



CROSS-CULTURAL ADAPTATION AND VALIDATION OF ARABIC VERSION OF THE MULTIDIMENSIONAL PAIN INVENTORY

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ABSTRACT

Objective: To perform translation and cross-cultural adaptation of the Multidimensional Pain Inventory (MPI) and to assess the validity of this version. **Design:** Cross-sectional survey conducted between January 2012 and June 2013. **Setting:** Department of Rheumatology and Physical Rehabilitation, Mohamed Vth Military Teaching Hospital in Rabat; Morocco. **Subjects:** Consecutive patients aged 18 years or over and living with chronic pain; **Methods:** The data collection forms were structured in three parts. 1) questions for information on the characteristics of patients with chronic pain; 2) pain related characteristics; and 3) instrument for pain assessment. The Numeric Pain Rating Scales (NPRS) and MPI scale were used to evaluate the chronic pain. MPI was translated to Arabic with cross-cultural adapt; and then the validity of this new version was assessed. **Results:** The internal consistency for all scales was satisfactory, with α Cronbach coefficients values ranging from 0.70 to 0.86. The stability coefficients were in the 0.74-0.98 range. All items factor loading exceeded the 0.3. The correlations values ranged in absolute magnitude from 0.00 to 0.64. All of these intercorrelations values are lower than the reliability coefficients. In order to examine the convergent validity we have noted a positive correlation between the Numeric pain scale and the Pain severity and pain Interference scales of section 1 du MPI and negative correlation with the general activity scales statistically significant ($p < 0.05$). **Conclusions:** The Arabic version of the MPI is a reliable and valid scale to assess chronic pain in Moroccan patients.

KEYWORDS: Arabic; Chronic Pain; Evaluation; Multidimensional Pain Inventory.

INTRODUCTION

There are very scarce data concerning pain in Morocco. Its burden seems common and represents two-thirds of outpatient. Moreover, the prevalence of chronic pain is 21% and osteoarticular disease is the most frequent etiology of pain (70%).^[1,2]

In fact, chronic pain in rheumatic diseases and related conditions are very common.^[3] Therefore, an effective evaluation of this type of pain is requisite.^[4] Its assessment helps physicians for a better approach of the patient suffering and allows them to take an appropriate care decision and to monitor the effectiveness of the treatment^[5] in order to improve quality of life of patient.

Few validated Arabic versions of chronic pain ratings are available; such as the Brief Pain Inventory, and the DN4.^[6,7]

The most commonly multidimensional chronic pain ratings used were: the McGill Pain Questionnaire and the West Haven-Yale Multidimensional Pain Inventory (MPI).^[8-10]

The biopsychosocial model of pain regards the maintenance of chronic pain as a dynamic interaction among biological, psychological, behavioural and social-cultural factors. Assessment and treatment that follows this theory focuses not only on the physical and psychological effect of persistent pain, but also on the quality of available social support. Thus, one questionnaire that is based on biopsychosocial theory and

offers a comprehensive assessment of chronic pain is the MPI.^[10-12]

The MPI is theoretically related to cognitive behavioral conditions and takes into account a number of individual pain perception aspects, including the patient's perception of the reactions of others towards one's own pain symptoms, the perception of behavioral limitations and the impact caused by pain on the patient's lifestyles.^[10] The MPI has been translated and validated in multiple languages.^[13-17] However, there is no validated Arabic-language version available.

Therefore, the objective of the present study was to translate the MPI accurately into Arabic and to validate this new version on chronic pain population with rheumatic diseases and related conditions.

MATERIALS AND METHODS

Study design

This was a cross-sectional survey with prospective data collection conducted between January 2012 and June 2013.

