VALIDITY AND RELIABILITY OF LYMPHEDEMA QUALITY OF LIFE QUESTIONNAIRE ARABIC VERSION

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Abstract

Background: The Lymphedema Quality of Life Questionnaire, which has four components (function, appearance, symptoms, and mood) and final score, was created to assess the quality of life for lymphedema patients. It is accessible in many different languages.

Aim of the study: This study was carried out to examine the psychometric features of the translated Arabic version of the lymphedema quality of life questionnaire and to validate it.

Methods: The Arabic LYMQOLQ-UL/LL was acquired using the forward-backward translation method between June 2022 and August 2022. Patients were chosen from the National Cancer Institute of Egypt, the National Cancer Institute of Tanta, and the hospital of health insurance-El Gharbia. In this study, ten specialists and 100 patients with a mean age of (48.11 6.97) years each participated. Reliability was examined using internal consistency analysis and test-retest procedures. Test-retest analysis was conducted using the intraclass correlation coefficient (95% confidence interval), and internal consistency was assessed using the Cronbach alpha value. Index of clarity was used to detect the LYMQOLQ's face validity, and the scale (CVI) was used to assess the LYMQOLQ's content validity (S-CVI). By looking at the association between LYMQOL and the EORTC QLQ-C30, internal construct validity was evaluated.

Results: LYMQOLQ and EORTC QLQ-C30 have a moderate correlation. It is highly reliable internally consistent. Analysis between tests is highly linked. The CVI (S-CVI) was 99.05% for the UL and 98.64% for the LL, both of which are outstanding. The index of clarity is (UL) 97.62% and (LL) 97.27%, both of which are great.

Conclusion: The lymphedema quality of life questionnaire in Arabic is a reliable and valid tool. There is a fair amount of association between the LYMQOLQ and the EORTC QLQ-C30. As a result, it might be taken into account while evaluating the quality of life lymphedema sufferers for Arabic-speaking individuals.

Keywords: Assessment tool, Arabic version, LYMQOLQ, lymphedema, quality of life, Questionnaire.

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1. INTRODUCTION

A chronic condition called lymphedema is characterized by an excessive accumulation of lymphatic fluid in the body. This swelling can result in alterations to the skin and other bodily tissues. The capacity of the lymphatic system to transfer the fluid is exceeded by the chronic, increasing accumulation of protein-rich fluid in the interstitium and the fibro-adipose tissue [1].

There are two types of lymphedema: primary lymphedema, which develops as a result of genetic developmental defects that cause distortion or dysfunction of the lymphatic vasculature, and secondary lymphedema, which is typically acquired following an injury to the lymphatic vessels [2].

Most occurrences of lymphedema are secondary lymphedema. Secondary lymphedema, often known as filarial lymphedema, is frequently brought on by filarial infection in tropical climates. Cancer treatments are a major contributor of secondary lymphedema, also known as lymphedema related to cancer or lymphedema connected to cancer therapy, in industrialized nations [3].

The development of fibrosis following radiation, which results in lymphatic vessel constriction, may be the cause of arm lymphedema by reducing the lymph nodes' capacity to filter foreign substances and changing the immunological response. The occurrence of lymphedema is caused by a variety of physical and pathological factors [4].

Risk factors of lymphedema considered were age, occupation/hobby (hand use), Tumor Lymph Node Metastasis (TNM) stage, number of dissected nodes, number of positive nodes, Lymph Node (LN) status, type of surgery, level of axillary dissection, tumor size, receptor status, radiotherapy, chemotherapy, postoperative complications, tumor side (dominant hand), injury, infection, comorbidity (diabetes mellitus and hypertension), and BMI [5].

Lymphedema can lead to a number of complications, including amputation, deep vein thrombosis (DVT), cellulitis that is frequently recurrent, Lymphangitis, superficial bacterial and fungal infections, lymphphangio-adenitis, and superficial bacterial and fungal infections [6].

The circumferential technique was used to assess lymphedema in the limbs. The measures of the circumference of the upper limbs were taken every 5 cm along both limbs, beginning at the level of the carpometacarpal joint with the arm abducted at a 30° angle. Arm circumference measurement readings were converted into limb volumes in milliliters using limb volumes professional version 5.0. Edema was characterized as an Interlimb volume differential [7].

The creation of Quality of life (QoL) tools specifically for lymphedema has gained increased attention in recent years. Use of a questionnaire created specifically for people with lymphedema is crucial due to their unique symptoms and challenges [8].

