ORIGINAL ARTICLE

Psychometric Evaluation of the Tagalog Version of Psoriatic Arthritis Quality of Life Questionnaire

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ABSTRACT

Background. Psoriatic arthritis (PsA) is a potentially destructive inflammatory arthritis among individuals with psoriasis which may lead to disability and poor quality of life. The Psoriatic Arthritis Quality of Life (PsAQoL) questionnaire is an instrument developed to assess the true impact of PsA on the overall lives of patients. There are 32 language versions, 12 in developing countries. The Tagalog version has been translated and tested for face and content validity but has not been fully validated psychometrically.

Objective. This study aimed to evaluate the psychometric properties of the Tagalog version of the PsAQoL to assess its reliability and consistency.

Methods. This is a prospective validation study involving 47 patients with PsA from June to August 2023. The psychometric properties tested were internal consistency (Cronbach's alpha coefficients), test-retest reliability, convergent validity (Spearman's rank correlation), and known group validity (Mann-Whitney U Test or Kruskal-Wallis One-Way Analysis of Variance).

Results. The PsAQoL on both week 0 and week 2 had Cronbach's alpha coefficients of 0.926 indicating high internal consistency. Test-retest reliability was 0.929, which demonstrates excellent reliability and low level of random measurement error. The PsAQoL scores highly correlated with the Health Assessment Questionnaire-Disability Index (r=0.754, p<0.001), which demonstrates convergent validity. However, there was no significant correlation with the pain scale (r=0.225, p=0.128). No significant differences in PsAQoL scores were found between participants for demographic factors. However, there was a significant difference in self-reported health scores (p=0.015). This demonstrates the ability of the Tagalog PsAQoL to detect meaningful differences.

Conclusion. The Tagalog version of the PsAQoL demonstrates excellent psychometric properties and is recommended for monitoring of Tagalog-speaking patients with psoriatic arthritis in healthcare settings.

Keywords: psoriatic arthritis, Psoriatic Arthritis Quality of Life questionnaire, Tagalog, psychometric evaluation

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INTRODUCTION

Psoriatic arthritis (PsA) is an inflammatory type of arthritis occurring in individuals with psoriasis.[1] The symptoms of PsA are diverse, as the disease affects both the joints and skin, which results in a unique presentation for each affected individual. This condition has been shown to have a detrimental effect on the quality of life of patients.[2] It is therefore important to obtain the patient's perspective on the benefits of therapeutic modalities and whether these translate to well-being and improved quality of life.

The complexity of the disease presents challenges in accurately measuring treatment response, disease activity, and patient functioning. Existing outcome measures have several limitations. They often fail to consider the patient's perspective when determining the acceptability and impact of various interventions. Secondly, they do not holistically assess all domains of the disease. Some existing tools focus on joint impairment and physical disability components of the disease,[3,4] while others focus solely on the skin. The Dermatology Life Quality Index (DLQI) is a commonly used non-specific quality of life instrument for skin diseases. It has a Tagalog version already in use for assessment of patients with psoriasis.[5,8]

The Psoriatic Arthritis Quality of Life (PsAQoL) questionnaire was developed to holistically assess the impact of PsA on the lives of patients.[3] It is a patient-focused outcome measure that was developed using the needs-based model, a clear and conceptual model of quality of life.[4] The model states that quality of life is determined by the ability to meet one's needs. This is different from existing outcome measures which typically focus on symptoms and functioning. The PsAQoL is designed to measure the extent to which the disease prevents a patient from meeting their needs and therefore assesses to what degree the disease is impacting quality of life. The statements in the questionnaire were derived directly from qualitative interviews with PsA patients in the UK. The items therefore represent the patient's experiences of the condition in their own words as direct quotes were used. Additionally, quality of life in the needs-based model is assumed to be a unidimensional construct.[3] Consequently, the PsAQoL is useful in identifying beneficial interventions that improve quality of life. The PsAQoL is easy for patients to answer, and can be completed in approximately 5 minutes, making it useful in the clinical setting.[3] Refer to *gr@galen-research.com* to secure the license to use the PsAQoL questionnaire English version.