Study area

Recruitment was performed in the Department of Rheumatology and Physical Rehabilitation. Mohamed Vth Military Teaching Hospital in Rabat; Morocco. This department contains two units; a) Rheumatology unit and b) Physical Rehabilitation unit. The department primarily treats patients presenting with chronic articular rheumatism and arthritis essentially rheumatoid sight its high prevalence in Morocco (0.7%), followed by spondyloarthropathy and chronic joint pain mechanically generated such as osteoarthritis with different localization and chronic low back pain.

Study population

We included all consecutive patients admitted in the Rheumatology unit during the study period. The participants aged 18 years or over, living with chronic pain, and who were able to self-assess pain filled out a questionnaire and completed information. The interview was used for illiterate patient (person with no education and unable to read and write).

Chronic pain has been recognized as pain which persists past the normal time of healing^[18] with non malignant pain, three months is the most convenient point of division between acute and chronic pain, but for research purposes six months will often be preferred.^[19]

In this study, chronic pain more than six months was used

Patients were excluded from the study for any of the following:

- Acute pain
- Altered mental state
- Neuropsychiatric diseases
- Inability to communicate; language barrier

- Refusal to participate in the study

The anonymity of all patients included in our study was respected. All patients were duly informed about the goal and procedure of the study and have voluntarily agreed to participate.

The study was approved by the local ethics committee and informed consent was obtained from all patients.

Data collection

Standardized collection of demographic and clinical data was performed by a trained research assistant using data collection forms. The data collection forms were structured in three parts. The first part contains questions for information on the characteristics of patients with chronic pain; the second part contains pain –related characteristics; and the third part contain instrument for pain assessment.

Collected data from each patient included age of patient (per years), gender, education level (illiterate; primary; secondary; university), geographic origins (rural; Urban) and significant other (Spouse; Parent; Child; Other relative).

Pain – related characteristics included; pain diagnosis (Rheumatoid arthritis, Ankylosing spondylitis, Lower back pain; Coxalgia; Other diagnosis); pain localization (Multiple joints; knee; Lumbar spine; Foot; Hip; Other location); and pain duration (by month).

Instruments

Two instruments were used to evaluate the chronic pain. The Numeric Pain Rating Scales (NPRS) to evaluate pain intensity and the MPI scale which evaluate the impact of chronic pain.

The Numeric Pain Rating Scales (NPRS)

The NPRS have been used widely to assess pain intensity and have shown good reliability and validity. We used an 11-point scale for pain intensity, with the anchors labeled as 0 (no pain) and 10 (most pain imaginable).^[20,21]

The Multidimensional Pain Inventory scale

The MPI scale was developed in order to fill a widely recognized void in the assessment of clinical pain.^[10] The tool is an integral part of the Multiaxial Assessment of Pain and enables individuals with pain to be classified according to psychosocial and behavioural factors rather than factors related to their physical injury alone.^[17]

The MPI is divided into three sections, which aims to assess the impact of chronic pain on various aspects of patients life. Section 1 comprises twenty items and divided into five factors (pain interference, support, pain severity, life control and affective distress). Section 2 assesses the responses of others to the patients' communications of pain, which divided into three factors (negative responses, solicitous responses and distractive

responses) and comprises fourteen items. Section 3 evaluates how patients participate in common daily activities and lists four factors (household chores, outdoor work, activities away from home and social activities); and comprises eighteen items.^[10]

Translation and cultural adaptation processes

Translation procedures followed by a transcultural adaptation were undertaken following international guidelines.^[22,23] The following steps were used; in the first phase, the MPI was translated by two professional translators. Both of them were native Arabic speakers. Once the two translations were completed, discrepancies between them were resolved by a committee consisting of the translators and three further individuals not involved in the translation process (three physicians). The committee created one unified translation of the MPI. Because of the difficulties related to Arabic grammar and to the style of Arabic writing, two other Arabic linguistics experts also reviewed the translated version. Then, the Arabic version of the MPI was backtranslated by a native English speaker living in Morocco, who was unaware of the original English language document. Once the backtranslation completed the committee reconvened to review and resolve the discrepancies between backtranslation and the original document.

