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RESEARCH ARTICLE

A Cross-sectional Study of the Effect of Sex, Age, Weight Index, Age of Disease and Onset of Disease in Patients with Psoriasis

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ABSTRACT

Background: Psoriasis is a chronic immune-mediated illness with cutaneous and systemic manifestations. It had been documented the presence of a link between certain types of factors and the onset of psoriasis and its worsening.

Objective: The study were aimed to study effect of sex, age, weight index, age of psoriasis and onset of disease.

Methods: Thirty-one psoriatic patients. The patients were classified according to PSAI score to mild, moderate, and severe cases. The current study was designed as cross-sectional study. Out of 31 patients with psoriasis were involved. The time period for samples collection took about six months in an outpatient clinic, and the samples were examined in an external laboratory. All clinical details of patients were recorded according to prepared questionnaire. The patients were divided by physician into three groups according to their PASI score: mild (PASI < 10), moderate (PASI 10–29), and severe (PASI > 30).

All psoriasis patients from both sex were eligible to be enrolled in the current study even they were under treatment. All age groups were enrolled.

Patients have genetic disorders such as Down syndrome. Patients with other skin disorders were also excluded Steven Thompson equation was used to calculate the preferable sample size. The sample size was 31 patients.[1]

Results: About 32.25% of patients had psoriatic lesions on all of the body sites. The mean age of psoriasis was higher in females and the initiation of the disease starts with younger age in females than in males. Inversely, severe cases were more frequent in males with statistical significance.

There was a significant difference in the mean of starting of Psoriasis according to severity of the disease. Additionally, there were no significant differences in age of Psoriasis according to severity.

Regarding BMI, the current study's results show that 51.6% of patients have normal BMI. The BMI mean of patients with moderate PSAI score was significantly different from mild and sever PSAI

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INTRODUCTION

Psoriasis is a chronic, Immune-mediated inflammatory skin disease characterized by red, scaly plaques on the elbows, knees, scalp, and lower back, although any skin surface can be affected[2]regional, and country specific estimates of its prevalence. Design Systematic review and meta-analysis. Data sources Medline, Embase, Web of Science, SciELO, Korean Journal Databases, Russian Science Citation Index, WPRIM, SaudiMedLit, Informit, IndMed, and HERDIN were searched systematically from their inception dates to October 2019. Methods Studies were included if they reported on the incidence or prevalence of psoriasis in the general population. Incidence data were summarised descriptively, whereas bayesian hierarchical models were fitted to estimate the global, regional, and country specific prevalence of psoriasis. Results 41 164 records were identified and 168 studies met the inclusion criteria. In adults, the incidence of psoriasis varied from 30.3 per 100 000 person years (95% confidence interval 26.6 to 34.1. The reported prevalence of this disorder ranged between 0.0 to 2.1% among children and 0.91 to 8.50% among adults worldwide.[1-3]

Psoriatic skin lesions are distinguished by well-defined erythematous scaly plaques and follow a chronic relapsing and remitting pattern. The severity ranges from a few isolated plaques to virtually complete body surface involvement.[4] Although the illness can be noticed at any age, the clinical symptoms and severity of the disease vary by age group. According to studies, psoriasis has two peaks: the first between the ages of 30–39, and the second between the ages of 50–59 or 60–69. Psoriasis can substantially influence the quality of life in children and teenagers by interfering with self-esteem, family and social interactions, as well as education and job. According to the research that give age-specific incidence rates of psoriasis, incidence increases more or less continuously with age up to the seventh decade of life.[5]

According to most prevalence studies, males are somewhat more likely than women to have psoriasis. A literature review indicates noteworthy gender disparities in numerous facets of the illness, including epidemiology, pathophysiology, clinical features, comorbidities, quality of life, and therapy. These differences may be influenced by multiple factors, including skin anatomy, physiology, genetics and hormones, but also social, cultural and environmental factors. Such differences may have implications regarding gender-related management and prognosis, but further research is needed to better define these differences.[6-7]

Obesity, drinking, smoking, diabetes, and coronary artery disease have all been linked to or are risk factors for psoriasis.[3-5] The first research demonstrating a link between psoriasis and obesity were conducted in Europe. Herron et al.[8] found that whereas obesity was found in 34% of psoriasis patients, it was seen in just 18% of the general population in Utah, USA. The links between the immune system, adipokines, and metabolism have been proposed to explain the link between obesity and psoriasis[7]but this relationship is not completely understood.

Objectives

This study aimed to evaluate associations between the severity of psoriasis and weight excess as determined using a variety of parameters. Methods A cross-sectional study was performed in 296 psoriasis patients. Their body mass index (BMI).

Psoriasis has an unknown cause. The development of psoriasis is thought to be caused by a number of different factors, including genetic predisposition, environmental triggers, disruption of the skin barrier, immune dysfunction and infection, as well as microbial and complex cellular interactions.[8]

About 32.25% of patients had psoriatic lesions on all of the body sites. The mean age of psoriasis was higher in females and the initiation of disease starts with younger age in females than males. Inversely, sever cases were more frequent in males with statistical significance.