There are 32 language versions of the PsAQoL and 12 of them (37.5%) are used in developing countries. The main limitation identified in the previous adaptations was the small sample size. There are three stages when adapting the PsAQoL into another language: (1) translation into the target language, (2) cognitive debriefing interviews (CDIs) to determine face and content validity, and (3) psychometric evaluation.[9-13]

In the first stage, the original English version of the PsAQoL was translated into Tagalog using the dual-panel methodology. This method has been shown to produce translations that are more acceptable to patients than the standard forward-backward methodology. Other QoL questionnaires such as the University of Washington-quality of life questionnaire version 4 used the forward-backward method of translating the measure into Tagalog version. This method of translation has four steps: (1) forward translation to the Tagalog version by two bilingual translators, (2) backward translation to English by two bilingual translators whose native tongue is English, (3) expert committee review to discuss both versions of the questionnaire, and (4) pilot testing in a small sample of respondents.[14,15]

PsAQoL questionnaire was translated into Tagalog using the dual-panel methodology. In this method, two panels (bilingual panel and lay panel) were formed in the Philippines to conduct the translation**.** The bilingual panel consisted of a group of individuals from Manila, Philippines whose first language was Tagalog and were fluent in English. The purpose of this panel was to suggest translations for the instructions, items, and response categories. The bilingual panel found the items and instructions clear and simple to translate. The lay panel consisted of monolingual Tagalog-speaking individuals with an average to lower-than-average educational level, considered more typical of the patient population to be tested. The purpose of this panel was to ensure that the final wording of the items was at an appropriate level for typical patients. Participants were presented with the translations made by the bilingual panel and asked to comment on them in terms of comprehension and acceptability. In particular, they were asked to decide whether the phrasing and choice of words were acceptable or whether these should be changed to make the items more 'natural', while maintaining the original meaning. They were also asked to choose between alternative translations that the bilingual panel had produced. The lay panel agreed with the translations provided by the bilingual panel except for four items where the panel decided to create new versions that were considered more acceptable without changing their meaning.[16]

The second stage was testing for face and content validity of the translated questionnaire through CDIs. Patients completed the questionnaires in the presence of an interviewer who took note of any difficulties or hesitations over items. Patients were asked whether they considered the items relevant, applicable, and comprehensible and whether any important aspects of their experience of PsA had been excluded.[16,17] The patients found the questionnaire clear and easy to understand. There was no specific item that appeared to be poorly phrased or difficult to interpret. Majority of the respondents felt that the items accurately represented their own situation and that they could easily relate to the ideas conveyed. Further, the significant aspects of their experience of psoriatic arthritis were included in the questionnaire. There were no items that were regarded as unsuitable, offensive, or deemed unacceptable by the participants. Everything was considered appropriate and in line with the expected standards.

The third stage of validation, psychometric evaluation, is the scope of the current study. This study aims to evaluate the psychometric properties of the Tagalog version of the PsAQoL prior to its use in the Arthritis Clinic of the UP-PGH. The validated Tagalog version of the PsAQoL will be valuable in the assessment and care of Tagalog-speaking patients with PsA. The license for use of the Tagalog PsAQoL questionnaire can be secured through *gr@galen-research.com.*

MATERIALS AND METHODS

Study Design, Setting and Population

A prospective validation study was conducted among patients with PsA seen at the outpatient Arthritis Clinic of the Philippine General Hospital (PGH) from June to August 2023. All patients who fulfilled the following inclusion criteria were recruited: 1) 19 years old and above, 2) score of ≥3 in the Classification for Psoriatic Arthritis (CASPAR) Criteria, and 3) provided informed consent. The study had a total of 47 respondents which satisfied the minimum number of participants (n=40) needed to reach a significant result as what was also shown in the previous validations studies. However, a bigger sample size may enable generalizing the study findings.

Data Collection

The following demographic information was obtained (gender, age, marital status, employment status, education level, and socioeconomic status). The clinical data collected was self-reported general health, self-reported severity of disease, disease duration, presence of disease flare, and the type of flare.

The Tagalog version of the PsAQoL questionnaire was completed twice, two weeks apart in the same setting (clinic or at home). Patients who completed the first administration of the questionnaire in the clinic returned after two weeks to complete the second. Those who opted to answer the questionnaire at home were instructed to complete the second copy two weeks after the first and both copies were returned to the investigator. An ID number was allocated to all respondents to ensure anonymity while enabling the investigator to identify the two questionnaires filled out by the same patient. The principal investigator collected and checked all questionnaires for completeness of entries prior to encoding in the Excel data template.

