

Prevalence of Psoriatic Arthritis among Patients with Psoriasis Using the Psoriatic Arthritis Screening Tool (PEST) Questionnaire in a Tertiary Government Institution

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ABSTRACT

Background. Psoriatic arthritis (PsA) is a complex musculoskeletal disorder that is associated with psoriasis. Its estimated prevalence among patients with psoriasis ranges widely from 6% to 42% in Europe, North America, and South Africa. However, there is a paucity of data in Asia. To date, there is no local study done in the Philippines.

Objective. This study aimed to determine the prevalence of psoriatic arthritis (PsA) among patients with psoriasis in a tertiary institution.

Methods. This is a descriptive cross-sectional study that included 150 patients with psoriasis in the Dermatology Clinic. Demographic and clinical data were collected. Psoriatic Arthritis Screening Tool (PEST) was applied to all participants. Those who scored ≥ 3 on the PEST were seen at the Rheumatology Clinic and confirmed with the Classification of Psoriatic Arthritis (CASPAR) Criteria. Descriptive statistics were used to describe the demographic and clinical characteristics. The prevalence of psoriatic arthritis among patients with psoriasis was calculated as the percentage of the population who scored ≥ 3 on the CASPAR Criteria.

Results. Out of the 150 patients with psoriasis, a total of 50 scored ≥ 3 on PEST. Of these, 47 patients (31.3%) qualified for the diagnosis of PsA using the CASPAR criteria. Thirty-seven out of the forty-seven patients (79%) are known PsA patients, while the remaining 10 patients (21%) were newly diagnosed with PsA. A total of 34 patients (72%) were female, with a mean age of 33 and 39 years at the onset of psoriasis and PsA, respectively. Family history of psoriasis was present in 22 patients (47%). The most common pattern of arthritis was polyarticular (51%) followed by oligoarticular (38%) and axial (11%). Morning stiffness was present in 83% of the patients. Dactylitis was

recorded in 16 patients (34%), while 19 patients (40%) had enthesopathy. Onycholysis was the most common nail abnormality seen in 20 patients (43%). Only 13 patients had rheumatoid factor at baseline, and all were negative. Most of the patients did not have imaging studies at baseline.



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Conclusion. In this single center study, the diagnosis of psoriatic arthritis among patients who were previously diagnosed with psoriasis increased from 24.5% to 31.3% using PEST as a screening tool, showing its usefulness in improving clinical detection of psoriatic arthritis among these patients.

Keywords: psoriatic arthritis, psoriasis, prevalence, PEST questionnaire, screening

INTRODUCTION

Psoriatic arthritis (PsA) is a complex musculoskeletal disorder that is associated with psoriasis. In approximately 72% of PsA patients, psoriasis precedes the development of arthritis by an average of 7-8 years.¹ Hence, the presence of cutaneous and/or nail psoriasis represents an important risk factor for PsA. Moreover, the risk of developing PsA was shown to increase with psoriasis severity, being highest in patients with more severe disease.² And, in the study of Merillano et al., 57.4% of the 155 patients with psoriasis had a moderate to severe disease.³

Given the increased risk of developing PsA in patients with psoriasis, screening for the presence of this condition is recommended. However, it is quite impractical to refer all patients with psoriasis to a rheumatologist to diagnose PsA. Several screening tools are currently available. These include Psoriasis Epidemiology Screening Tool (PEST), Psoriasis and Arthritis Questionnaire (PAQ), Psoriatic Arthritis Screening and Evaluation (PASE), and Psoriasis and Arthritis Screening Questionnaire (PASQ). The PEST has been established to be superior compared to other screening tools with a sensitivity of 94% and a specificity of 78%. It is composed of a five-item yes or no questions that will be answered by patients with psoriasis. A score of three out of five warrants a referral to a rheumatologist for evaluation of the possible presence of PsA.^{4,5} A Validated Filipino version of the PEST questionnaire is available. The validation study showed that the Filipino version is comprehensible, clear, and appropriate. It also showed good reliability at 94%.⁶

The heterogeneous nature of PsA makes its diagnosis challenging. Currently, there are no diagnostic criteria available for PsA. The Classification Criteria for Psoriatic Arthritis, also known as CASPAR criteria, is a published classification criterion used as a diagnostic guide, which was based on the analysis of 588 PsA patients and 536 controls. The patient fulfills the diagnosis of PsA when he/she has an inflammatory articular disease, and the score garnered from the CASPAR Criteria is ≥ 3 points. The parameters include evidence of psoriasis; psoriatic nail dystrophy; negative test for rheumatoid factor; the presence of dactylitis and radiologic evidence of juxta-articular new bone formation. The criteria demonstrated a sensitivity and specificity of 91.4% and 98.7%, respectively.^{5,7,8}

The estimated prevalence of PsA among patients with psoriasis ranges widely from 6% to 42% in Europe, North America, and South Africa. Figures, however, are much lower in Asian countries. PsA was observed in 9% of patients with psoriasis in Korea, 8% in India, and 1% in Japan.⁹⁻¹¹ There is paucity of studies on the prevalence of PsA among patients with psoriasis in Asia. To date, no known data exists in the Philippine population.

