 100% for all items except items 1 and 3 (90%). Also, the mean scale CVI (S-CVI/Ave) of all items was 98.33%, the scale validity index universal agreement (S-CVI/UA) was 83.33%, and the mean expert proportion was 98.4%. So, the content validity of the Arabic version of MedRisk questionnaire was excellent (97.5%) according to experts' opinions as shown in table 2.

Table 2. Content validity of the final version by the 3rd expert panels.

Items	No of experts agree	I-CVI
Item 1	9	90%
Item 2	10	100%
Item 3	9	90%
Item 4	10	100%
Item 5	10	100%
Item 6	10	100%
Item 7	10	100%
Item 8	10	100%
Item 9	10	100%
Item 10	10	100%
Item 11	10	100%
Item 12	10	100%
Mean	Mean experts' proportions=98.4%	S-CVI/AV= 98.33%

▪ Construct Validity

The construct validity of the Arabic language version of MedRisk questionnaire was done with factor analysis of the questionnaire. The sample size was suitable and adequate for factor analysis according to Kaiser Meyer Olkin and Bartlett tests where Kaiser Meyer Olkin test= 0.937, $X^2(66)= 22703.203$ and $P < 0.0001$ as shown in table 3. The questionnaire was found to have a single factorial structure by Scree Plot graph (Fig.1) and according to the total variance analysis; the single factor of Arabic language version of MedRisk questionnaire constitutes 61.1% of the total variance which also supports a single factorial structure as in table 4.

Table 3. Kaiser Meyer Olkin and Bartlett Measure of Sampling Adequacy.

Kaiser Meyer Olkin Test	Bartlett's Test		
	Chi-square	df	P
0.937	22703.203	66	< 0.0001

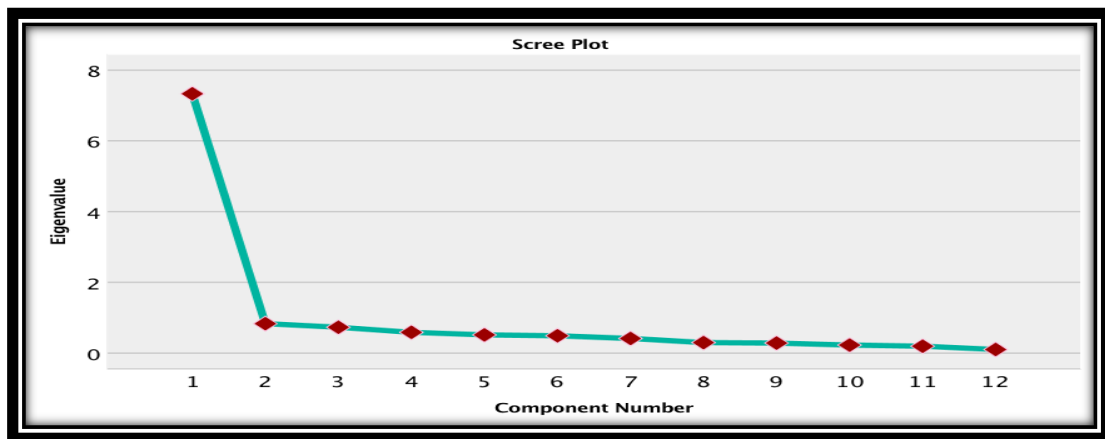


Figure 1. Screen plot graph of the Arabic version of the MedRisk questionnaire.

Table 4. Total Variance Analysis of Arabic version of MedRisk questionnaire.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.332	61.103	61.103	7.332	61.103	61.103
2	0.832	6.933	68.036			
3	0.730	6.081	74.117			
4	0.587	4.892	79.009			
5	0.514	4.287	83.296			
6	0.489	4.077	87.373			
7	0.413	3.441	90.814			
8	0.297	2.472	93.286			
9	0.283	2.358	95.644			
10	0.227	1.888	97.532			
11	0.194	1.620	99.153			
12	0.102	0.847	100.00			

