Original Article

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The Myanmar Version of the Oswestry Disability Questionnaire: A Cross-Cultural Adaptation, Reliability and Validity Study in the Low Back Pain Population

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Abstract:

Objective: To translate and cross-culturally adapt the Myanmar version of the Oswestry Disability Questionnaire (M-ODQ), and examine its reliability and validity in the low back pain (LBP) population.

Material and Methods: The M-ODQ was cross-culturally adapted in accordance with the ISPOR guidelines for translation. Prefinal testing was done on 20 individuals with LBP, with minor changes. The test-retest reliability, internal consistency, concurrent and construct validity, plus ceiling and floor effects of the M-ODQ were conducted on 101 individuals with LBP, via calculating the intraclass correlation coefficient $ICC_{(2,1)}$, Cronbach's alpha, and Spearman's rank correlation coefficient by correlating with the Myanmar version of the Roland-Morris Disability Questionnaire (M-RMDQ), visual analogue scale (VAS), back performance scale (BPS), and the Stark quality of life (QoL) questionnaire. The level of significance was set at p-value<0.05 for all statistical analyzes.

Results: The test-retest reliability and internal consistency of the M-ODQ showed an $ICC_{(2,1)}$ of 0.91 and a Cronbach's alpha of 0.703, thus indicating that the M-ODQ had an acceptable level of reliability. A moderate correlation between the M-ODQ and M-RMDQ (rho=0.56); and fair correlation with the VAS (rho=0.253), BPS (rho=0.336), and the physical component of the Stark QoL questionnaire (rho=-0.274) were found. Weak or no correlation was demonstrated with the mental component of the Stark QoL questionnaire (rho=-0.204). No ceiling or floor effects of the M-ODQ occurred in this study.

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Conclusion: The M-ODQ is a reliable and valid outcome measure for assessing disability among LBP patients in the Myanmar population.

Keywords: cross-cultural adaptation, low back pain, Myanmar, Oswestry Disability Questionnaire, reliability, validity

Introduction

Low back pain (LBP) is a major health problem worldwide, and its prevalence figures have increased dramatically in recent decades[1]. The incidence of LBP occurred at 60-90% in the general population, and the worldwide prevalence of LBP was estimated to be 19.6% in persons aged 20-59 years[2]. The prevalence of high disability due to LBP was 10.5%[3]. LBP has also been recognized as the most disabling condition and a core issue due to the impact of physical activity on work productivity and quality of life (QoL)[4].

Hence, outcomes for measuring pain and physical disability are crucial for establishing objectives, planning treatments, and evaluating results in the rehabilitation of the LBP population[5]. Conventionally, objective assessments, such as the range of motion of the spine and trunk muscle strength, are commonly used to measure functional disability related to LBP. However, functional disability could not be directly observed by objective measurements, so subjective evaluation is important to integrate information on functional disability related to LBP[6]. Nowadays, many validated self-reported back-specific disability questionnaires have been developed as subjective measures and are used in research and clinical practices. Among them, the Oswestry Disability Questionnaire (ODQ) has been one of the most widely used questionnaires to assess functional disability in patients with LBP[7].

The ODQ is a disease-specific questionnaire developed by Fairbank et al. and used to evaluate pain and disability occurring in patients with LBP. This consists of 10 sections comprising of pain intensity, personal care, lifting, walking, sitting, standing, sleeping, sex life, social life, and traveling. It is short, simple, quick, inexpensive, easy to score, and takes only a little time to complete the questionnaire[8]. Various language translations and cross-cultural adaptations have been performed and have reported good psychometric properties, including the Indonesian[9], Russian[10], Norwegian[11], Danish[12], Italian[13], Turkish[14], Greek[15], Arabic[16] and Croatian[17] languages. Furthermore, a Cronbach's alpha value ranging from 0.71 to 0.87 and an intraclass correlation coefficient from 0.7 to 0.96 has been reported.