Determining the prevalence of PsA among psoriasis patients in our locality is important to increase awareness of the disease and possibly decrease the chances of diagnostic

delay, which is usually the cause of late treatment and irreversible joint damage. Early detection through routine screening among patients with psoriasis will give physicians the opportunity to intervene early and prevent disabilities. Hence, the purpose of this study. It is aimed to determine the prevalence of PsA among patients with psoriasis in a tertiary institution with the following specific objectives: 1) to describe the characteristics of patients with psoriasis and those with PsA; 2) to demonstrate the utility of the PEST questionnaire in screening patients with psoriasis in a tertiary setting; and 3) to diagnose psoriatic arthritis among those who will score ≥ 3 on PEST screening using the CASPAR Criteria.

MATERIALS AND METHODS

Study Design, Setting and Population

We conducted a descriptive cross-sectional study among patients with psoriasis seen in the Dermatology Clinic of a tertiary institution from August 2023 to January 2024. They fulfilled the following inclusion criteria: 1) patients who are ≥ 19 years old and 2) with informed consent. Using complete enumeration sampling, a total of 150 patients with psoriasis were included in the study. This was based on the estimated sample population of 150 patients with psoriasis seen a year prior to the conduct of the study.

Data Collection

After ethical approval, the recruitment process was started. The study flow was presented in Figure 1. Prospective data collection was done for patients who fulfilled the inclusion criteria. We collected the following demographic (age, age of onset of psoriasis, marital status, educational background) and clinical data (type of psoriasis, Body Mass Index (BMI), current medications, presence of comorbidities, and prior diagnosis of psoriatic arthritis) of patients with psoriasis. All 150 participants were asked to answer the Validated Filipino Version of the PEST questionnaire. The PEST questionnaire was self-administered by the participants. For those who scored ≥ 3 in PEST (50 participants), the parameters for the CASPAR Criteria were obtained. These include evidence of psoriasis or family history of psoriasis; psoriatic nail dystrophy; negative test for rheumatoid factor; the presence of dactylitis and radiologic evidence of juxta-articular new bone formation. Other parameters we believe important and, thus, included are the age of onset of arthritis, pattern of arthritis, presence of morning stiffness >1 hour, enthesopathy, other evidence of inflammatory arthritis on radiographic imaging, and C-reactive protein (CRP). The patient fulfills the diagnosis of PsA when he/she has an inflammatory articular disease, and the score garnered from the CASPAR Criteria is ≥ 3 points (47 participants).

Data Analysis

Descriptive statistics were employed to describe the study population. Specifically, frequencies and percentages

were used for the nominal variables, and the mean was computed for the continuous variables. The prevalence of psoriatic arthritis among patients with psoriasis was calculated as the percentage of the population who scored more than or ≥ 3 for the CASPAR Criteria.

Bias

To reduce the chances of bias, the study had clear objectives and a detailed procedure on how to perform data collection and how these would be analyzed. Strict inclusion criteria were implemented to reduce selection bias. A prospective design was used to avoid recall bias. A validated Filipino version of the PEST questionnaire was used to measure objective outcomes from the participants. The CASPAR criteria are well-established classification criteria widely used as a diagnostic guide for psoriatic arthritis, making it an ideal and objective tool for the study.

Ethical Considerations

Ethical approval was given by the Research Ethics Board of the institution.

RESULTS

Characteristics of Patients with Psoriasis

The mean age of psoriasis onset among all of the participants was 33.7 years (Table 1). Plaque type psoriasis was seen in 111 (74%) patients. Topical steroids were the treatment for 63 patients (42%), while another 63 patients (42%) were given topical steroids and oral methotrexate. Comorbidities were present in 61 patients (40%), wherein hypertension was the most common, at 27 (44%).