2. Reliability of Arabic-language version of MedRisk questionnaire.

▪ *Internal consistency Reliability*

The internal consistency for the Arabic version of the MedRisk questionnaire was measured by Cronbach α . The Cronbach α was 0.939 for first measurement total scores and the values of Cronbach α if the items or questions excluded were 0.937 for item 1, 0.936 for item 2, 0.935 for item 3, 0.935 for item 4, 0.937 for item 5, 0.936 for item 6, 0.931 for item 7, 0.932 for item 8, 0.931 for item 9, 0.933 for item 10, 0.929 for item 11, and 0.928 for item 12. The Cronbach α was 0.937 for second measurement total scores and the values of Cronbach α if the items or questions excluded were 0.935 for item 1, 0.936 for item 2, 0.934 for item 3, 0.934 for item 4, 0.933 for item 5, 0.934 for item 6, 0.930 for item 7, 0.933 for item 8, 0.930 for item 9, 0.930 for item 10, 0.926 for item 11, and 0.927 for item 12. All values of Cronbach α decreased when each item/question was excluded as shown in table 5 which indicates that all of the twelve scales items /questions contribute to the overall score of the questionnaire.

Table 5. Internal Consistency of Arabic Version of MedRisk Questionnaire

Items	Cronbach's Alpha if Item deleted	
	1 st time of measurement	2 nd time of measurement
Item 1	0.937	0.935
Item 2	0.936	0.936
Item 3	0.935	0.934
Item 4	0.935	0.934
Item 5	0.937	0.933
Item 6	0.936	0.934
Item 7	0.931	0.930
Item 8	0.932	0.933
Item 9	0.931	0.930
Item 10	0.933	0.930
Item 11	0.929	0.926
Item 12	0.928	0.927
Cronbach's Alpha total Score	0.939	0.937

▪ *Test Re-Test Reliability*

To test the reliability of the Arabic version of the MedRisk questionnaire, patients were asked to re-fill the questionnaire after 7 days (2nd measurement). The ICC values (95% CI) were 0.98(0.97-0.98), $P < 0.0001$ for item1, 0.96 (0.95-0.97), $P < 0.0001$ for item 2, 0.95 (0.93-0.96), $P < 0.0001$ for item 3, 0.94 (0.92-0.95), $P < 0.0001$ for item 4, 0.91 (0.89-0.93), $P < 0.0001$ for item 5, 0.96 (0.95-0.97), $P < 0.0001$ for item 6, 0.94 (0.92-0.95), $P < 0.0001$ for item 7, 0.88 (0.85-0.91), $P < 0.0001$ for item 8, 0.94 (0.93-0.95), $P < 0.0001$ for item 9, 0.96 (0.95-0.97), $P < 0.0001$ for item 10, 0.95 (0.94-0.97), $P < 0.0001$ for item 11, and 0.95 (0.93-0.96), $P < 0.0001$ for item 12. The ICC value of the total score of the questionnaire was 0.992 (0.990-0.994), $P < 0.0001$ indicating that the Arabic version of the MedRisk questionnaire has high test-retest results as in table 6.

Table 6. Test-retest reliability for the Arabic Version of MedRisk Questionnaire.

Items	ICC	95% CI	P-Value
Item 1	0.98	0.97-0.98	< 0.0001
Item 2	0.96	0.95-0.97	< 0.0001
Item 3	0.95	0.93-0.96	< 0.0001
Item 4	0.94	0.92-0.95	< 0.0001
Item 5	0.91	0.89-0.93	< 0.0001
Item 6	0.96	0.95-0.97	< 0.0001
Item 7	0.94	0.92-0.95	< 0.0001
Item 8	0.88	0.85-0.91	< 0.0001
Item 9	0.94	0.93-0.95	< 0.0001
Item 10	0.96	0.95-0.97	< 0.0001
Item 11	0.95	0.94-0.97	< 0.0001
Item 12	0.95	0.93-0.96	< 0.0001
Total	0.992	0.990-0.994	< 0.0001

3. Feasibility of Arabic-language version of MedRisk questionnaire.

Feasibility of the Arabic version of MedRisk questionnaire measured by calculation of missed item index and average time needed to answer the question. Sheets with missed data (items not answered by the patient) were counted for each item and the scale items were filled out by 100% in all sheets. The Arabic version of MedRisk questionnaire needed an average 5.33 minutes (SD± 1.04) to be answered. The frequency and percentage of time taken to answer the questions in minutes showed in Table 7 and Fig. 2.