2. PATIENTS AND METHODS

One hundred patients, both sexes, with primary or secondary upper and/or lower limb lymphedema, with ages ranging from 30 to 60.

- **Inclusion criteria:**

Patients with primary or secondary lymphedema, upper or lower limb involvement, ages 30 to 60, ability to read and write Arabic, and comprehension of questionnaire items.

- **Exclusion criteria:**

Include patients with mental health issues, communication, vision, or hearing impairments, as well as those who don't complete the questionnaire all the way through or who aren't cooperative.

MATERIALS:

- **Assessment Scale:**

A self-report outcome tool called the lymphedema quality of life questionnaire (LYMQOL) was created to measure patients' quality of life. The 22-item Lymphedema Quality of Life Questionnaire is broken down to four parts: Functioning elements (components 1(a-f), 2 and 3), appearance/body image (items 4, 5, 6, 7, 8, and 10), physical symptoms (items 11, 12, and 13), and emotions/mood (items 16, 17, 18, and 19) [9].

Every enquiry has a scale of 1 to 4. A lower HRQOL rating was indicated by a higher score. General quality of life (Q22) is measured by patient's marked value, which ranges from 0 to 10. On the testing day, a score of ten was the best and a score of zero was the lowest. It is possible to compute five summary scores [9].

- **Procedures:**

The LYMQOL was translated and adapted into Arabic language according to the following steps: (Sousa and Rojjanasrirat et al., 2011)

Step 1: Arabic-language translation of the original instrument (forward translation)

a. Scale was translated from English to Arabic to provide two forward-translated versions of the scale (Al and A2).
b. Two translators who engaged in forward translation have different backgrounds but Arabic as their mother tongue. One of the translators was familiar with Arabic medical jargon and the tool's construction's subject matter. The second translator was familiar with the Arabic language's intricacies as well as its cultural ones.

Step 2: comparison between the instrument's two translations: the researchers and the research committee for surgery for physical therapy compared and combined both versions (A I and A2); some academic staff members were asked to help with addressing contradictions and ambiguities. The initial translated Arabic version was created as a result of this stage (A1, 2).

Step 3: Blind backward translation of the original version of the instrument's translation: The scale was translated into English in its tentative initial translation to provide two back-translated versions (B1 and B2).

a. Back translation was done by two translators; however, their backgrounds were different. One of the translators was familiar with medical jargon and the English language's context for the tool's construction. The second translator was familiar with the linguistic and cultural intricacies of English.

Step 4: Comparison of the two back-translated versions of the instrument

The committee included researchers, medical professionals, interpreters, and a language expert. The committee examined the instructions, objects, answer style, language, sentence structure, context, and relevance of scales B1 and B2 to the original English scale. They also compared scales B1 and B2 to scale B1. The committee verified the written

report, translations (A1 and A2, A1, 2, B1 and B2), and back translations by comparing them to the forward translations (A1, 2). These translations lead to the assumption that the preliminary Arabic version represented the pre-final Arabic version.

Step 5: pilot testing of the pre-final Arabic version of LYMQOL Questionnaire:

a. A total of ten specialists were involved to analyze each questionnaire item for face validity (clarity) and offer suggestions for improving that item's clarity.
b. Each committee member who finds the questionnaire's instructions, response structure, or any other issue to be confusing is invited to offer suggestions on how to modify the statements and clarify the language.
c. Using the following scale, experts evaluated each item of the revised pre-final version for validity of content: Scores (1, 2) are irrelevant, but scores (3, 4) are relevant. After the revised pre-final version passed the content and face validity expert inspections, it was designated the final version. Things are changed and reevaluated if they don't meet the minimal acceptable indices. We compute new content validity indices. After obtaining sufficient indicators of content-related validity or content equivalence, the process is repeated. To boost confidence in the validity of the instrument's content; it is also advised to determine the kappa coefficient of agreement. The lowest acceptable coefficient to judge good agreement is typically kappa of 0.60.

Step 6: complete psychometric testing of the pre-final Arabic version of the LYMQOL Questionnaire in a sample of the target population

One hundred participants with Lymphedema participated in this study to develop the LYMQOLQ-Arabic version, initial full psychometric properties. The patients completed the LYMQOLQ-Arabic version along with the EORTC QLQ-C30 questionnaire Arabic version, and the patients then completed the two questionnaires 1 week later.

