

## Determining the Validity and Reliability of Persian Version of the Psoriatic Arthritis Screening and Evaluation Questionnaire

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### Abstract

**Background:** The psoriatic arthritis screening and evaluation (PASE) questionnaire was designed in English language with no particular action for the Persian language population. The current study aimed to determine the validity and reliability of this questionnaire for screening the patients with psoriatic arthritis (PSA).

**Patients and methods:** The PASE questionnaire was administered to 100 patients with psoriasis. After determining the validity of questionnaire, the receiver operation characteristic (Roc) curve was used to optimize the sensitivity and specificity of the questionnaire to diagnose the patients. The reliability of the PASE questionnaire was determined by a group of patients with PSA; data were analysed using SPSS.

**Results:** Out of 100 participants, 36 had PSA. The mean  $\pm$  standard deviation (SD) score of the questionnaire in the groups with PSA and without PSA were  $50.19 \pm 12.97$  and  $38.75 \pm 12.53$ , respectively and the difference between the groups was significant ( $P < 0.0001$ ); the total score of the questionnaire ranged 15-75. In this questionnaire, scores higher than 42 are considered as patients with PSA, with 73.81% Sensitivity and 74.13% specificity. Correlation between the tests was significant using test-retest reliability ( $P < 0.05$ ;  $r \geq 0.8$ ).

**Conclusion:** The results showed that the questionnaire has a relatively high sensitivity and specificity for distinguishing PSA patients. Furthermore the questionnaire had acceptable reliability; however, Persian version is not an adequate method for diagnosis patients with psoriatic arthritis in the absence of clinical diagnosis rheumatologist. In other words the Persian version of the PASE questionnaire is only an initial screening test for PSA diagnosis and cannot substitute for clinical examinations by a rheumatologist.

**Keywords:** Psoriatic arthritis; PASE questionnaire; Validity; Reliability

### Introduction

Psoriatic arthritis (PSA) is an inflammatory arthritis associated with irreversible joint changes in a group of patients with psoriasis. Every joint may be involved to this disease, but mainly fingers, lumbar spine and cervical joints are affected. Pain, swelling, limited movement, feeling pain when touching objects and warmth of involved joints, flaky skin, and also pitted, rigid and yellow nails, tiredness and fever are among other symptoms of this disease [1,2]. About 6% - 42% of the patients with psoriasis may also show incidence of PSA [3]. The prevalence of PSA ranges from 0.04% to 0.74%; this rate is various in different countries [4,5]. The reason for PSA is unknown. It is believed that genetic (hereditary factors), immune system abnormalities and environmental factors play role in the incidence of PSA. Researchers believe that a certain genus bacteria, *Streptococcus* spp. may play role in the incidence of this disease and stimulation of immune system; stimulation of immune system may cause PSA in people who have genetic predisposition to this disease [6,7]. To prevent irreversible and long-term joint damages, early diagnosis of PSA is of great importance [8]. Since dermatologists usually administrate psoriatic cases, they are

in the ideal status for screening people with PSA who are in the early stages of disease [5]. In recent years, researchers have developed various self-administered questionnaires to diagnose PSA in patients with psoriasis [9]. The psoriatic arthritis screening and evaluation (PASE) questionnaire is used to diagnose inflammatory joint diseases in patients with psoriasis [10].

This questionnaire was developed to help dermatologists to diagnose patients with PSA for the timely referral to rheumatologist [11]. No reliable screening tool is available in Persian language for screening patients with PSA; hence, the current study aimed to validate PASE to help dermatologists to diagnose patient in the early stages of PSA. The current study also aimed to translate PASE questionnaire to Persian and determine its reliability and validity regarding the diagnosis of PSA in patients with psoriasis.

### Patients and Methods

The current cross-sectional study was conducted on 100 patients referred to the dermatology clinic of Qazvin, Iran, in 2014. To select subjects, the non-probability sampling method was used. All patients with psoriasis symptoms were enrolled into the study. The inclusion criterion was the age range of 18-85 years old, regardless of joint

involvement. The exclusion criteria were Patients' dissatisfaction, lower education, rheumatoid arthritis, having diseases such as collagen vascular and gout. Data gathering tool was the PASE questionnaire for screening PSA. At first, the questionnaire was translated into Persian, then it was translated by a bilingual person into English and again retranslated into Persian and this final version was used.

The 15-item PASE questionnaire was designed in two parts; the first part includes the questions (seven items) regarding patients' symptoms and the second part includes questions on patient's functions (eight items). To complete the questionnaire, a 5-option Likert scale, from 1 (strongly disagree) to 5 (strongly agree), is used; in a way that people with higher degrees of PSA get higher scores. Total score range from 15 to 75. The maximum scores of the first and second part of the questionnaire are 35 (from seven questions) and 40 (from eight questions), respectively [11]. To diagnose psoriasis based on the clinical evaluations, a golden standard was used by a dermatologist and clinical diagnosis of PSA was done based on Moll-Write criteria by a rheumatologist [12]. It is necessary to indicate that rheumatologists and dermatologists were unaware of results of the pilot study. Reliability of the questionnaire was assessed twice (in two non-consecutive weeks) by the test-retest on 20 patients with psoriasis. Results of the questionnaire were compared with those of clinical examinations. Pearson correlation coefficient was used to determine the reliability of the questionnaire. To choose the cut-off point, the receiver operation characteristic (Roc) curve was used. Data were analysed using statistical tests and SPSS software.