As a result of globalization and migration, the population of many countries is becoming more diverse[18]. LBP perception and reporting is influenced by various conditions, such as individual lifestyle and characteristics, work status, economic, social, cultural and ethnic factors, as well as the acceptance of treatment by the patients[19]. Thailand has been a magnet for migrants from neighboring countries and has over two million documented migrants working in the country, with the Myanmar population accounting for 80%. In Thailand, the prevalence of LBP in migrant workers has also been shown to be significant[20]. As a result, the treatment and prevention of LBP have become a major social issue, and disability assessments related to LBP have become important for research and clinical settings in patients with LBP. Consequently, these outcomes have helped in patient evaluation and monitoring during the diagnostic and treatment phases[16,21].

Accordingly, relevant cross-cultural studies need to be conducted to address many of the issues between these multinational and multicultural groups. Although most of the questionnaires were established in English-speaking countries, it is recognized that if the measures were to

be applied to different cultures, the material must be well translated and culturally adapted to maintain the validity of the material at a conceptual level in different cultures[22]. Moreover, reliable and valid measures would play an essential role not only in the clinical decision-making, but also for research purposes[23]. In several studies, the Roland-Morris Disability Questionnaire (RMDQ) and visual analogue scale (VAS) were mostly used as validated measures, as they were easy to understand and simple to use by the patients and had acceptable psychometric properties and correlations with the ODQ. The Myanmar version of the RMDQ (M-RMDQ) used in this study has good test-retest reliability ($ICC_{(2,1)}$=0.86) and internal consistency (Cronbach's alpha=0.70). Moreover, the health-related QoL questionnaire, the Stark QoL questionnaire, is short and easy to fill out as it uses images with fewer words, assesses both physical and mental components, and has good psychometric properties[24]. As a performance-based measure, several authors reported that LBP patients are more disabled in several movements than one, so the back performance scale (BPS); a back-specific performance measure including several physical performance tests of trunk mobility, was chosen in this study rather than other performance measures; such as the finger-to-floor test and the Schober test[25].

After reviewing the literature, it was found that the ODQ had more than 30 language translation versions although no Myanmar version of the ODQ had undergone cross-cultural adaptation. In the original version of the ODQ, no specific time frame was mentioned, and the "pain intensity" and "sleeping" sections of the questionnaire included references to painkillers and tablets, which did not measure pain in the same way as the other items measuring pain-related disability in the questionnaire. In the ODQ 2.1 (a) version, some modifications were made to these sections and might eliminate this problem[26]. Thus, we determined to translate and cross-culturally adapt the ODQ 2.1 (a) and evaluate its psychometric properties rather than the original version of the ODQ, as it is recommended as a back pain-specific measure of disability and included a specific time frame regarding pain-related disability. Therefore, the purposes of this study were to translate and cross-culturally adapt the Myanmar version of ODQ 2.1 (a) and to evaluate its psychometric properties; including reliability and validity.

Material and Methods

The study design of this research was a cross-cultural adaptation and observational, cross-sectional study in the Myanmar population. Ethical approval for this research was obtained from the research ethics review committee for research involving human research participants, group I, Chulalongkorn University, No.102/65. The study included two phases: (1) The translation and cross-cultural adaptation process, and (2) the psychometric evaluation process.

Phase 1: Translation and cross-cultural adaptation process

The original English version of the ODQ 2.1 (a) was used and permission from the MAPI Research Trust, the copyright holder of the ODQ, was obtained for adaptation into the Myanmar version. The adaptation process was followed by the guidelines proposed by Beaton et al., which consisted of five steps[27].

Step 1: Forward translation

The original version of the ODQ was translated into the Myanmar language by two independent translators whose mother language was Myanmar. The two forward translators, having different backgrounds, obtained two independent translations, including the comments of the two independent translators related to the translated questionnaires.

Step 2: Translation synthesis

Discussions were held between the forward translators, and inappropriate word choices were identified and resolved. After this, the synthesized version of the M-ODQ was produced.