STATISTICAL ANALYSIS:

Descriptive statistical analysis on the sample was performed using means and standard deviations for numerical data and using frequency and percentage for categorical data. Clarity index and expert proportion of the clearance were used to test face validity. Index of content validity (CVI), scale content validity indices (S-CVI) and expert proportion of relevance were used to test the content validity. Construct validity was investigated through the correlation between LYMQOL and EORTC QLQ-C30 estimated using Pearson correlation coefficients. Cronbach's alpha was used to measure the internal consistency reliability. Test–retest reliability was measured using intraclass correlation coefficient (ICC). All statistical tests had a significance level of p 0.05. The statistical software for social studies (SPSS) version 25 for Windows was used for the statistical analysis (*IBM SPSS, Chicago, IL, USA*).

3. RESULTS

One hundred patients with upper and /or lower limb lymphedema participated in this study. **Table (1)** showed the mean ± SD of subject's characteristics of the study group.

Table (1): General characteristics of the subjects.

	Mean ±SD	**Minimum**	**Maximum**
Age (years)	48.11 ± 6.97	36	60
Weight(kg)	80.33 ± 4.59	75	95
Height (cm)	166.69 ± 5.65	155	177
BMI (kg/m²)	28.95 ± 1.81	25.76	35.38
	N	**%**	
Sex distribution			
Females	58	58	
Males	42	42	
Affected limb			
Upper limb	57	57	
Lower limb	43	43	
Affected side			
Right	58	58	
Left	42	42	

- **Face validity**

Index of clarity of Arabic version of LYMQOL-UL:

The mean scale index of clarity of Arabic version of LYMQOL- UL was 97.62% which is excellent. The index of clarity of Arabic version of LYMQOL- UL ranged from 90% to 100%. The mean scale index of clarity of Arabic version of LYMQOL- LL was 97.27% which is excellent. The index of clarity of Arabic version of LYMQOL- LL ranged from 90% to 100%.

- **Expert proportion of clearance**

The mean expert proportion of clearance of the Arabic version of LYMQOL- UL was 99.05% which is excellent. The expert proportion of relevance ranged from 95.24% to 100%. The mean expert proportion of clearance of the Arabic version of LYMQOL- LL was 98.64% which is excellent. The expert proportion of relevance ranged from 95.45% to 100%.

- **Content validity:**

- Index of content validity (CVI)

The Arabic version of LYMQOL- UL show high content validity, the scale CVI (S-CVI) was 99, 05%.

The Arabic version of LYMQOL- LL show high content validity, the scale CVI (S-CVI) was 98, 64%.

- **Expert proportion of relevance**

The mean expert section of relevance of Arabic version of LYMQOL- UL was 99.05% which is excellent. The expert proportion of relevance ranged from 95.24% to 100%. Eight experts had 100% proportion of relevance. Two experts had above 90% proportion of relevance.

The mean expert section of relevance of Arabic version of LYMQOL- LL was 98.64% which is excellent. The expert proportion of relevance ranged from 95.45% to 100%. Seven experts had 100% proportion of relevance. Three experts had above 90% proportion of relevance.

- **Construct validity**

The correlations between LYMQOL-UL and EORTC QLQ-C30 were moderate positive significant correlation with function domain ($r = 0.573$, $p = 0.001$), appearance domain ($r = 0.647$, $p = 0.001$), symptom domain ($r = 0.629$, $p = 0.001$) and with mood domain ($r = 0.544$, $p = 0.001$).

The correlations between LYMQOL-LL and EORTC QLQ-C30 were moderate positive significant correlation with function domain ($r = 0.525$, $p = 0.001$), appearance domain ($r = 0.618$, $p = 0.001$), symptom domain ($r = 0.653$, $p = 0.001$) and with mood domain ($r = 0.640$, $p = 0.001$). **Table (2).**

Table (2): Correlation between LYMQOL and EORTC QLQ-C30 questionnaire

LYMQOL- UL	EORTC QLQ-C30	
	r -value	p- value
Function	0.573	0.001
Appearance	0.647	0.001
Symptom	0.629	0.001
Mood	0.544	0.001
LYMQOL- LL		
Function	0.525	0.001
Appearance	0.618	0.001
Symptom	0.653	0.001
Mood	0.640	0.001

r- value: Pearson correlation coefficient p -value: Probability value

- **Reliability**

- Internal consistency of LYMQOL- UL:

Cronbach's alpha was carried out to measure the internal consistency of the LYMQOL. Cronbach's alpha for function domain of LYMQOL- LL and LYMQOL- LL were 0.789 and 0.732 respectively that means it had acceptable internal consistency.

Cronbach's alpha for appearance domain of LYMQOL- LL and LYMQOL- LL were 0.80 and 0.87 respectively that means it had good internal consistency.