Characteristics of Psoriasis Patients with PEST score ≥ 3

Among the 150 participants, 50 (33%) scored ≥ 3 on the PEST (Table 1). The mean age of psoriasis onset was 32.9 years. Plaque-type psoriasis was seen in 38 (76%) patients. Topical steroids and oral methotrexate were the treatments given to 36 (72%) patients. Comorbidities were present in 19

Table 1. Characteristics of Patients with Psoriasis

	Overall, n = 150	PEST score <3, n = 100	PEST score ≥ 3 , n = 50
Mean Age (years)	42.43	41.65	44.14
Gender (%)			
Male	40% (60)	44% (44)	36% (18)
Female	60 % (90)	56% (56)	64% (32)
Mean Age at psoriasis onset (years)	33.74	34.10	32.93
Mean Body Mass Index (BMI)	25.74	26.10	25.01
Marital status			
Single	74	57	17
Married/living as married	67	38	29
Separated	5	3	2
Widowed	4	2	2
Educational background			
No education	0	0	0
Elementary level	8	7	1
Secondary level	49	30	19
College level	91	61	30
Post-graduate level	2	2	0
Type of psoriasis			
Nail psoriasis only	5	3	2
Plaque psoriasis	111	73	38
Guttate psoriasis	15	12	3
Pustular psoriasis	0	0	0
Erythrodermic	2	1	1
Scalp	7	6	1
Nail + skin involvement	8	4	4
Plaque + scalp	2	1	1
Current medications			
Topical steroids only	63	55	8
Topical steroids + Vitamin D Analogue	13	12	1
Topical steroids + oral Methotrexate	63	27	36
Topical steroids + SC Methotrexate	3	1	2
Phototherapy	1	1	0
Biologics	2	1	1
Phototherapy and topicals	2	2	0
Phototherapy and oral methotrexate	1	0	1
Biologics and oral methotrexate and topicals	2	1	1
Co-morbidities			
1	47	33	14
2	10	6	4
>2	4	3	1
None	89	58	31
Prior diagnosis of psoriatic arthritis			
Yes	37	0	37
No	113	100	13

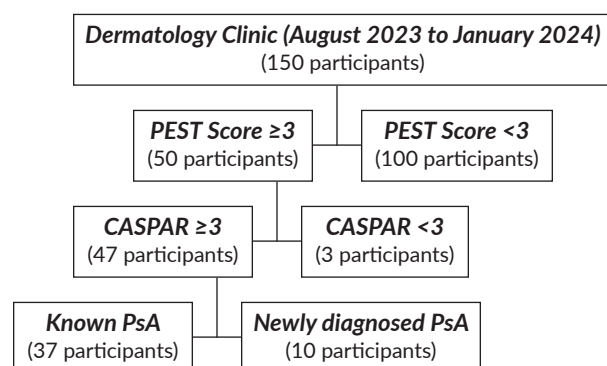


Figure 1. Study flow.

patients (38%), wherein hypertension was the most common, in 10 (52%).

Characteristics of Psoriasis Patients with PEST score ≥ 3 and CASPAR score ≥ 3

The prevalence of PsA among patients with psoriasis is 31.3% (47 out of 150 participants with $\geq$ PEST also fulfilled the CASPAR Criteria). Of these, 37(79%) were known to have psoriatic arthritis, and the remaining 10 patients (21%) were newly diagnosed with PsA (Table 2).

Of the 37 known psoriatic arthritis patients, 25 (68%) were female with psoriasis and psoriatic arthritis mean age of

onset of 32.38 and 38.1, respectively. Sixteen patients (43%) had a family history of psoriasis. Nineteen patients (51%) had a polyarticular pattern and 13 (35%) had an oligoarticular pattern. Thirty patients (81%) had morning stiffness; 9 (24%) patients had dactylitis in the hands, and 3(8%) had on both hands and feet; 12 (32%) patients had enthesopathy. Most patients did not have baseline radiographic imaging of the hands (29), feet (32), and pelvis (33). Only 11 (30%) patients were tested for rheumatoid factor and all of them were negative. Most of the patients, 25 (68%), had no baseline CRP. Fourteen patients (38%) had onycholysis, and 14 patients (38%) had pitting as nail abnormalities (Table 3).