Step 3: Backward translation

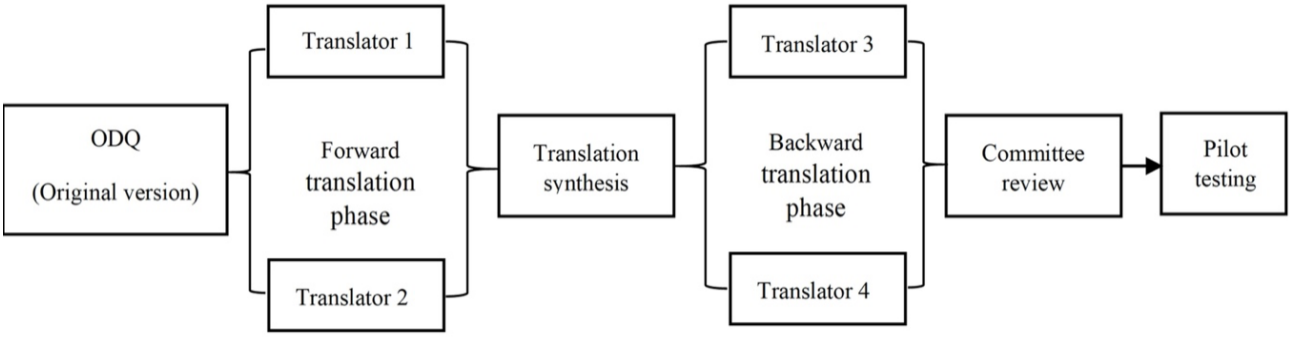
Two totally blind bilingual translators, whose native language was English, translated the synthesized version of the M-ODQ into English. In this process, unclear phrasing and major inconsistencies were magnified, and the translated version ensured that it reflected the same content as the original document.

Step 4: Expert committee review

A panel of experts composed of two physical therapists and four translators were involved in the translation process. The committee discussed all the translation versions of the ODQ and made the decision to achieve equivalence between the original and the translated versions to develop the prefinal version of the M-ODQ for field testing.

Step 5: Pilot testing of the prefinal version

In the field testing, the prefinal version of the M-ODQ was evaluated on 20 LBP individuals. They were asked to complete the M-ODQ and explain how they understood each item of the questionnaire and the meaning of their chosen answers. Finally, as no major difficulties were faced by the patients the final version of the M-ODQ was produced. The procedure for the translation and cross-cultural adaptation of the M-ODQ is shown in Figure 1.



ODQ=oswestry disability questionnaire, M-ODQ=Myanmar version of the oswestry disability questionnaire

Figure 1 The procedure showing the translation and cross-cultural adaptation of the M-ODQ

Phase 2: Psychometric evaluation process

Subjects

Myanmar people, who were staying in Bangkok, Thailand, were considered for recruitment to participate in this study. The inclusion criteria were a LBP duration of at least or more than six weeks, being aged between 18 and 55 years, and being literate in the language of Myanmar. Participants with pregnancy, mental disorders, and neurological pathologies were excluded from this study.

Calculation of the sample size

The "Quality criteria for measurement properties of health status questionnaires" stated that a sample size of not less than 50 participants was appropriate for the validation studies[28]. Based on previous studies sample size ranges, a sample size range of 55 to 72 was identified[11,29]. As a result, a sample size of 101 participants was acceptable for this study.

Outcomes

1. M-ODQ 2.1(a)

The ODQ 2.1(a), developed by Fairbank et al., is a self-administered 10-item questionnaire measuring the impact of pain and disability on daily activities. It assesses personal care, lifting, walking, sitting, standing, sleeping, sex life, social life and traveling. Scores range from 0 to 5 per item, with a total possible score of 50. The disability score is calculated as a percentage by summing up the item scores, divided by the total possible score, and multiplying by 100. The total possible score ranges from 0 (no disability) to 100 (maximum disability). It takes approximately five minutes to complete[30].

2. M-RMDQ

The RMDQ, developed by Roland and Morris in 1983, is a tool used to assess physical disability in patients with LBP. It consists of 24 items related to functional and physical activities, with scores ranging from 0 (no disability) to 24 (maximum disability). The M-RMDQ, used in this study, showed good test-retest reliability ($ICC_{(2,1)}$=0.86) and internal consistency (Cronbach's alpha=0.70)[30].