Data Analysis

Descriptive Statistics

Inspections of the distributions, descriptive statistics (mean, median, proportions), and assessment of floor and ceiling effects (% of patients scoring the minimum and maximum possible scores, respectively) were conducted. PsAQoL scores were compared by age group (above median vs below median), gender, marital status, employment, and education level.

Internal Consistency

Internal consistency of the PsAQoL was assessed using item-total correlation (ITC) and Cronbach's alpha coefficient. The ITC is a measure of how well each individual item on a scale or test correlates with the total score of that scale, excluding the item itself. Cronbach's alpha, on the other hand, is a statistic that assesses the internal consistency of a set of items by examining the average inter-item correlation. Item total correlations (ITCs) should be between 0.2 and 0.8 and a Cronbach's alpha coefficient of >0.70 is considered acceptable. A lower level of alpha (<0.70) indicates that items don't work satisfactorily well together to form a scale.[18]

Test-retest Reliability

Test-retest reliability is an estimate of the reproducibility of a questionnaire over time. Spearman's rank correlation was used to compare the quality of life scores obtained at the two administrations. A minimum coefficient of equal to or more than 0.85 is required to indicate adequate reproducibility and low random measurement error.[19]

Convergent Validity

Convergent validity is assessed by calculating the degree of association between scores on the prospective questionnaire and comparator questionnaire measuring a similar construct. The Health Assessment Questionnaire (HAQ) was used as the comparator for this investigation. Spearman's rank correlation was used to compare PsAQoL scores to HAQ domain scores. The HAQ[20-25] is a generic instrument composed of 9 items and 2 domains (Disability Index and Pain Scale) which measure functional limitations. The Disability domain uses a four-point scale (0- 3) and the Pain Scale uses the Visual Analog Scale (VAS), which is scored from 0 to 100 (convertible to a 0-3 scale). Higher scores indicate greater dysfunction and more severe pain. Although the HAQ doesn't measure the impact of skin lesions in PsA, it was chosen as a comparator questionnaire since it has been validated in Tagalog, and this version has been used in previous studies.[4,12,26]

Known Group Validity

Known group validity was determined using non-parametric tests for independent samples (Mann-Whitney U Test for two groups or Kruskal-Wallis One-Way Analysis of Variance for three or more groups). This is to assess whether the questionnaire can accurately distinguish between groups of people that differ according to a known disease factor. In this study, known factors were patient-reported general health, self-reported severity of symptoms, number of years with PsA, experience of disease flare, and type of flare.

Ethical Consideration

The University of the Philippines Manila Research Ethics Board gave the ethical approval for this study.

RESULTS

The study population described in Table 1 consisted of 47 patients, with a near-equal split of female and male participants. The average age was 45 and all participants reported low socioeconomic status. The majority had lived with PsA for 0-10 years and most were currently experiencing a flare up. Most patients reported their disease severity as 'mild' or 'moderate' and the majority identified their general health as 'good.'

Table 2 shows the descriptive statistics for the questionnaires at both time points. The range of scores on the PsAQoL scale was from 0 to 20. The results showed some floor effect and no ceiling effect. It suggests that instrument questions were too difficult for 20% of the patients. However, for the vast majority of patients (80%), the questionnaire remains well calibrated and covers good range of severity levels.

Internal Consistency, Test-retest Reliability and Convergent Validity

The ITCs were between 0.26 and 0.76 indicating good correlation between the items in the questionnaire (see Appendix). The Cronbach's alpha coefficient of the PsAQoL at both time points was 0.926, showing excellent internal consistency. Test-retest reliability was also excellent (0.929). The PsAQoL scale and the Disability Index strongly correlated, Rho Spearman=0.754 n=47 $p < 0.001$. However, the pain scale did not significantly correlate with the PsAQoL scale, Rho Spearman=0.225 n=47, $p = 0.128$.

Table 3 shows PsAQoL scores for patients grouped by gender, age, marital status, level of education, and employment status. Significant differences in PsAQoL scores were not found between participants in any of the demographic factors, suggesting disease factors were more important.

The results of the known group analyses are shown in Table 4. The categories for self-reported general health were grouped into "fair & poor" and "good & very good". Self-reported disease severity was grouped into "mild" and "moderate, severe, and very severe." Disease severity categories were grouped due to low frequencies per category. The PsAQoL scores were significantly higher among those with fair and poor self-reported general health. There was no significant difference in quality of life scores for other known group factors.