## Results

Totally, 100 patients with skin psoriasis were recruited, out of which 48 were male and 52 female. The mean age of the subjects was  $36.16 \pm 14.37$  years; ranged from 18 to 75. It is noteworthy that 12 subjects had family history of psoriasis and 26 (26%) subjects showed nail complication. The scores of Persian version of the questionnaire were analysed for 100 subjects and accordingly 42 subjects (42%) were diagnosed with PSA. The total score of the Persian version of PASE ranged from 15 to 75. There was a significant difference regarding the mean  $\pm$  SD of total, symptoms and functions scores between the groups with PSA and without PSA ( $P < 0.05$ ) (Table 1).

Scores	Psoriatic arthritis	Psoriasis	P-value
Symptoms scores M (SD)	21.90(6.41)	16.34(6.11)	<0.0001
Functions score M (SD)	28.28 (8.57)	22.41 (8.07)	0.024
Total score M (SD)	50.19 (12.97)	38.75 (12.53)	<0.0001

**Table 1:** Results of independent samples t-test for Questionnaire Scores.

The Sensitivity for the items of the questionnaire ranged from 36% (item No. 10 from the functions subscale) to 79% (item No. 2 from symptoms subscale) and the specificity ranged from 43% (item No. 2 from symptoms subscale) to 86% (item No. 14 from functions subscale) (Table 2).

PASE Questionnaire	Sensitivity	Specificity
1-I feel tired most of the day	52%	47%
2-I have pain in joints	79%	43%
3-I have pain on my back	62%	53%
4-I have inflammatory joints	76%	57%
5-I have warm joints	76%	57%
6-My fingers and toes are sometimes swollen and they takes sausage-like shape	69%	74%
7-I noticed that my pain goes from a joint to the other; for example, first, I feel pain in my knee and, then, it goes to my wrist	64%	74%
8-I feel that the pain in my joints affects my job functions.	76%	53%
9-I feel that the pain in my joints affects my ability to take care of myself ; for example, when getting dressed or brushing my hair	60%	74%
10-I have problem in wearing my ring or watch	36%	74%
11-I have problem in getting in or out of the car	45%	76%
12-I am not able to be as active as I wish	76%	79%
13-I have stiff joints for more than 2 hours in the morning	76%	83%
14-The mornings are the worst time of the day for me	38%	86%
15-No matter which time of the day, It always takes me several minutes obtain my ability to move well	43%	43%

**Table 2:** Sensitivity and Specificity of Items of PASE Questionnaire Sensitivity Specificity.

Figure 1 shows Roc curve in which the total score of the PASE questionnaire differentiated the patients with PSA from those without

PSA from the score 42, with 73.8% Sensitivity and 74.13% specificity. The area under the curve was 0.719 (confidence intervals (CI): 95%,

0.616-0.82) for the total score, and (0.624-0.833) and (0.573-0.789) for the symptoms and functions scores, respectively. The diagnostic accuracy of the employed method was 0.00369% in the current study.