Translation of the MPI items led to the establishment of an experimental version which was administered to a group of 10 participants (G1) (four women and six men) whose average age was 45 years (min. 21; max. 60), three subjects were illiterate. This step occasioned several linguistic modifications; the terms that seemed difficult for patients to assimilate were replaced by more appropriate terms; the question meanings nonetheless, remained unaltered.

Concepts lacking any equivalent in Moroccan culture were modified in view of adapting them to the local context.

Then a committee was created and composed by composed by all the participants in the translation process (the translators and three physicians) who met to make the necessary adjustments both linguistically and culturally to the questionnaire. The synthesis afforded an Arabic version very close to the original English version and written in simple literary language, easily understood even by illiterates.

Therefore, this new version was qualified as a candidate version (Multidimensional Pain Inventory Arabic version "MPI-AV") to be validated. However, five questions under the section 3 were modified:

- "Mow the lawn" by "take care of the plants on the balcony or in the garden"
- "Go to a movie" by "go to the cafe or steam room"
- "Take a ride in a car" by "Take a ride in a car or in the bus"

- "Work on the car" by "repair the satellite dish or similar"
- "Wash the car" by "take out the trash"

Therefore, this new version was qualified as a candidate version (Multidimensional Pain Inventory Arabic version "MPI-AV") to be validated.

Statistical analyses

Qualitative variables were presented as number and percentages. Quantitative variables were presented as mean \pm standard deviation for variables with normal distribution and as median and interquartile range (IQR) for variables with skewed distributions. Imputation was used for missing data using an expectation maximization (EM) analysis with impute function in SPSS software. EM analysis revealed that data were missing at random, meaning that difference in missing data are related to observed data and missing values were replaced by imputed values.^[24,25] All statistical analyses were performed using SPSS (version 13.0; SPSS Inc. USA).

MPI-AV validation process

1- Acceptability

The acceptability of the MPI-AV refers to ratings regarding the missing responses to 52 items and time taken to complete the questionnaire.

2- Reliability and stability

Internal consistency is a method of reliability in which we judge how well the items on a test that are proposed to measure the same construct produce similar results. Internal consistency was assessed using Cronbach's coefficient alpha. A high alpha coefficient (≥ 0.70) suggests that the items within a scale measure the same construct. Generally, 0.70 is acceptable, 0.80 is good and 0.90 or higher is considered very good.^[26,27]

Test-retest reliability refers to the stability of the score derived from serial administration of measure by the same investigator. It was determined in each scale by interviewing a group of 26 patients (G2) consecutively admitted in Rheumatology unit and responding to inclusion criteria on two occasions separated by 4 ± 1 day. The interval of five day was chosen in order to maintain health status between the two administrations. Test-retest reliability was assessed using an intraclass correlation coefficient (ICC). An ICC above 0.70 is considered to be acceptable.

3- Factor structure and dimensionality

To determine whether the correlation structure between MPI-AV items resembled the structure proposed in the literature for the MPI, a series of exploratory factor analysis (EFA) were performed. Kaiser-Meyer- Oklin and the Bartlett's test of sphericity measure of sampling adequacy were used to verify whether the data were appropriate for EFA. The number of extracted factors was selected to be the same as the original factor structure for each section separately. An initial eigen

value greater than 1.0 was used as the factor extraction criterion if problems appeared with the number of potential factors. The analyses were performed using principal axis factoring extraction followed by an oblique rotation as reported in the literature.^[10,17] Once the factor analyses are conducted, it is usual to regard factor loadings as high if they are greater than 0.60 and moderately high if they are above 0.30. Items with factor loading <0.30 were removed.^[28,29]

4- Discriminate validity

To assess discriminate validity of the MPI-AV we examined the intercorrelation between different scales. The Pearson correlation coefficients were computed among the scores on each factor to assess this correlation. The score for each factor was obtained by averaging the item scores according to the original factor structure; no items were omitted or used more than once. If there were missing values for one or more items in the factor, that item was omitted and the score was computed with the rest of the items.