Table 2. Psoriasis Epidemiology Screening Tool (PEST)*

Questions	Number of patients with a "YES" response, n = 150
Have you ever had swollen joint or joints? <i>Nakaranas ka na ba ng pamamaga ng mga kasu-kasuan?</i>	67
Has a doctor ever told you that you have arthritis? <i>Sinabi ba ng doktor sa iyo na ikaw ay may arthritis?</i>	47
Do your fingernails or toenails have holes or pits? <i>Mayroon bang butas or uka sa iyong mga kuko sa kamay o paa?</i>	101
Have you had pain in your heel? <i>Nagkaroon ba ng pananakit sa iyong sakong?</i>	54
Have you had a finger or toe that was completely swollen and painful for no apparent reason? <i>Nakaranas ka na ba ng pamamaga at pananakit sa iyong mga daliri sa kamay o paa nang walang dahilan?</i>	57

*Note: The Validated Tagalog Version is in italicized form.

Table 3. Characteristics of Patients with Psoriasis who scored >3 in PEST

	CASPAR score ≥ 3			CASPAR score <3
	Known PsA, n = 37	Newly diagnosed PsA, n = 10	Overall PsA patients, n = 47	Not PsA, n = 3
Sex (% , n)				
Male	32% (12)	30% (3)	32% (15)	100% (3)
Female	68% (25)	70% (7)	68% (32)	0
Mean age	44.11	44.30	44.20	35.33
Mean age of onset of psoriasis	32.38	35.0	33.0	29.30
Mean age of onset of arthritis	38.1	42.7	39.0	N/A
Family History of psoriasis (n)				
Yes	16	6	22	0
No	21	4	25	3
Pattern of arthritis				
Oligoarticular	13	5	18	N/A
Polyarticular	19	5	24	N/A
DIP involvement	0	0	0	N/A
Axial	5	0	5	N/A
Arthritis mutilans	0	0	0	N/A
Morning stiffness				
Yes	30	9	39	0
No	7	1	8	3

Table 3. Characteristics of Patients with Psoriasis who scored >3 in PEST (*continued*)

	CASPAR score ≥ 3			CASPAR score <3
	Known PsA, n = 37	Newly diagnosed PsA, n = 10	Overall PsA patients, n = 47	Not PsA, n = 3
Dactylitis				
Hands only	9	1	10	0
Feet only	0	2	2	0
Both hands and feet	3	1	4	0
None	25	6	31	3
Enthesopathy				
Yes	12	7	19	0
No	25	3	28	3
Hand x-ray				
With evidence of inflammatory arthritis	2	0	2	0
With no evidence of inflammatory arthritis	6	2	8	3
Not done	29	8	37	0
Foot x-ray				
With evidence of inflammatory arthritis	1	0	1	0
With no evidence of inflammatory arthritis	4	2	6	3
Not done	32	8	40	0
Pelvic x-ray				
With evidence of inflammatory arthritis	3	0	3	0
With no evidence of inflammatory arthritis	1	0	1	1
Not done	33	10	43	2
Rheumatoid factor				
Positive	0	0	0	0
Negative	11	2	13	1
Not done	26	8	34	2
CRP				
Low	2	0	2	2
High	10	0	10	0
Not done	25	10	35	1
Inflammatory Articular Disease				
Joint	32	8	40	N/A
Spine	4	1	5	N/A
Enteseal	1	1	2	N/A
Current psoriasis				
Diagnosed by Rheumatologist	1	0	1	0
Diagnosed by Dermatologist	36	10	46	3
Personal history of psoriasis				
1 st degree relative	8	3	11	0
2 nd degree relative	8	3	11	0
None	21	4	25	3
Typical psoriatic nail dystrophy				
Onycholysis only	14	6	20	1
Pitting only	14	3	17	1
Hyperkeratosis	0	0	0	0
Onychodystrophy	1	0	1	0
Onycholysis + pitting	4	0	4	1
Radiographic evidence of juxta articular new bone formation				
Yes	3	0	3	0
None	6	2	8	2
Not done	28	8	36	1

Of the 10 newly diagnosed psoriatic arthritis patients, 7(70%) were female, with a mean age of psoriasis onset at 35 and a mean age of psoriatic arthritis onset at 42.1. Six patients (60%) had a family history of psoriasis. Five patients (50%) had a polyarticular pattern, and the remaining five (50%) had an oligoarticular pattern. Nine patients (90%) had morning stiffness; one patient (10%) had dactylitis on both hands, one (10%) on both feet, and two (20%) on both hands and feet. Enthesopathy was present in seven (70%) patients. Most of them 8 (80%) did not have baseline radiographic imaging of hands, feet and pelvis. Only 2 patients (20%) were tested for rheumatoid factor, and both were negative. All of the patients had no baseline CRP. Six patients (60%) had onycholysis, and three patients (30%) had pitting as nail abnormalities (Table 3).