Table 7. Frequency distribution of time needed to fill the questioner in minutes

Time	Frequency	Percent	Cumulative Percent
3 Min	14	4.7	4.7
4 Min	17	5.7	10.3
5 Min	180	60.0	70.3
6 Min	42	14.0	84.3
7 Min	41	13.7	98.0
8 Min	3	1.0	99.0
9 Min	3	1.0	100
Total	70	100%	

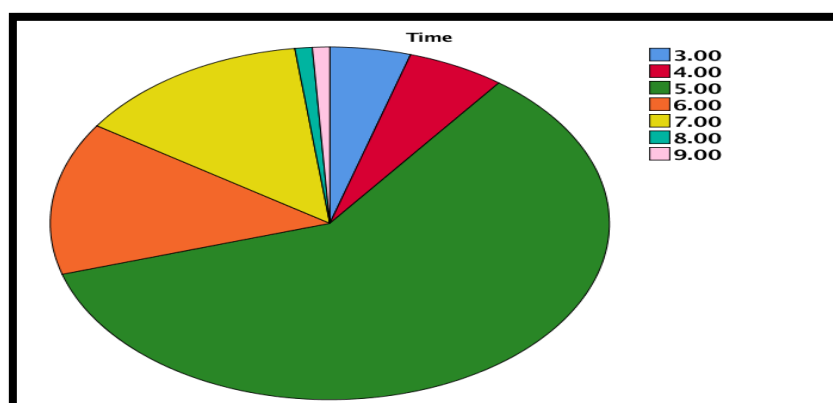


Figure 2. Distribution of time in minutes to fill out the Arabic version of MedRisk Questionnaire.

4. Floor and ceiling effect of Arabic-language version of MedRisk questionnaire.

The response distributions for each item showed that all response categories were used for all items with no significant floor or ceiling effects. According to Dean et al., [30], a total of <40% respondents selecting “1” or “5” indicated that an item does not show significant “floor” or “ceiling” effects, respectively and it was hence reassuring that the vast majority of items in the BQ had floor effects <18% and ceiling effects <37%. Features of scale score distributions were assessed at each time point, which indicated that a wide range of effects are tapped by the scores as shown in table 8.

Table 8. Item completeness and response distribution for each MedRisk item

Item	n	% missing	Response category (%)				
			1	2	3	4	5
1	300	0	1.3	13.7	15.3	39.7	30
2	300	0	6	18	22.7	23	30.3
3	300	0	17.3	22.7	41.3	14.3	4.3
4	300	0	4.3	18.3	32	24.7	20.7
5	300	0	7.7	13.3	42.7	26	10.3
6	300	0	7.3	20.8	33.7	24.7	13.5
7	300	0	3	12.3	30	27.7	27
8	300	0	5.3	10.7	40.3	26.7	17
9	300	0	1	7	21.3	43.7	27
10	300	0	2	5.3	19.3	37.3	36
11	300	0	6	13	31.3	36.7	13
12	300	0	6.3	12.3	25.7	39.7	16.3

• Summary of the results:

Face validity was tested by two expert panels, clarity index was 74.17% in the 1st expert panel and 97.5% in the 2nd expert panel. The content validity of the Arabic version of MedRisk questionnaire was excellent (97.5%) according to experts' opinions. The questionnaire was found to have a single factorial structure by Scree Plot graph and according to the total variance analysis; the single factor of Arabic language version of MedRisk questionnaire constitutes 61.1% of the total variance which also supports a single factorial structure. Internal consistency reliability was measured by Cronbach α and all values of Cronbach α decreased when each item/question was excluded which indicates that all the twelve scales items /questions contribute to the overall score of the questionnaire. The Arabic version of the MedRisk questionnaire has high test-retest results. The Arabic version of MedRisk questionnaire needed an average 5.33 minutes (SD \pm 1.04) to be answered. The response distributions for each item showed that all response categories were used for all items with no significant floor or ceiling effects.

IV- DISCUSSION

This cross-sectional study was conducted to test face validity, content validity, factor analysis, feasibility, internal consistency reliability, and test-retest reliability of Arabic-language version of MedRisk questionnaire.

The purpose of the current study was to translate, culturally adapt, validate, and test the reliability of the Arabic version of MedRisk questionnaire. Although the translation and cultural adaptation of the Arabic version of the MedRisk questionnaire for LBP was a long and tedious multistep process, it was successfully established according to the most recent, comprehensive, and published guidelines [24; 23]. The MedRisk questionnaire might be considered a valid and reliable tool for the Arabic speaking population. This study has investigated the levels of satisfaction with physical therapy care in Egypt. High levels of satisfaction were observed for most of the items. These aspects of satisfaction are consistent with previous studies that used the MRPS in English and Spanish speakers [25].