The discriminant validity is considered as established if all of these intercorrelations are lower than the reliability coefficients for the 9 scales, which indicates that each scale contains unique, reliable variance or, in other words, discriminate distinctiveness of each scale is demonstrated.^[10]

5- Convergent validity

In order to examine the agreement between the MPI and other validated questionnaires, the Pearson correlation coefficient was calculated between the 9 scales and NPRS.

RESULTS

1. Patient Characteristics

During the study period, among the 192 patients were involved, 10 were included in the pretest (G1) and 26 in the test retest (G2), factorial analysis was therefore conducted on the remaining 156 patients (G3) (figure 1).

Table 1 summarizes the demographic and chronic rheumatic conditions of two groups; G2 G3.

2. Acceptability

The MPI-AV has an average completion time of 20 minutes \pm 2 SD, 5% of our population have not responded to two questions: "Since the time you Developed a pain problem, how much your pain has changed your Ability to work?" And "How much your pain has changed the Amount of satisfaction or enjoyment you get from work? ".

3. Reliability and stability

Table 2 presents the reliability and stability (test-retest) coefficients among the 13 MPI-AV scales. The reliability (internal consistency) estimates for all scales appear to be quite satisfactory, ranging from 0.70 to 0.86. The stability coefficients were in the 0.74-0.98 range,

indicating that a substantial proportion of the reliable variance in these scales was stable over time.

4. Factor structure and dimensionality

SECTION I.

Exploratory factor analytic procedures (principal axis factoring) were rating on 20 items for 156 patients who reported living with a spouse or significant other in section I.

A 5-factor was found to be adequate for these data but one items was no correlated significantly with their hypothesized factors (factor loading <0,30) "In general, how much does your pain problem interfere with your day activities?" in Pain interference scale. We have been able to remove this item without changing the structure of the first section.

The total sum of common variance represented by the five factors was 76.21%. The values of factor loading of Affective distress scale are high and ranged between 0.70 and 0.89. While the values of factor loading items of Pain interference scale are moderate and ranged between 0.30 and 0.80. The 20 activity items and their factor loadings are presented in Table 3.

SECTION II

Ratings on the 14 items in section II were factor analyzed using exploratory factor analytic procedures (principal axis factoring). Both the Kaiser and Scree criteria indicated that a 3-factor solution was most appropriate for these data. The amount of common variance accounted for by the 3 factors was 33.99%, 16.08% and 13.71%, respectively. Examination of the factor loadings for this 3-factor solution indicated that 13 of the 14 items met our criteria for convergent validity. The 14 activity items and their factor loadings are presented in Table 4.

SECTION III

Ratings on the 18 activity checklist items contained in section III of the MPI-AV were factor analyzed using principal axis factoring. A 4-factor solution was selected based on the number of eigen values greater than one. The amount of common variance accounted for by the 4 factors was 42.67%, 17.412%, 8.01% and 6.86%, respectively. Inspection of factor loadings indicated that all of the 18 items met our convergent validity criteria. The 18 activity items and their factor loadings are presented in Table 5.

5. Discriminant validity

There was no case in this dataset in which the number of missing item values exceeded the number of valid answers for each factor. As it can be seen, these correlations ranged in absolute magnitude from 0.00 to 0.64. The high negative intercorrelations for the factor pairs, "life control – affective distress" and "general activity– pain interference" were observed as well as between the negative responses and distractive responses

factors. The high positive intercorrelations for the factor pairs “pain severity – pain interference” and “distractive responses– general activity” were noted. Table 6 presents the intercorrelations among the MPI-AV scales. All of these intercorrelations values are lower than the reliability coefficients.