There was significant difference in the mean of starting of Psoriasis according to severity of the disease. Additionally,

Table 1: Demographic data of patients

Variables	Patients (%)	Control (%)
Studied population	31	31
Age-group (Years)		
≤15	12(38.7)	12(38.7)
16–30	12(38.7)	12(38.7)
31–50	7(22.6)	7(22.6)
Sex		
Male	14(45)	14 (45)
Female	17(55)	17 (55)
Diabetes mellitus (DM)		
With DM	1(3.33)	0 (0)
Without DM	30 (96.77)	31 (100)
Hypertension		
Hypertensive	1(3.33)	0 (0)
Non-hypertensive	30 (96.77)	31 (100)
Smoking		
Smoker	4(12.9)	0(0)
Non-smoker	27(87.1)	31(100)
Psoriasis score (PASI)		
Mild	10(32.25)	0 (0)
Moderate	11(35.5)	0 (0)
Sever	10(32.25)	0 (0)
Heart disease		
With Heart disease	0(0)	0(0)
Without Heart disease	31(100)	31(100)
Cancer		
With cancer	0(0)	0(0)
Without cancer	31(100)	31(100)
Psoriatic Arthritis (PsA)		
With PsA	0(0)	0(0)
Without PsA	31(100)	31(100)

Table 2: Age and sex distribution among psoriatic patients

Sex	Age group			Total
	≤15 years	16–30 years	31–49 years	
Male	4	7	3	14
Female	8	5	4	17
Total	12	12	7	31

there were no significant differences in age of Psoriasis according to severity.

Regarding BMI, the current study's results show that 51.6% of patients have normal BMI. The BMI mean of patients with moderate PSAI score was significantly different from mild and sever PSAI.

Thus, the study aims to study the effect of sex, age, weight index, age of disease and onset of disease in patients with psoriasis.

Statistical Analysis

Statistical analysis was carried out using IBM SPSS version 24. Chi-square test, Odds ratio to identify the danger factors with their 95% confidence interval (CI), were used to find the association between the categorical variables, *p-value* ($p \leq 0.05$) was considered statistically significant.

RESULTS

As shown in Table 1, the current study is a cross-sectional study which conducted to study the association of bacterial infection and severity of psoriatic disease in patients residing in Kerbala Province, Iraq. Thirty-one patients were included. Fourteen were males (45.2%) and 17 were females (54.8%). The patients' ages ranged from 2 to 49 years with a mean age of 21.13 ± 13.03. Ten patients had mild, 11 moderate, and 10 had severe PSAI scores. Four patients were smokers and one had diabetes mellitus.

Distribution of Age and Sex Among Psoriatic Patients

As shown in Table 2, More than 78.5% and 76.47% of male and female patients were aged below 30 years. The statistical analysis involved in this study did not find a significant difference between the age groups with sex. This finding agreed with a previous study[9]. Also, no significant differences was observed between both sex. Family history of psoriasis, the number of comorbidities, and cardiovascular risk factors did not significantly correlate with sex.[10]

Location of Psoriatic Lesion on the Body of the Patients

The results of the current study also showed that the highest frequency in the location of psoriasis lesion was found on all of the body, while the head was the second highest site of psoriasis, as shown in Figure 1.

Age of Psoriasis and Time of Psoriasis Beginning

Mean period of the disease was 7 ± 4.368 and 9.76 ± 7.267 years for male and female, respectively. No significant difference was observed in the mean period of Psoriasis between males and females as shown in Table 3.

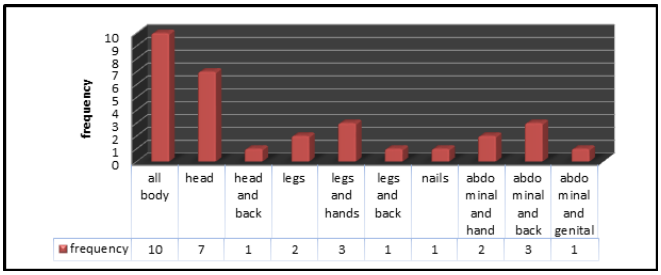

Figure 1: The frequency of psoriasis lesion sites among the patients

Table 3: Comparison between male and female psoriasis patients based on time of clinical characteristic

Sex	N	Psoriasis age		Beginning of psoriasis	
		Mean	SD	Mean	SD
Male	14	7.00	4.368	14.07	9.699
Female	17	9.76	7.267	11.88	13.047
p-value	0.222			0.607	

$p \leq .05$ was considered statistically significant; SD: standard deviation

This result is inconsistent with the findings of El-Komy *et al*., they found significant differences in the mean of age at presentation and duration of psoriasis between male and females.[11]

The mean age of beginning of psoriasis in female patients was not statistically different from that in male patients. This result is inconsistent with a population-based study from the UK, surveys from China and Italy, and national surveys from both countries, which revealed there were significant differences in the mean of age at presentation and duration of psoriasis between males and females.[12]

Disease Severity and PSAI Score Distribution among Psoriatic Patients

As shown in Table 1, ten patients had mild and severe PSAI scores and eleven had moderate severity. Statistical analysis revealed the presence of a significant difference in the severity of the disease between males and females. Additionally, the significant difference among age groups of patients in the severity of the disease was observed in Table 4.