Cronbach's alpha for symptom domain of LYMQOL- LL and LYMQOL- LL were 0.80 and 0.83 respectively that means it had good internal consistency.

Cronbach's alpha for mood domain of LYMQOL-LL and LYMQOL- LL were 0.870 and 0.805 respectively that means it had good internal consistency. **Table (3).**

Table (3): Cronbach's Alpha for LYMQOL- UL

	LYMQOL- UL		LYMQOL- LL	
	Cronbach's Alpha	**95% CI**	**Cronbach's Alpha**	**95% CI**
Function	0.789	0.672-0.869	0.732	0.556-0.846
Appearance	0.80	0.705- 0.872	0.87	0.805- 0.923
Symptom	0.80	0.970- 0.977	0.83	0.734- 0.899
Mood	0.870	0.707-0.871	0.805	0.698-0.883

CI: confidence interval

- Test-retest reliability of the Arabic version of LYMQOLL:

The Arabic version of LYMQOL-UL showed excellent test-retest reliability in function domain, ICC was 0.952; appearance domain, ICC was 0.958; symptom domain ICC was 0.952; mood domain, ICC was 0.982 and overall score, ICC was 0.921.

The Arabic version of LYMQOL-LL showed excellent test-retest reliability in function domain, ICC was 0.912; appearance domain, ICC was 0.982; symptom domain ICC was 0.977; mood domain, ICC was 0.918 and overall score, ICC was 0.927.

Table (4): Test-retest reliability of the Arabic version of LYMQOL- UL

LYMQOL- UL	**ICC**	**(95% CI)**		**P value**
		Lower bound	**Upper bound**	
Function	0.952	0.918	0.971	0.001
Appearance	0.958	0.929	0.975	0.001
Symptom	0.952	0.919	0.972	0.001
Mood	0.982	0.969	0.989	0.001
Overall	0.921	0.866	0.954	0.001
LYMQOL- LL	**ICC**	**(95% CI)**		**P value**
		Lower bound	**Upper bound**	
Function	0.912	0.837	0.952	0.001
Appearance	0.982	0.967	0.990	0.001
Symptom	0.977	0.957	0.987	0.001
Mood	0.918	0.848	0.955	0.001
Overall	0.927	0.865	0.960	0.001

CI: confidence interval, **p value:** Probability value

4. DISCUSSION

This study was conducted to translate, validate, and test psychometric properties of the Arabic version of **LYMQOLQ**. The LYMQOLQ might be considered a valid and reliable tool for the Arabic speaking population.

Recent years have seen a rapid increase in lymphedema research. lymphedema after Breast cancer has a major effect on quality of life (QoL) and is an important consideration while evaluating and monitoring various therapy modalities. Our study looked into the suitability and quality of patient-reported response measures, and it found that lymphedema-specific QoL measurements had strong psychometric qualities and provided higher reliability and validity for use in BCRL survival studies **Borman P. et al. [10].**

LYMQOLQ's Arabic translation's psychometric properties were translated, validated, and tested as part of our study. For those who speak Arabic, the LYMQOLQ may be regarded as a useful and trustworthy instrument.

Patients with lymphedema issues can self-report using the LYMQOLQ questionnaire. It creates a QOL instrument for lymphedema that is condition-specific and can be utilized in research as well as ordinary clinical practice for assessment and outcome measurement. It is crucial that the tool is simple to use and brief in order to avoid confusion.

Our study included 100 patients, ranging in age from 30 to 60, which was consistent with the conclusions reached by **Najjar et al. [11]** who found that older age was associated with an increased risk of breast cancer. Breast cancer may cause lymphedema, and **Armer, J. et al. [12]** found that lymphedema incidence was disproportionately higher in breast cancer survivors under the age of 60 than in those over the age of 60. People over the

age of 40 appear to be at risk of developing breast cancer, which may cause lymphedema.

In our study we have demonstrated the face validity, content validity, construct validity, internal consistency and test-retest reliability.

The face validity of Arabic-language version of LYMQOL questionnaire was tested by ten experts by using clarity index. The clarity index of Arabic version of LYMQOL- UL was tested and pre-final version was modified to make sure that is obvious and easy for the patient.

The clarity index of Arabic version LYMQOLQ - UL was 97.62% which is excellent. The clarity index of Arabic version of LYMQOL- LL was 97.27% which is excellent. That means that the items are clear and easy and not lengthy.