6. Convergent validity

In order to examine the agreement between the MPI-AV and other validated questionnaires, the correlation

coefficient was calculated between the 9 scales and Numeric Pain Rating Scales. Thus, we have noted a positive correlation between the Numeric pain scale and the Pain severity and pain Interference scales of section 1 du MPI and negative correlation with the general activity scales (who resumed all scales of 3rd section) statistically significant ($p < 0.05$). Table 7 lists the correlation values that have emerged.

Table 1: Sociodemographic and clinical characteristics for the sample of EFA and of test-retest

Characteristics	Values	
	EFA Groupes(n=156)	Test-Retest Groupes (n=26)
Age (by years) Mean (SD)	43.5+/-15	42.5+/-13
Gender		
Female	84 (53.8%)	15(57.7%)
Male	72 (46.2%)	11 (42.3%)
Educational level		
Illiterate	24(15.4%)	3(11.5%)
Primary	32(20.5%)	6(23.1%)
Secondary	86(55.1%)	13(50%)
University	14(9.0%)	4(15.4%)
Geographical origins		
Rural	67 (42.9%)	10 (38.5%)
Urban	89 (57.1%)	16(61.5%)
Significant other		
Spouse	97(62.2%)	14(53.8%)
Parent	42(26.9%)	10(38.5%)
Child	14(9.%)	2(7.7%)
Other relative	3 (1.9%)	-
location of pain		
Multiple joints	59 (37.8%)	11(42.3%)
knee	19(12.2%)	5 (19.2%)
Lumbar spine	17 (10.9%)	4 (15.4%)
Foot	12 (7.8%)	-
Hip	12 (7.8%)	-
Other location	37(23.5%)	6 (23.1%)
Diagnosis		
Rheumatoid arthritis	65 (41.7%)	10 (38.5%)
Ankylosing spondylitis	33(21.1%)	6(23.1%)
Lower back pain	30(19.2%)	4(15.4%)
Coxalgia	19(12.2%)	3(11.5%)
Other diagnosis	9(5.8%)	3(11.5%)
Duration of pain by month	24 +/-54	21 +/-9

Table 2: The reliability and stability (test-retest) coefficients

Scale	Number of items scales	Mean	SD	TEST RETEST	Cronbach α
Section 1					
Pain severity	3	3.78	0.94	0.94	0.82
Interference	8	3.45	0.76	0.95	0.72
Life control	2	3.65	0.94	0.94	0.78
Affective distress	3	3.21	0.83	0.74	0.84
Support	3	4.79	1.01	0.93	0.70
Section 2					

Negative responses	3	0.52	1.07	0.98	0.84
Sollicitous responses	6	4.54	0.84	0.89	0.74
Distracting responses	4	3.26	1.28	0.96	0.80
Section 3					
Household chores	5	2.59	1.25	0.96	0.80
Outdoor work	5	2.29	1.27	0.96	0.86
Activities away from home	4	3.29	1.07	0.97	0.76
Social activities	4	2.99	1.07	0.93	0.82
General activity	18	2.75	0.89	0.97	0.81

Table 3: Item composition of MPI-AV with factor loading: section 1

Factors and items	mean ± SD*	α **	FL***
Pain interference	3.45 ± 0.76	0.72	
Since the time you developed a pain problem.how much has your pain changed your ability to work?			0.75
How much has your pain changed the amount of satisfaction or enjoyment you get from participating in social and recreational activities?			0.33
How much has your pain changed your ability to participate in recreational and other social activities?			0.59
How much has your pain changed the amount of satisfaction you get from family-related activities?			0.75
How much has your pain changed your marriage and other family relationships?			0.30
How much has your pain changed the amount of satisfaction or enjoyment you get from work?			0.40
How much has your pain changed your ability to do household chores?			0.64
How much has your pain changed your friendships with people other than your family?			0.80
Support	4.79 ± 1.01	0.70	
How supportive or helpful is your spouse (significant other) to you in relation to your pain?			0.92
How worried is your spouse (significant other) about you in relation to your pain problem?			0.82
How attentive is your spouse (significant other) to your pain problem?			0.24
Pain severity	3.78 ± 0.94	0.82	
Rate the level of your pain at the present moment.			0.78
On the average.how severe has your pain been during the last week?			0.86
How much suffering do you experience because of your pain?			0.69
Life control	3.65 ± 0.94	0.78	
During the past week.how much control do you feel that you have had over your life?			0.76
During the past week.how much do you feel that you've been able to deal with your problems?			0.80
Affective distress	3.21 ± 0.83	0.84	
Rate your overall mood during the past week.			0.89
During the past week.how irritable have you been?			0.89
During the past week.how tense or anxious have you been?			0.71