3. VAS

The Myanmar version of VAS is an instrument used for assessing pain and disability and consists of a self-reported 100-mm-long horizontal line, including end points of "no pain" and "worst pain". Patients were asked to indicate a mark along the line that best represented their pain severity. The higher score represented higher levels of pain and was measured in millimeters[31].

4. Stark QoL questionnaire

The Stark QoL questionnaire was developed by Stark and assesses health-related QoL using minimal words and images. It has two components: mental (mood, energy, social contact) and physical. The mental component uses smiley faces, walking pictures, and social contact images. The physical component has six items related to activities; such as shopping, moving a table, tying shoes, taking a glass, sweeping rubbish and lifting a heavy box. Scores range from 0 (poor) to 100 (excellent). The time required to complete the questionnaire was 3-5 minutes. Cronbach's alpha was 0.77[24].

5. BPS

BPS was developed as a back-specific performance-based measure of mobility-related activity limitations in patients with LBP. The scale involves five physical performance tests of trunk mobility (sock test, pick-up test, roll-up test, fingertip-to-floor test, and lifting test). Each of the five tests has scores ranging from 0 to 3, which depends on the best to worst performance. The total possible score ranges between 0 (no disability) and 15 (maximum disability). The test-retest reliability and internal consistency of BPS demonstrated an $ICC_{(2,1)}$ of 0.91 and Cronbach's alpha of 0.73, respectively[25].

Procedure

Data collection was performed at the physical therapy clinic, faculty of allied health science, Chulalongkorn University, Thailand. Eligible participants with LBP who passed the screening phase signed the informed consent and enrolled in this study. The participants were administered the M-ODQ twice: seven days apart. On the second visit, they answered a 7-point global perceived effect (GPE) scale to detect any major alterations in their LBP symptoms between the two assessments. Respondents who answered "a little improved", "not changed," or "a little deterioration" were classified as stable[32]. Seventy-six patients with stable symptoms were included for the test-retest reliability study.

A total of 101 patients participated in the validity study, which was conducted together with the internal consistency, ceiling and floor effects analysis studies. Patients were also administered the M-RMDQ, VAS, BPS, and Stark QoL questionnaire; as the baseline to collect the data required for the analysis of the internal consistency, ceiling and floor effects, and validity. Concurrent validity was evaluated by correlation with the M-RMDQ and VAS, while construct validity was evaluated by correlation with Stark QoL questionnaire and BPS.

Data analysis

The data obtained from the reliability and validity study of the M-ODQ were analyzed using Statistical Package for the Social Sciences (SPSS)

(v.22 for Windows), with a significance level set at p-value<0.05. The normal distribution of data was assessed using the Shapiro-Wilk's test, and descriptive statistics were used to analyze participant demographics[7]. Test-retest reliability was measured using $ICC_{(2,1)}$ of a two-way mixed effects model with absolute agreement. Values were categorized as poor (<0.50), moderate (0.50-0.75), good (>0.75-0.90), or excellent (>0.90)[33]. Internal consistency of the M-ODQ was evaluated by calculating the value of Cronbach's alpha, which had an acceptable value of at least 0.7 but not over 0.9 to avoid redundancy[28]. The ceiling and floor effects of the M-ODQ were determined if more than 15% of participants achieved the highest or lowest scores by calculating the number of participants scoring the highest status (90-100) or the lowest status (0-10) of the M-ODQ scores[34].

Concurrent and construct validity of the M-ODQ were assessed using Spearman's rank correlation coefficient. The validity criterion measures included the M-RMDQ, VAS, BPS, and Stark QoL questionnaire. Spearman's rho values were interpreted as follows: <0.25 (little or no relationship), 0.25-0.50 (fair), >0.50-0.75 (moderate), and >0.75 (excellent)[28]. Priori hypotheses are stated in Table 1, based on previous validation studies of the ODQ[16,28].