According to previous studies, males are more likely than women to receive specialized care for their psoriasis[1314].

Table 4: Differences in Sex and Age groups according to PASI Score of Psoriatic Patients

PSAI	Sex		Age groups			Total (%)
	Male (%)	Female (%)	≤15 (%)	16–30 (%)	31–49 (%)	
Mild	3 (30)	7(70)	8(80)	1(10)	1(10)	10(100)
Moderate	3(27.3)	8(72.7)	2(18.2)	6(54.5)	3(27.3)	11(100)
Sever	8(80)	2(20)	2(20)	5(50)	3(30)	10(100)
p-Value	0.039*		0.033*			

*($p \leq .05$) was considered statistically significant; PASI, Psoriasis Area Severity Index.

Table 5: Comparison the time of the beginning of psoriasis with PSAI score

PSAI	Beginning of Psoriasis			Psoriasis age	
	N	Mean	SD	Mean	SD
Mild	10	5.30	7.543	7.30	8.832
Moderate	11	16.45	11.928	9.45	5.336
Sever	10	16.50	11.559	8.70	3.945
p-value	0.035*			0.737	

*($p \leq .05$) PASI, or the Psoriasis Area Severity Index, was regarded as statistically significant.

Table 6: BMI groups and PSAI scores among Psoriatic patients

BMI groups	N (%)	PSAI			Total
		Mild	Moderate	Sever	
Normal weight	16 (51.6)	4	7	5	16
Overweight	8 (25.8)	1	4	3	8
Below weight	7 (22.6)	5	0	2	7
Total	31 (100)	10	11	10	31

* ($p \leq .05$) was considered statistically significant; PASI, Psoriasis Area Severity Index. BMI: Body Mass Index.

Following that, an imbalance in the psoriasis treatment population was discovered. The majority of other european registries for systemic psoriasis treatment had more males than females: Denmark (66%), Germany (60%), Italy (67%), Netherlands (68%), and Spain (63%).[15]

According to the physicians, women were shown to have less severe psoriasis than men in a descriptive research from Ireland, and men got systemic therapy twice as frequently[1617]. The dermatology Index of disease severity discovered that men experience more severe psoriasis during follow-up than women.

Differences in Time of Psoriasis Beginning and Age of Psoriasis according to Disease Severity

There was a significant difference in the mean of starting of psoriasis according to severity of the disease. Additionally, there were no significant differences in age of psoriasis according to severity (Table 5).

Body Mass Index (BMI)

The patients were divided into three groups: normal weight (BMI between 18.5 and 24.9), overweight (BMI greater than 25), and underweight (BMI less than 18.5). The current study results show that 51.6% of patients with normal BMI, as shown in Table 6. The BMI mean of patients with moderate PSAI score was significantly different from mild and sever PSAI, Table 7.

The findings of our study are at odds with those of Sobhan and Farshchian, who discovered that in Hamadan, patients with mild, moderate, and severe psoriasis had mean BMIs of 25.865.93, 30.853.77, and 26.965.68 kg/m^2, respectively (p =0.096), and that there was no statistically significant difference between the three groups in terms of mean BMI.[18]

Bardazzi *et al*., examined the severity of psoriasis and its connection to BMI. They discovered a strong correlation between the rise in BMI and waist size on one side and the rise in disease severity.[19]

Table 7: Differences in means of BMI according to disease severity

BMI			
PSAI	N	Mean	SD
Mild	10	19.0	5.95
Moderate	11	27.3	8.02
Sever	10	21.3	6.15
p-value	0.024*		

* ($p \leq .05$) was considered statistically significant; PASI, Psoriasis Area Severity Index. BMI: Body Mass Index.

In seven out of nine papers, Felming *et al*., in systematic review of the literature found a strong correlation between higher BMI and increased psoriasis severity.[20]

According to a primitive American study, psoriasis sufferers are more likely to be obese than the general population[21]. Obesity is rapidly increasing in both industrialized and developing nations, and it has been suggested that obesity affects several skin illnesses and raises their severity and prevalence.[22]

According to certain studies, inflammatory cytokines may influence the onset, progression, and severity of psoriasis, a finding that helps to explain the association between psoriasis and BMI.[22,23]

According to the results of the present study, there is a significant difference in PASI scores between male and females. More severe scores were observed in male patients whereas females tend to have mild and moderate scores. These results are in agreement with the findings of Hägg *et al*., who discovered that women had statistically lower median PASI scores (5.4) than males (7.3) [p =0.001].[6]

CONCLUSION

Approximately 55% of patients were females. More than 78.5% and 76.47% of male and female patients were aged below 30 years. No association of age or sex with psoriasis was found. Approximately 32% of patients had psoriatic lesions on all of the body sites and 22.5% of them had a lesion on the head. The mean age of the disease was higher in females (females tend to have the disease for longer) and the clinical presentation of the disease starts with younger age. Regarding disease severity, significant differences were found with sex and age groups. The mean of starting of psoriasis was significantly different according to severity of the disease. The mean BMI was significantly higher with moderate PSAI score.

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