SD: standard deviation α: alpha de cronbach FL: factor loading

Table 4: Item composition of MPI-AV with factor loading: section 2

Factors and items	mean ± SD*	α **	FL***
Negartiveresponses	0.52 ± 1.07	0.84	
Takes over my jobs or duties			0.92
Expresses frustration at me.			0.89
Expresses anger at me			0.76
Sollicitousresponses	4.54 ± 0.84	0.74	
Asks me what he/she can do to help.			0.57
Takes over my jobs or duties			0.67
Tries to get me to rest.			0.79
Gets me some pain medications.			0.80
Gets me something to eat or drink.			0.66
Turns on the T.V. to take my mind off my pain			0.37
Distractingresponses	3.26 ± 1.28	0.80	
Reads to me.			0.84
Talks to me about something else to take my mind off the pain.			0.87
Tries to involve me in some activity			0.60
Encourages me to work on a hobby			0.74

SD: standard deviation α : alpha de cronbach FL: factor loading

Table 5: Item composition of MPI-AV with factor loading: section 3

Factors and items	mean \pm SD*	α **	FL***
Householdchores	2.59 \pm 1.25	0.80	
Wash dishes.			0.43
Go to shopping.			0.62
Help with the house cleaning			0.88
Prepare a meal.			0.89
Do a load of laundry.			0.79
Outdoorwork	2.29 \pm 1.27	0.86	
Mow the lawn.			0.48
Work in the garden.			0.46
Work on the car			0.87
Wash the car.			0.89
Work on a needed house repair.			0.89
Activities away from home	3.29 \pm 1.07	0.76	
Go out to eat.			0.79
Go to a movie.			0.69
Take a ride in a car.			0.37
Take a trip.			0.81
Social activities	2.99 \pm 1.07	0.82	
Play cards or other games.			0.77
Visit friends.			0.80
Visit relatives			0.76
Go to a park or beach.			0.58

SD: standard deviation α : alpha de cronbach FL: factor loading

Table 6: Inter-scale correlations

	I	LC	AD	S	NR	SR	DR	GA
PS	.447**	-.091	.107	-.012	-.089	-.077	.088	-.320**
I		.000	.123	.193*	.237**	-.072	-.061	-.395**
LC			-.647**	-.242**	.372**	.031	.044	.243**
AD				.156	-.376**	.091	.085	-.358**
S					.039	.188*	-.289**	-.358**
NR						-.326**	-.449**	-.245
SR							.320**	.155
DR								.437**

(N=156). * $P < 0.05$; ** $P < 0.01$.

PS: Pain Severity; I: interference; LC: Life-Control; AD: Affective Distress; S: Support; NR: Negative Responses SR: Solicitous Responses; DR: Distracting Responses; GA: General Activity.