In this study, face validity was tested by two expert panels, each consists of ten experts. According to 1st expert panel opinion, the clarity index for all twelve items was 74.17%, where clarity index was 60% for 2 items, 70% for 4 items, 80% for 5 items, and 90% for 1 item. The modifications from the first experts' panel were applied

to the Arabic version of MedRisk questionnaire and sent to the second expert committee (2nd panel). According to 2nd expert panel opinion, the clarity index for all twelve items was 97.5%, where clarity index was 90% for 3 items and 100% (clear) for 9 items. These findings confirm the face validity and acceptability of the MRPS consistent with those reported for original English [25; 31]; Brazilian Portuguese [32]; and Turkish [33].

Content validity examines the extent to which the concepts of interest are comprehensively represented by the items in the questionnaire [31]. Unlike previous studies, this study attempted to assess the content validity of the Arabic version of MedRisk questionnaire [32; 25; 33]. Although this was done for the English version when it was originally created, current methodology states that the content should also be evaluated when translating into a new language [34]. Content Validity index (I-ICV) were 100% for all items except items 1 and 3 (90%). Also, the mean scale CVI (S-CVI/Ave) of all items was 98.33%, the scale validity index universal agreement (S-CVI/UA) was 83.33%, and the mean expert proportion was 98.4%. So, the content validity of the Arabic version of MedRisk questionnaire was excellent (97.5%) according to experts' opinions.

The sample size was suitable and adequate for factor analysis according to Kaiser Meyer Olkin and Bartlett tests results. The questionnaire was found to have a single factorial structure by Scree Plot graph and according to the total variance analysis; the single factor of Arabic language version of MedRisk questionnaire constitutes 61.1% of the total variance which also supports a single factorial structure. The authors of the current study agreed with point of view that the MedRisk questionnaire has a single factorial structure because the number of questions is insufficient to result in an adequate number of factors. These results suggest that the factorial structure of this instrument is critically dependent on the cultural aspects from each country [35]. The results of the current study were not in agreement with Beattie et al. [25] for Spanish version of the MedRisk questionnaire that has two factors.

To examine the external construct validity, it is generally recommended to use other questionnaires that were validated, accepted as a gold standard, and, if possible, context specific. However, there is no gold standard questionnaire available among the questionnaires evaluating LBP [26]. In most of different languages version of MRPS, the validity of the questionnaire tested against Roland–Morris questionnaire or Oswestry Disability Index. However, the construct validity of the Arabic Roland–Morris questionnaire was assessed against only one dimension (pain intensity) and was found to have a low correlation against pain intensity; also, the other constructs, such as the bodily pain or physical functioning subscales were not tested [37].

Also, Oswestry Disability Index contains only three domains (pain, physical function, and social activity), often used for very acute patients, and asks patients about their condition now rather than on average [38]. In contrast, the MRPS contains twelve items and asks patients about information regarding their age, sex, and location of primary symptoms. Items 1 to 3 represent the external factor, while items 4 to 10 represent the internal factor. Items 11 and 12 are global measures of satisfaction [31]. Therefore, the MedRisk questionnaire was selected for LBP patients and has been translated and validated into many languages [25; 32; 31; 33; 39].

The Cronbach alpha in this study was 0.939 for first measurement total scores and 0.937 for second measurement total scores indicating that the questionnaire has a high internal consistency. All values of Cronbach α decreased when each item/question was excluded, which indicates that all the twelve scales items /questions contribute to the overall score of the questionnaire. In previous studies, Cronbach alpha values of the MRPS were 0.86, 0.64, 0.63 and 0.53 by Lee et al., 0.49 and 0.81 by Yeşilyaprak et al., 0.83 by Beattie et al., 0.63 to 0.77 by Oliveira et al., & 0.90 and 0.82 by Beattie et al. [25; 32; 31; 33; 39]. So, the Cronbach alpha values of the Arabic version of the MRPS were found to be quite high similar to the other languages' versions. The results of current study revealed that the Arabic version of the MRPS has a high level of internal consistency.