Thirty four (72%) of the 47 patients with psoriatic arthritis were female, with a mean age of 33 and 39 years at the onset of psoriasis and PsA, respectively. Family history of psoriasis was present in 22 patients (47%). The most common pattern of arthritis was polyarticular in 24 (51%), followed by oligoarticular in 18 (38%) and axial in 5 (11%). Morning stiffness was present in 39 patients (83%). Dactylitis was recorded in 16 patients (34%), while 19 patients (40%) had enthesopathy. Onycholysis was the most common nail abnormality seen in 20 patients (43%). Only 13 patients (28%) had rheumatoid factor at baseline, and all were negative. Most of the patients did not have radiographic imaging studies at baseline.

DISCUSSION

This local study showed that the prevalence of psoriatic arthritis among patients with psoriasis is 31.3%. This is higher compared to the studies in Asia (<10%). The prevalence among whites is estimated at 15-30%. In the meta-analysis of 266 studies done by Alinaghi et al., the pooled prevalence was 19.7%. The majority of the studies (119 studies) were from Europe with a prevalence of 22.7%; 47 studies were from North America with a prevalence of 19.5%; 10 studies from South America with a prevalence of 21.5%; 3 studies from Africa with a prevalence of 15.5%; and 59 studies from Asia with a prevalence of 14%.¹²

The studies from Asia include those from Bangladesh, China, India, Iran, Israel, Japan, Kuwait, Malaysia, Pakistan, Saudi Arabia, South Korea, Taiwan, Thailand, and Turkey.¹² The previously reported prevalence among Japanese patients with psoriasis is only 1%.^{13,14} But the recent study done by Ohara et al. revealed a pooled prevalence of 14.3% (range 8.8-20.4%). The higher prevalence observed among Japanese patients may be attributed to environmental factors such as shift toward a Westernized lifestyle that is associated with certain co-morbidities (such as obesity and hyperlipidemia) as well as advances in diagnostic tools that possibly led to improved disease detection.¹⁴ This is also evident in our study, where several comorbidities were seen, such as

hypertension (most common), diabetes mellitus, fatty liver, hyperlipidemia, and hyperuricemia. Another possible reason for higher prevalence in our study is increased awareness of the disease. Our setting is an end-referral institution with a Residency Training in Dermatology and Fellowship Training in Rheumatology, making it ideal for early recognition of PsA. Further, the institution caters to a higher number of patients with psoriasis, usually with longer duration of the disease and are more complicated ones, hence higher chances of developing PsA.

Study Limitations

In this study, baseline radiographic imaging of the hands, feet or pelvis were not uniformly done for all patients. In addition, rheumatoid factor was not routinely requested. Once the minimum criteria of CASPAR were met, mainly by history and physical examination, laboratory and imaging examination were done optionally due to the limited financial capacity of some patients. Instead, patients were treated directly mirroring the lived realities of clinical practice in resource limited settings. Nevertheless, in future studies, it is recommended to do all the necessary diagnostics included in the CASPAR Criteria to better decide on the appropriate treatment and prognosis, specific to the domain involvement. This is especially true in patients presenting with inflammatory back pain, where radiographic imaging and magnetic resonance imaging (MRI) play a significant role. Our study revealed polyarthritis as the most common pattern of arthritis. Although most of the data demonstrated either oligoarthritis or polyarthritis as a predominant pattern, spondylitis was the most common in some studies.^{5,9,15,16} One possible reason proposed was racial differences. Hence, radiographic imaging of the pelvis to assess axial involvement is a good area of investigation in future research studies.

About 24.5% of this study's population was previously diagnosed with PsA. With the use of the screening tool, an additional 10 patients were identified to have PsA, increasing the prevalence of psoriatic arthritis in this cohort of patients to 31.3%. Increased awareness of this disease with the routine use of screening tools such as PEST in monitoring and identifying PsA early on will be extremely helpful in early intervention for this potentially destructive disease.

Another important limitation that should also be emphasized is that the study was conducted in one center only. Inclusion of participants from other institutions is suggested to better represent the prevalence of psoriatic arthritis in the country.

CONCLUSION

In this single center study, the diagnosis of psoriatic arthritis among patients who were previously diagnosed with psoriasis increased from 24.5% to 31.3% using PEST as a screening tool, showing its usefulness in improving clinical detection of psoriatic arthritis.

It is recommended that the scope of this study be widened to a multi-center study to better reflect the prevalence of psoriatic arthritis among Filipino patients with psoriasis.

Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

All authors declared no conflicts of interest.

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