Table 7: Correlation between MPI-AV and Numeric Pain Rating Scale

Scale	Number of Questions	Mean	SD	Pearson Correlation	P
Section 1					
Pain severity	3	3.78	0.94	<u>0.73</u>	<u>0.00</u>
Interference	8	3.34	0.80	<u>0.38</u>	<u>0.00</u>
Life control	2	3.65	0.94	-0.10	0.10
Affective distress	3	3.21	0.83	-0.02	0.77
Support	3	4.79	1.01	0.08	0.27
Section 2					
Negative responses	3	0.51	1.23	<u>0.16</u>	<u>0.04</u>
Solicitous responses	6	4.54	0.84	-0.008	0.92
Distracting responses	4	3.26	1.28	0.07	0.33
Section 3					
General activity	18	2.75	0.89	<u>-0.35</u>	<u>0.00</u>

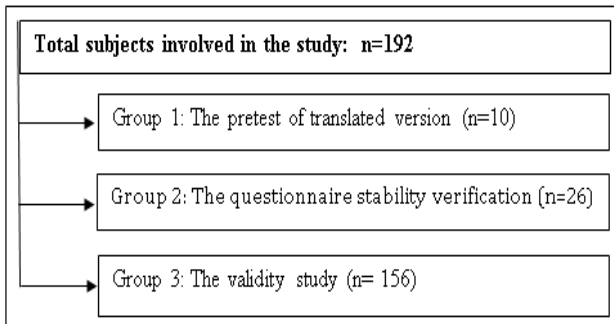


Figure 1: Shart flow of patient included in a study

DISCUSSION

This study describes the steps of MPI cross-cultural adaptation to the Arabic language and evaluates the psychometric properties of the translated inventory.

The translation/back translation method allowed us to achieve linguistic adaptations, emphasizing the sense rather than the literal translation. Translation difficulties were mainly due to the need to bring in an easy and close literary Arabic Moroccan. When a concept has no equivalent in Moroccan culture, the choice adopted was to modify it to fit the item to the cultural context.

The acceptability of this questionnaire administered to a Moroccan population with chronic pain has been satisfactory. The two questions that patients did not respond to, concern the work. For many people in Moroccan society the word “work” is dedicated only to work outside home. So an explanation of this item on the questionnaire seems to be necessary.

The results of this research establish that the psychometric properties of the MPI-AV are satisfactory with reference to factor structure and reliability. It behaved very similarly to the original tool (10) and to other translations of the MPI.^[14-17]

The reliability of the MPI-AV is good with α Cronbach coefficients values ranging from 0.70 for ‘Support’ to 0.86 for ‘Outdoor work’.

These values are almost identical to those of the original version where α values ranged from 0.72 for ‘pain severity’ to 0.90 for ‘life interference’ and to the results of the Swedish study where the internal consistencies ranged between 0.66 for ‘life control’ to 0.86 for ‘life interference’.^[10,15,16]

The stability was evaluated by the ICC, which is more advantageous than Pearson’s r since it considers the actual magnitude of scores and the agreement between ratings, not only the correlation and linear association among variables.^[18,19]

The obtained values were all superior to 0.70 confirming that our inventory is stable through time.

The scale structure of the MPI was originally evaluated using confirmatory factor analysis in section 1 and EFA in sections 2; and 3 on a sample of 120 patients suffering from chronic pain and the authors encouraged cross-validation of the results on other populations.^[10] In our study we worked on a sample of 156 patients and we perform the exploratory factor analysis for the three sections. In an EFA, relations among observed or latent variables are not specified in advance, the statistical assumptions being that all factors are correlated and that all observed variables are directly influenced by all factors, regardless of the theoretical appropriateness of these assumptions. Considering that relations among observed or latent variables are already specified on the original tool and on other versions we decided to perform only EFA.

In section 1, we noted that one questions had a factor loading <0.30 “In general, how much does your pain problem interfere with your day to day activities” in “Pain interference scale”. We have been able to remove this item without changing the structure of the first section. Seen the results of the verification procedures of stability, reliability and intercorrelation of our MPI scale, it would be appropriate to maintain the same number of factors.

In section 2, the results showed that internal consistency of the negative responses factor in section 2 may be improved if the item ‘Ignores me’ was removed. In Arabic, as other versions, the item ‘Ignores me’ contains a negative connotation, which may cause confusion, particularly if the answer is ‘Never’, resulting in a double negative. However, in a number of previous translations into other languages, it was proposed that the item ‘Ignores me’ be removed from section 2 because it was not highly correlated with the negative responses factor with a factor loading= 0.073.^[15-17] The suggestion was therefore made to eliminate ‘Ignores me’ from section 2 of the MPI.