Table 1 Priori hypotheses for evaluating the psychometric properties of the M-ODQ

Reliability		
Internal consistency		Cronbach's alpha=0.70-0.95[28]
Test-retest reliability		ICC>0.70[28]
		Validity
Variables		Expected hypotheses
RMDQ		Moderated to high positive correlation (r=0.50-0.84)[16]
VAS		Fair to excellent positive correlation (r=0.33-0.84)[16]
Stark QoL Questionnaire	Mental component	Fair to moderate negative correlation
	Physical component	Fair to moderate negative correlation
BPS		Fair to moderate positive correlation

ICC=intraclass correlation coefficient, RMDQ=roland-morris disability questionnaire, VAS=visual analogue scale, Stark QoL Questionnaire=stark quality of life questionnaire, BPS=back performance scale, M-ODQ=Myanmar version of oswestry disability questionnaire

Results

Phase 1: Translation and cross-cultural adaptation process

The translation and cross-cultural adaptation of the M-ODQ were done successfully with minor changes. In section 1 (Pain intensity), the word "very" was omitted from the statement, "The pain is very mild at the moment.". In section 3 (Lifting), the phrase "conveniently positioned" was replaced with the phrase "positioned at a manageable height". In section 9 (Social life), the phrase "energetic interests" was supplemented with "strenuous activities". In the prefinal testing, some participants reported that it was difficult to understand the exact meaning of the words "social life" and "traveling" in sections 9 and 10. Thus, the expert committee decided to add the phrase "social activities" to clarify the meaning. Additionally, the term "traveling" was modified to "in and out of the city" to align better with how it is commonly understood by Myanmar people.

Phase 2: Psychometric evaluation process

Test-retest reliability

In this study, participants with subacute and chronic LBP having a mean age of 31 years were enrolled. The participants consisted of 40.8% males and 59.2% females, with an average BMI of 23.11 kg/m^2. All participants completed the M-ODQ twice: one week apart. Stable symptom participants, as determined by the 7-point GPE scale, were analyzed for test-retest reliability, while 12 participants were excluded due to symptom changes and 13 patients were excluded due to a lack of follow-up for a second visit. A total of 76 participants answered the M-ODQ twice and were eligible for determining the reliability by calculating the $ICC_{(2,1)}$ of the M-ODQ. Baseline and follow-up assessments showed mean M-ODQ scores of 18.96 (S.D.=9.03) and 17.90 (S.D.=8.38), respectively. Detailed demographic data and test-retest reliability results are shown in Tables 2 and 3.

Internal consistency

The details of the demographic characteristics of the participants included in the analysis of internal consistency are demonstrated in Table 4. The internal consistency (Cronbach's alpha) of the M-ODQ was calculated on 101 participants with subacute and chronic LBP and showed an acceptable value of 0.703. The result is shown in Table 3.

Ceiling and floor effects

A total of 101 participants with LBP were included to assess the ceiling and floor effects of the M-ODQ. At the baseline measurement, 14 patients (13.8%) scored the M-ODQ at 10 or lower, and no one (0%) had the highest score of the M-ODQ. There were no ceiling or floor effects of the M-ODQ found in this study. The data are reported in Table 5.

Table 2 Demographic characteristics of participants for test-retest reliability of M-ODQ (n=76)

Variables	N (%)	Mean (S.D.)
Gender		
Male	31 (40.8)	-
Female	45 (59.2)	-
Age (years)	-	31.80±8.80
Weight (kg)	-	61.98±13.89
Height (m)	-	1.75±1.15
Body mass index (kg/m^2)	-	23.11±5.22
Duration of LBP (weeks)	-	38.66±43.95
Subacute (6-12 weeks)	14 (18.4)	-
Chronic (>12 weeks)	62 (81.6)	-
7-point GPE scale		
A little improved	34 (44.7)	-
Not changed	32 (42.1)	-
A little deteriorated	10 (13.2)	-

S.D.=standard deviation, LBP=low back pain, 7-point GPE scale=7-point global perceived effect scale, M-ODQ=Myanmar version of oswestry disability questionnaire, N=numbers of participants

Table 3 Test-retest reliability (n=76) and internal consistency of M-ODQ (n=101)

Questionnaire	1st assessment		2nd assessment		ICC 2,1	Cronbach's	p-value
	Mean	S.D.	Mean	S.D.	(95%)	alpha	
M-ODQ	18.96	9.03	17.90	8.38	0.91	0.703	<0.001