Which was consistent with the results of the Swedish version, **Madelene Wedin et al [13],** who found that more than 90% of the participants found the questionnaire satisfactory in terms of ease of answering; the questions were straightforward, there were enough of them, and none were superfluous. However, in the leg version, 28% discovered that the LYMQOL form had not addressed significant lymphedema issues that might have an influence on QoL. A synthesis of topics is created from the comments on the open questions.

Turkish version, **Borman, P. et al [14].** The LYMQOL was initially developed in the UK, and it is a fairly brief instrument used to measure patient-reported outcomes that assess patients' quality of life (QoL) who has lymphedema. For the transcultural validation of LYMQOL, only Dutch patients were originally published; nonetheless, this data was used in many studies.

Also, The Dutch LYMQOL is a viable, reliable, and valid tool in the assessment of HRQOL in patients with lower limb lymphedema, according to research by **van de Pas CB et al. [15].** It is simple to use and rather brief.

Also, **English version Vaughan Keeley et al. [16]** who conducted that the Patients found LYMQOLQ easy to complete, clear and not too long.

Content validity examines the extent to which the concepts of interest are comprehensively represented by the items in the questionnaire **Shi J, et al. [17].** The CVI (S-CVI) was 100% for all items except 2 items (5, 9) (90%) for UL, CVI (S-CVI) was 100% for all items except 2 items 8(80), 17(90) for LL. The mean specialist proportion of relevance of Arabic version of LYMQOL- UL was 99.05%, eight specialist s had 100% proportion of relevance. Two specialists had above 90% proportion of relevance. The mean specialist proportion of relevance of Arabic version of LYMQOL- LL was 98.64%, seven specialists had 100% proportion of relevance. Three specialist s had above 90% proportion of relevance. So, the content validity of the Arabic version of LYMQOLQ was excellent according to specialist s' views.

Which in comparable with the finding of **Italian version Samela, T et al, [18]** who conducted that the Items were clear to all participants, which improved content validity. For subscale scores, the alpha coefficients were high.

In this study, evidence for construct validity was obtained by determining the relationship between the LYMQOLQ and the EORTC QLQ-C30. The EORTC QLQ-C30has the same components of LYMQOLQ. The EORTC QLQ-C30 is valid and reliable so it can be used to assess the same domains of LYMQOLQ and prove the construct validity of LYMQOLQ.

The correlations between function domain of LYMQOL-UL and EORTC QLQ-C30 were moderate positive significant correlation ($r = 0.573$, $p = 0.001$), between appearance domain of LYMQOL-UL and EORTC QLQ-C30 were moderate positive significant correlation ($r = 0.647$, $p = 0.001$),between symptom domain of LYMQOL-UL and EORTC QLQ-C30 were moderate positive significant correlation ($r = 0.629$, $p = 0.001$),between mood domain of LYMQOL-UL and EORTC QLQ-C30 were moderate positive significant correlation ($r = 0.544$, $p = 0.001$).

The correlations between function domain of LYMQOL-LL and EORTC QLQ-C30 were moderate positive significant correlation ($r = 0.525$, $p = 0.001$), between appearance domain of LYMQOL-LL and EORTC QLQ-C30 were moderate positive significant correlation ($r = 0.618$, $p = 0.001$), between symptom domain of LYMQOL-LL and EORTC QLQ-C30 were moderate positive significant correlation ($r = 0.653$, $p = 0.001$), between mood domain of LYMQOL-LL and EORTC QLQ-C30 were moderate positive significant correlation ($r = 0.640$, $p = 0.001$).

Keeley et al. [16] showed moderate correlation and interclass correlation coefficients in both limb variants using the EORTC QLQ-C30 in the construct validation. In both Turkish investigations examining the arm version, similar comparisons and findings were given. The LYMQOL is composed of questions derived from the EORTC QLQ-C30, so there may be a problem with utilizing it as a reference. For obvious reasons, a positive and meaningful connection would likely be made possible by such a structure. However, the Turkish research additionally employed additional QoL tools to examine the construct validity and discovered decent to excellent correlations with the LYMQOL in these.

Contrary to the English-language study by **Vaughan Keeley et al. [16],** which found that there appeared to be no meaningful link between initial limb volume and quality of life, the construct validity was not fully established. It's interesting to note that some research have found no connection

between better quality of life and a decrease in limb volume following treatment.

Moreover, **Crooks,Se, et al. [19]** did research that validated the validity of Face, Content, Criteria, and Interval. Although there was no relationship between initial limb volume and LYMQOL score (construct validity), this result is consistent with that of other studies. The low response rates after three and six months following the initial assessment hindered the validation of responsiveness.