In section 3, for us, keeping the original structure namely four factors seems justified. First exploratory factor analysis allowed to distinguish four factors with total common variance of 75%. Secondly, the reliability (internal consistency) and the stability estimates for all scales appeared to be quite satisfactory. In addition, in Moroccan society culture, “Household chores”, “outdoor work”, “Activities away from home” and “Social activities” are quite different activity. Other versions suggest adopting three factors only by combining the social activities and activities away from home scales into a single leisure activities scale.

In addition, statistical findings show that using a factor that evaluates the general activity level, including all the items in section 3, is acceptable. Many studies^[15,16] used a general activity factor comprising all of the items rather than the subscales in this section. The profiling of persons living with chronic pain, therefore, takes into

account only the general activity factor, which provides some insight into the overall degree of activity.

In our study, we have found similar intercorrelations to those in the original version and in other languages versions.^[13,16]

As expected, we noted a strong inverse correlation between the general activities on the one hand and pain severity and pain interference on the other hand. This can be explain that more severe is the pain, less is participation of patients in general activities. As in the French version of the MPI, the affective distress – general activity link is interesting; withdrawal from usual activities is directly associated with an increase in emotional problems.^[17] Reliability estimates for all scales still satisfactory, all the intercorrelations are lower than the reliability coefficients for the 9 scales. Thus, discriminate distinctiveness of each scale is demonstrated.

To assess the convergent validity we used the numerical verbal scale. We found that the score of the verbal numeric scale varies in the same direction as the PI and PS, which means that the three scales evaluated the same thing. By contrast, it varies in the opposite direction of the four scales in Section 3 which assess daily activities. This demonstrates that the longer the patient has severe pain, less he practices his daily activities as usual.

Limitation

First, the MPI is a self-administered questionnaire. Interview techniques may increase response rates, there is a possibility that interviewers can introduce bias.^[30] Respondents may give answers that they feel are socially acceptable rather than stating their true view when in a one to- one situation. They may also be influenced by characteristics and attitudes of the inter- viewer, particularly in face to face situations.^[30] Interviewers themselves can make errors when delivering questions or recording answers. The alternative would have been to exclude low-literacy participants. However, the decision to include these participants was more important and better than the risk of bias because the inclusion of the low-literacy participants was a better representation of Moroccan population. Furthermore, the different data collection methods (self-administration and administration by an investigator) have advantages and disadvantages and no consensus is available concerning the problem of administering questionnaires in low literacy populations.^[31]

Second. In many studies^[13-17] to assess the convergent validity of the MPI translated, the authors have used other scales that measure the same dimensions. In our study we only used the numerical verbal scale. In effect, acceptability, reliability and stability were satisfying. However; to improve validity of MPI-AV our inventory, future comparative studies must using e its with others validated pain assessment tools” can be done.

CONCLUSION

In summary, our study led to the validation of an Arabic version of the MPI: ‘MPI-AV’ in literary Arabic adapted to Moroccan culture with a good psychometric properties with satisfying acceptability, reliability and stability. This validated Arabic version can be used in Arabic population with cultural adaptation for each society.

The use of our tool for patients of rheumatology could not measure the intensity of pain before and after treatment only but to provide for the involvement of the “significant other” of the patient at the time of rehabilitation.

To improve the measure, future comparative study between 'MPI-AV' and other multidimensional survey assessing chronic pain; in several clinical applications, and larger population will be useful. Future investigation, using the MPI-AV', to evaluate the difference in the multidimensional experience of chronic pain in Morocco relative to other countries were also useful.

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• Conflicts of interest

The authors declare that they have no conflicts of interest related to this article

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