M-ODQ=Myanmar version of oswestry disability questionnaire, ICC=intraclass correlation coefficient

Table 4 Demographic characteristics of participants for internal consistency, validity, ceiling and foor efects of M-ODQ (n=101)

Variables	N (%)	Mean (S.D.)
Gender		
Male	43 (42.6)	-
Female	58 (57.4)	-
Age (years)	-	32.37±8.92
Weight (kg)	-	62.84±14.25
Height (m)	-	1.73±1.00
Body mass index (kg/m^2)	-	23.23±5.03
Duration of LBP (weeks)		39.48±45.28
Subacute (6-12 weeks)	18 (17.8)	-
Chronic (>12 weeks)	83 (82.2)	-

S.D.=standard deviation, LBP=low back pain, M-ODQ=Myanmar version of oswestry disability questionnaire, N=numbers of participants

Table 5 Ceiling and floor effects of M-ODQ (n=101)

Questionnaire	Ceiling effect N (%)	Floor effect N (%)
M-ODQ	0 (0)	14 (13.8)

M-ODQ=Myanmar version of oswestry disability questionnaire, N=numbers of participants

Validity

Spearman's rank correlation coefficient was used to examine the relationship between the M-ODQ and other validity criteria measures: M-RMDQ, VAS, BPS, and Stark QoL questionnaire to assess concurrent and construct validity. The M-ODQ showed moderate correlation with the M-RMDQ (rho=0.56, p-value<0.001) and fair correlation with the VAS (rho=0.253, p-value=0.011) for concurrent validity. For construct validity, the M-ODQ demonstrated fair positive correlation with the BPS (rho=0.336, p-value<0.001) and negative correlation with the physical component of the Stark QoL questionnaire (rho=-0.274, p-value=0.006). There was no significant correlation with the mental component of the Stark QoL questionnaire (rho=-0.204, p-value=0.041). All the results confirmed 75% of the predefined priori hypotheses.

Discussion

This study described the reliability and validity of the ODQ after the translation and cultural adaptation to the language of Myanmar by the guidelines proposed by Beaton et al. for use in individuals with LBP in the Myanmar population[27]. The M-ODQ was successfully translated and culturally adapted without major problems; except for selecting appropriate words that align with Myanmar culture for section 9 (Social life) and section 10 (Traveling). The expert committee decided and chose suitable words to ensure equivalence with the original version. After that, the M-ODQ was successfully adapted.

The test-retest reliability in this study was high, with an ICC value of 0.91; indicating excellent test-retest reliability. The ICC values of the previous validation studies ranged from 0.7 to 0.96[10,11,35,36]. The ICC value of this study concurred with the ICC values from the Danish and Iranian versions[12,37]. The interval used for the test-retest assessment in this study was seven days, which was consistent with the interval used in other validation studies[13,36]. The interval used for the assessment of the test-retest reliability in previous studies ranged from one to 14 days[35,36,38]. Moreover, the time interval of one to two weeks was adequate to measure the stability of the outcome[28].

In this study, the internal consistency of the M-ODQ showed a Cronbach's alpha of 0.703, which demonstrated that the M-ODQ had good internal consistency. The possible reason for the lower Cronbach's alpha value could be due to the number of missing values in the ODQ. The Cronbach's alpha value in other studies was higher than the M-ODQ; however, a similar value was reported in the Iranian version of the ODQ[6]. In the current study, there were no respondents that answered with the highest M-ODQ score (ceiling effect), and the percentage of patients who achieved the lowest M-ODQ score (floor effect) was 13.8%. No ceiling and floor effects of the M-ODQ were observed in this study, which were consistent with the Hausa and Croatian versions of the ODQ[17,34].