The Arabic LYMQOL questionnaire's items all had high correlations in our analysis, showing good internal consistency.

We noticed that the Arabic LYMQOL subscales all exhibited strong internal consistency and test-retest reliability. For the entire questionnaire and subclass domains, the Arabic translation was accurate and internally consistent. The cronbach alpha for the function domain (UL) was 0.789, the LL was 0.732, the symptom domain (UL) was 0.80, the LL was 0.83, the mood domain (UL) was 0.870, and the LL was 0.805.

For patients with BCRL, the reliability of the Arabic LYMQOL varied from good to excellent. We discovered Cronbach alpha coefficients higher than the suggested level of 0.70, which is similar to van de Pas et al.'s testing of the validity of Dutch LYMQOL. [15]

Our findings were supportive to those of the initial validation research conducted on BCRL patients in the UK. The Cronbach alpha values of the LYMQOL-Arm, leg subscales were good in the reliability analysis of the current study and were consistent with earlier validation studies.

Which in comparable with the finding of Italian version **Samela, et al. [18]** who conducted that The Italian ULL-27's overall score had good internal consistency (0.90).

The results of **MadeleneWedin et al [13]**.'s analysis of the internal consistency of the LYMQOL for the arm version showed Cronbach's alpha values between 0.79 and 0.93 (categorised as acceptable to excellent), and for the leg version, the values were 0.87 to 0.94. This is comparable to the findings of the Swedish version (categorized as good to excellent). And also, comparable with finding of **Turkish version Borman P et al. [10]** for the entire questionnaire and subclass domains, the Turkish translation was accurate and internally consistent. Cronbach's alpha is 0.90. For patients with BCRL, the Turkish LYMQOL's reliability ranged from good to excellent. And **Dutch version van de Pas et al. [15]** who conducted that the item responses of the LYMQOL during the primary assessment showed accepted internal consistency (Cronbach's alpha¼0.89). The LYMQOL was administered to the 60 participants twice, two weeks apart. (mean18 days).

Which is in comparable with finding of **Vaughan Keeley et al. [16]** who conducted that Cronbach's alpha was >0.8 for all domains in both the arm and leg versions of LYMQOL, thus confirming internal consistency.

Test-Retest reliability of Arabic version of LYMQOLQ was (UL) 0.952 ,(LL) 0.912 for function and (UL) 0.958,(LL) 0.982 for appearance, was (UL) 0.952,(LL) 0.977 for symptoms, was (UL) 0.982 ,(LL) 0.918 for mood, overall score (UL) 0.921,(LL) 0.927, (P=0.001)for UL,LL suggesting that test-retest findings are strongly correlated.

The correlation analyses between the test-retests demonstrated a high degree of consensus, with co around 0.90 (ICC) in both versions, which is consistent with the Swedish version, **Madelene Wedin et al. [13].** Internal consistency in the arm variant ranged from good to outstanding, and in the leg version it ranged from good to exceptional. These results are consistent with the findings of prior research that compared the arm and leg versions relation coefficients.

Also, the test-retest correlation coefficient, as evaluated by ICC, demonstrated the stability of the LYMQOL-Arm in the Turkish sample, which is equivalent to the results of the **Turkish version Borman P et al. [10].** Our findings were remarkably comparable to those of **van de Pas et al. [15],** who discovered excellent test-retest reliability and good internal consistency. For patients with BCRL, the Turkish LYMQOL's reliability ranged from good to outstanding. We discovered, similarly to van de Pas et al who examined the reliability of the Dutch LYMQOL.

Cronbach's alpha values that are more than the recommended value of 0.70. Our findings were comparable to those of the initial validation research conducted on BCRL patients in the UK. The Cronbach alpha values of all LYMQOL-Arm subscales in the reliability analysis of the current study were satisfactory and agreed with results from earlier validation studies.

Also, **Dutch version van de Pas et al. [15]** who conducted that Except for the overall QOL, where the test-retest reliability was good (rho>0.7), the LYMQOL's test-retest reliability was excellent (rho>0.8) for all sections.

5. CONCLUSION

The translated Arabic version of lymphedema quality of life questionnaire is a reliable, valid and feasible tool. Factor analysis demonstrated that it had three factors; the construct validity of the LYMQOLQ has very moderate level of correlation with EORTC QLQ-C30 questionnaire Arabic version. Therefore, it might be considered in the assessment of quality of life for lymphedema patients problems for Arabic-speaking people.

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