The current study tested the reliability of the Arabic version of the MedRisk questionnaire and found that it had high test-retest results, patients were asked to re-fill the questionnaire after 7 days to overcome the effect of the short time intervals, which were found in other previous studies [25]. Re-test results of the current study were similar to Yeşilyaprak et al., who reported that the time interval was chosen because the mean length of stay was limited to 7–10 days (generally 3–7 days includes physical therapy) in the hospital units that were used. According to a previous study, a re-test was performed after 72 h from the first administration before their discharge to avoid recall effects and also there was no statistically significant difference between test–retest results performed at a time interval of 2 days and 2 weeks [40].

The ICC values (95% CI) were 0.990-0.994 ($p < .0001$). The ICC value of the total score of the questionnaire was 0.992, ($p < 0.0001$) indicating that the Arabic version of the MedRisk questionnaire has high test-retest results. Oliveira et al. determined test–retest ICC results of the total score of the questionnaire ranged from 0.64 to 0.79 [32].

Yeşilyaprak et al. reported that the ICC for the two total scores was 0.97 (95% CI: 0.94–0.98) indicating excellent consistency [33]. De Vet et al. reported that the ICC is interpreted as follows: less than 0.40 (low reliability); 0.40 to 0.75 (moderate reliability); 0.75 to 0.90 (substantial reliability); greater than 0.90 (excellent reliability) [41]. Test–retest results of the current study were similar to the ICC values of the previous studies. Considering the ICC values of each question and the total score of the questionnaire, it is possible to say that the Arabic version of the MRPS is stable over time.

An ideal questionnaire for the use in daily practice should be brief while at the same time minimizing both the response burden as well as the costs of data collection and management [42]. The feasibility of the Arabic version of MRPS measured by calculation of missed item index and the average time needed to answer the question. Sheets with missed data were counted for each item and the scale items were filled out by 100% in all sheets. The Arabic version of MedRisk questionnaire needed an average 5.33 minutes (SD± 1.04) to be answered. The frequency and percentage of time taken to answer the questions in minutes.

The response distributions for each item in the current study showed that all response categories were used for all items with no significant floor or ceiling effects. There are no studies have calculated ceiling and floor effects for the MRPS [43]. The Brazilian-Portuguese version of the MRPS study [32] was the first to test this measurement property and detected a strong ceiling effect. Ceiling effects can preclude the ability of the instrument to distinguish patients who are satisfied from those who are not satisfied. It seems that ceiling effects in satisfaction measures are not uncommon, [44] as observed in patients with diabetes [45] and those who have had knee [46] and hip replacement surgery [47].

According to Oliveira et al. [32] the percentage of the patients' scores at the bottom or top of the range of possible scores was calculated to determine the potential floor and ceiling effects. In the case of more than 15% of the patients' scores at the lowest or highest possible total score, ceiling and floor effects were considered present. Features of scale score distributions were assessed at each time point, which indicated that a wide range of effects are tapped by the scores. Oliveira et al., said that we did not detect floor effects; however, a large proportion of patients (176 out of 303, 58.1%) scored 60 points or higher, and 49 participants scored the maximum score of 65, so these results reflect a strong ceiling effect. By contrast, Yeşilyaprak et al. [33] reported that no floor or ceiling effects were detected. Only 8.3% (n = 17) of the patients scored the maximum score (60 points), and no patients scored the minimum score. The Turkish version of the MRPS can discriminate between satisfaction of the patients who are at the extremes of satisfaction, and it is sensitive to changes at both ends of the spectrum.

V- CONCLUSION

The Arabic version of MedRisk questionnaire is valid, reliable, and feasible. The sample size was suitable and adequate for factor analysis according to Kaiser–Meyer–Olkin and Bartlett tests results. In addition, the MedRisk questionnaire has high test–retest and internal consistency reliability, the majority of the patients were satisfied with physiotherapy service for LBP and they rated it as highly satisfactory. Most of them agreed that they would use the same health facilities in future if need arises.

This finding is encouraging regarding the construct validity and cross-language validation of our instrument. These findings are promising, and suggest that, despite language differences and possible cultural variations between samples, the English- and Arabic-language versions of the MRPS measure similar underlying factors. The study outcome supported that patients are generally satisfied with the quality of physiotherapy treatment they received for their LBP.

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