DISCUSSION

The Tagalog version of the PsAQoL showed excellent internal consistency and test-retest reliability, similar to the Brazilian, Portuguese, and Chinese adaptations of the PsAQoL.[10,12,18] A strong correlation was found between the PsAQoL score and the disability domain of the HAQ,

Table 1. Demographic and Clinical Information of Patients with PsA (n=47)

	n (%)
Gender	
Male	25 (53.2)
Female	22 (46.8)
Age (years)	
Median (IQR)	45 (38-50)
Mean (SD)	43.4 (9.7)
Range	19-61
Marital Status	
Married or living as married	34 (72.3)
Divorced or separated	2 (4.3)
Single	11 (23.4)
Employment Status	
Full-time	5 (10.6)
Part-time	13 (27.7)
Homemaker	9 (19.1)
Student	1 (2.1)
Unemployed	17 (36.2)
Other	2 (4.3)
Education Level	
Secondary	25 (53.2)
College	11 (23.4)
Vocational	11 (23.4)
Socioeconomic status	
Upper class	0
Middle class	0
Lower class	47 (100)
Poor	0
Self-reported general health	
Poor	9 (19.1)
Fair	9 (19.1)
Good	25 (53.2)
Very Good	4 (8.5)
Self-reported severity of disease	
Mild	17 (36.2)
Moderate	23 (48.9)
Quite Severe	5 (10.6)
Very Severe	2 (4.3)
Years with PsA	
0 to 5 years	19 (40.4)
6 to 10 years	20 (42.6)
More than 10 years	8 (17.0)
Flare-up	
No	5 (10.6)
Yes	42 (89.4)
Type of flare n=42	
Arthritis flare	1 (2.4)
Psoriasis flare	5 (11.9)
Both	36 (85.7)

IQR: Interquartile range; SD: Standard deviation

Table 2. Questionnaire Descriptive Statistics (n=47)

	n	Median (IQR)	Mean (SD)	Min-Max	Scoring minimum (%)	Scoring maximum (%)
Time 1						
PsAQoL	47	4.0 (1.0 – 12.0)	6.2 (5.9)	0.0 – 18.0	11 (23.4)	1 (2.1)
HAQ						
Disability Index	47	0.25 (0.0 – 0.88)	0.50 (0.64)	0.0 – 2.75	17 (36.2)	1 (2.1)
Pain Scale	47	1.20 (0.40– 1.40)	1.06 (0.59)	0.0 – 2.60	1 (2.1)	1 (2.1)
Time 2						
PsAQoL	47	2.0 (1.0 – 11.0)	5.8 (5.8)	0.0 – 17.0	10 (21.3)	2 (4.3)

PsAQoL score (0-20) low score indicates good quality of life and high score indicates poor quality of life.

Disability Index (0-3) higher score indicates greater disability, lower score indicates lesser disability or dysfunction.

Pain score (0-3), higher score indicates more severe pain.

Table 3. Median PsAQoL Scores by Demographic Factors

	PsAQoL (n)	Median
Gender		
Male	25	3.0
Female	22	8.0
p value: 0.43		
Age (median = 45)		
Below the median	25	2.0
Above the median	22	4.0
p value: 0.96		
Marital Status		
Married/Living as married	34	2.0
Divorced/Separated/Single	13	10.0
p value: 0.10		
Level of Education		
Secondary	25	6.0
College	11	2.0
Vocational	11	0.0
p value: 0.21		
Employment		
Full time	5	0.0
Part time	13	2.0
Homemaker	9	13.0
Student	1	10.0
Unemployed	17	6.0
Other	2	6.5
p value: 0.65		

p-values presented for results of statistical tests: Mann-Whitney U Test for two groups or Kruskal-Wallis One-Way Analysis of Variance for three or more groups