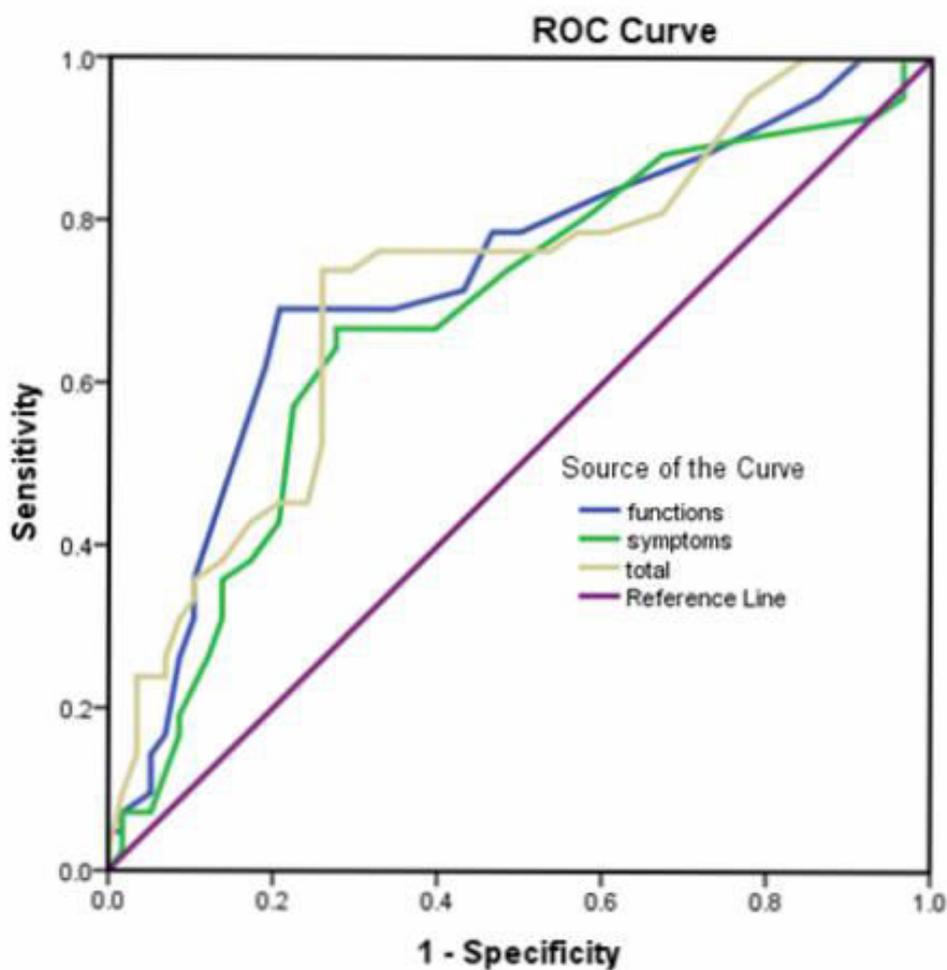


Figure 1: A ROC curves for PASE total, symptom, and function scores of all participants.

The PASE questionnaire could not diagnose 16 out of 42 patients with PSA in the current study because their scores (cut-off point) were lower than 42. In addition, 15 out of 58 patients without PSA were misdiagnosed as positive, according to the results of the questionnaire.

The reliability of the questionnaire was measured within two weeks on 20 patients (Table 3). Results of the Pearson test showed a significant correlation between these two tests for all items of the questionnaire ( $r \geq 0.8$ ;  $P < 0.05$ ).

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Pearson correlation coefficient	0.8	0.9	0.7	0.8	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
P-value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3: Test-retest reliability for each PASE question.

## Discussion

Since skin involvement is prior to joint involvement in psoriasis and dermatologists encounter with this disease more than other specialists, initially it was thought Persian version this method can improve the

accuracy of PSA diagnosis by dermatologists; therefore, it was assumed using PASE questionnaire is of great importance for the early diagnosis and treatment of PSA, and prevention of its debilitating complications. The results showed that the questionnaire has a relatively high sensitivity and specificity for distinguishing PSA patients. Furthermore

the questionnaire had acceptable reliability; however, Persian version is not an adequate method for diagnosis patients with psoriatic arthritis in the absence rheumatologist. In other words the Persian version of the PASE questionnaire is only an initial screening test for PSA diagnosis and cannot substitute for clinical examinations by a rheumatologist. Husni et al. in a study showed that this test, as a self-administered questionnaire, can help dermatologists for PSA screening and treatment of the patients [13].

The PASE questionnaire had a relatively high specificity and Sensitivity to diagnose patients with PSA, but the cut-off point to diagnose patients with PSA was lower than that of the study by Domingues et al. [10]. To evaluate the reliability of the PASE questionnaire, the test-retest was employed and the result was acceptable. The cultural differences between USA and Iran can be considered as a factor for different Sensitivity, specificities and cut-off points of the questionnaire.

In the current study, 16 out of 42 patients with PSA were not identified using PASE questionnaire, since their total score was lower than 42 (cut-off point). The reason for this misdiagnosis, which sometimes happens, is that the screening test cannot definitely diagnose the disease; therefore, lower risk estimation does not reject the possibility of PSA.

The mean of total score of patients with PSA was lower than that of the ones without PSA; moreover, the symptoms and functions scores in patients with psoriatic arthritis than those without PSA were significantly different which was consistent with the results of Garrott et al. [14].

Lower score of some variables is among the limitations of the Persian version of PASE questionnaire; it is because PSA symptoms were inactive at the time of completing the questionnaire, which was similar to the results of Oyur et al. The sensitivity of the questionnaire in the current study and that of Oyur et al. was under the influence of some variables and different responses of patients to symptoms affected the sensitivity of the results [15]. Another limitation of the current study was that this method was mostly useful for initial screening the patients with PSA and cannot substitute for clinical examination by a rheumatologist, and also laboratory and radiologic evaluations.

## Conclusion

The current study was a cross-cultural validation of psoriatic arthritis screening and evaluation (PASE) questionnaire and showed that the questionnaire has a relatively high sensitivity and specificity for distinguishing PSA patients. Furthermore the questionnaire had acceptable reliability; however, Persian version is not an adequate method for diagnosis patients with psoriatic arthritis in the absence

rheumatologist. Since dermatologists usually visit the patients with psoriasis before incidence of PSA, this questionnaire can somewhat help dermatologists in the early diagnosis of this disease.

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