According to the researchers' knowledge, this was the first study to assess validity criteria measures; such as the Stark QoL questionnaire and BPS with the ODQ. The Stark QoL questionnaire was used because there was no translated and culturally adapted Myanmar version of the subjective questionnaire to assess the QoL of the patients. Due to the minimum number of words, the participants could easily answer the questions, and less time was required to complete the questionnaire. In other validation studies of the ODQ, the Short Form-36 (SF-36) and performance tests; such as the fingertip-to-floor test, Schober's test, and a range of the motion of the lumbar spine were mostly used as criterion tools. In this study, the BPS was used because several authors reported that people were more disabled when they were limited in several activities rather than in one[39]. Accordingly, the BPS was used, which included various activities, to assess the disability related to LBP.

In this current study, Spearman's rank correlation coefficient (rho) value of the M-ODQ with the M-RMDQ revealed that there was a moderate correlation coefficient (rho=0.56). The Marathi, Greek, and Spanish translation versions of the ODQ also demonstrated a moderate correlation with the RMDQ, thus representing rho=0.503, rho=0.729, and rho=0.75, respectively[15,36,40]. The rho value of the M-ODQ was slightly lower when compared to other studies, which could be due to the cultural differences among the countries[5,13]. The concurrent validity of the M-ODQ was computed by comparing the responses of the M-ODQ with the values of the VAS. Spearman's rank correlation coefficient of the M-ODQ combined with the VAS showed a fair correlation; having a rho=0.253. This was similar to the results from the Polish, Marathi and Turkish versions of the ODQ[14,38,40].

The construct validity of the M-ODQ was determined by predefining priori hypotheses based on the results of the other validation studies of the ODQ. These were to prevent the potential risk of bias when presenting the results of the correlation between the M-ODQ and other validity criteria measures. The construct validity of the M-ODQ was confirmed in 75% of the predefined priori hypotheses. The M-ODQ had a fair correlation (rho=-0.274), with the physical component of the Stark QoL questionnaire, and weak or no correlation (rho=-0.204) was found with the mental component of the Stark QoL questionnaire. In previous studies, the SF-36 was the most commonly used validated QoL questionnaire to correlate with the ODQ.

Table 6 Concurrent and construct validity of M-ODQ (n=101)

	M-RMDQ (rho)	VAS (rho)	Stark QoL Questionnaire (rho)		BPS (rho)
			Mental component	Physical component	
M-ODQ	0.56*	0.253*	-0.204	-0.274*	0.336*

rho=spearman's correlation coefficient, M-RMDQ=Myanmar version of roland-morris disability questionnaire, M-ODQ=Myanmar version of oswestry disability questionnaire, VAS=visual analogue scale, Stark QoL Questionnaire=stark quality of life questionnaire, BPS=back performance scale, *significant correlation=p-value<0.05

Their results stated that the ODQ had a fair to moderate correlation with each component of the SF-36. In contrast with the results of this current study, the mental component of the SF-36 had a fair correlation with the ODQ in other studies[9,36]. The possible reason for the different results, compared with this study, could be the mental component of the Stark QoL questionnaire, which included not only measures specific to mental health, but also energy and social activities with others. Thus, it could be difficult to compare and discuss the results directly with the results of the other studies.

In this current study, the BPS was used to correlate with the M-ODQ, and the results showed that there was a fair positive correlation with the rho of 0.336. The results contrasted with those of previous validation studies, in which the performance measure that measured the same construct as the BPS was used. Their results stated that there was no correlation between the ODQ and performance measures[5,14]. The results of this study demonstrated that there was a positive correlation between the M-ODQ and BPS, because the BPS measured more than one component of the activities that could affect patients with LBP.

This study had some limitations. First, the test-retest reliability evaluation did not control for interventions received by patients during the test-retest interval: potentially affecting symptom changes. Second, the recruitment of only literate individuals may impact the broader applicability of the questionnaire. Lastly, the lack of a validated Myanmar version of the QoL measure restricted the validation process of the M-ODQ. Further studies are needed to validate the M-ODQ using other Myanmar versions of validated materials and to conduct responsiveness analysis.

Conclusion

The culturally adapted M-ODQ demonstrated reliable and valid outcomes for assessing disability in Myanmar patients with LBP. It is recommended for use in clinical settings and research studies within the Myanmar population.

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Conflict of interest

There are no conflicts of interests related to this study.

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