Table 4. Median Scores by Known Group Factors

	PsAQoL (n)	Median
Self-reported general health		
Poor & fair	18	10.0
Good & very Good	29	2.0
p value: 0.02		
Self-reported severity of disease		
Mild	17	3.0
Moderate/severe/very severe	30	6.5
p value: 0.26		
Flare up		
No	5	12.0
Yes	42	3.5
p value: 0.40		
Type of flare		
Arthritis flare or Psoriasis flare	6	2.5
Both	36	3.5
p value: 0.17		
Years with Psoriatic Arthritis (median = 6)		
Below the median	28	4.0
Above the median	19	3.0
p value: 0.93		

p-values presented for results of Mann-Whitney U Test

demonstrating the questionnaire has reasonable convergent validity. However, the HAQ pain scale did not correlate with the PsAQoL. The absence of correlation may be due to the HAQ pain scale measuring only one aspect of PsA, and varying pain tolerance among the participants affected by inherent patient characteristics, comorbidities, and socio-economic factors.[9] Validation of the Dutch and Chinese adaptations also showed a moderate correlation with the comparator measure; however, those studies did not include the pain component of the HAQ.[9,12,26]

Results demonstrated evidence of known group validity, as the PsAQoL reliably differentiated between patients' self-reported general health.[9-12] Additionally, PsAQoL scores did not significantly differ between patients for any demographic factors, suggesting that disease factors were more meaningful. This was consistent with the psychometric evaluation of the original UK English version and additional language adaptations.[3,27] However, no significant difference in PsAQoL scores for disease severity was found, which was inconsistent with other validation studies.[9-13]

In contrast to other studies wherein the disease severity was grouped to "mild to moderate" versus "quite severe to very severe," the disease severity in this study was grouped differently, as "mild" versus "moderate to very severe." This was due to the small number of participants reporting 'quite severe' or 'very severe' disease status. The new grouping and small sample size may have been insufficient to demonstrate the ability of the PsAQoL to distinguish between patients' self-reported disease severity.

One unexpected finding regards the relationship between PsAQoL scores and the presence of flare; results indicated that those who were not in flare had higher and relatively worse quality of life. This could be explained by the small number of patients in the sample who were not experiencing a flare (only 5 of 47). Possible reason for these inconsistencies with other validation studies includes the presence of comorbidities that may impact the quality of life of those not in flare.[26] It is a limitation of this study that data regarding comorbidities was not collected, and therefore this observation could not be further explored. Another limitation is that since the setting is in a tertiary government institution, all the 47 respondents belong to the lower socio-economic class. Hence, it does not represent the other socio-economic classes.

The validated Tagalog version is very helpful in assessment of response to pharmacologic and non-pharmacologic management of PsA in the clinical settings. This can also be incorporated in clinical trials that measure the outcomes of patients with psoriatic arthritis.

CONCLUSION

The Tagalog version of the PsAQoL demonstrates excellent psychometric properties and is recommended for use in clinical health care settings with Tagalog-speaking patients with PsA. However, the limitations identified in the study are: the small sample size, the absence of data regarding comorbidities, and the respondents belong to lower socio-economic class only. Future research studies that address these limitations will help give more concrete evidence of its excellent psychometric properties.

Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

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APPENDICES

Table 1. Scale Statistics

Mean	Variance	Standard Deviation	Number of Items
6.30	34.572	5.880	20

Table 2. Item difficulty estimates

Item #	Item difficulty estimate
Item 1	0.48
Item 2	0.07
Item 3	0.28
Item 4	0.22
Item 5	0.33
Item 6	0.30
Item 7	0.30
Item 8	0.39
Item 9	0.24
Item 10	0.59
Item 11	0.37
Item 12	0.24
Item 13	0.46
Item 14	0.24
Item 15	0.39
Item 16	0.33
Item 17	0.33
Item 18	0.24
Item 19	0.35
Item 20	0.17
Minimum	0.07
Maximum	0.59
Average	0.32

Table 3. Item-Total Statistics

	Item-Total Correlation	Cronbach's Alpha if Item Deleted
Item 1	0.363	0.928
Item 2	0.265	0.928
Item 3	0.664	0.921
Item 4	0.628	0.922
Item 5	0.769	0.919
Item 6	0.670	0.921
Item 7	0.652	0.921
Item 8	0.758	0.919
Item 9	0.533	0.924
Item 10	0.735	0.919
Item 11	0.666	0.921
Item 12	0.552	0.923
Item 13	0.546	0.924
Item 14	0.628	0.922
Item 15	0.544	0.924
Item 16	0.573	0.923
Item 17	0.670	0.921
Item 18	0.590	0.923
Item 19	0.778	0.919
Item 20	0.261	0.928