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Original Research Paper

Comorbidities in Psoriasis Among Iraqi Patients Attending al Yarmouk Teaching Hospital

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ABSTRACT:

Background: Psoriasis is a chronic dermatological condition that has been shown to exhibit a correlation with a heightened prevalence of comorbidities, such as the metabolic syndrome. It is recommended that individuals diagnosed with psoriasis have regular screening for metabolic syndrome. **Aim of study**: Is to evaluate the rate of metabolic syndrome and depression in patients with psoriasis in comparison with control patients and to assess association of metabolic syndrome and depression with the severity of psoriasis. **Methods**: This is a case control study conducted in department of dermatology and venereology out-patient in Al Yarmouk teaching hospital, Baghdad, Iraq from January 2022 to January 2023. This study involved 100 psoriatic patients (cases) and 100 patients attended outpatient for other dermatological diseases (controls) and matched for same age and gender, two different questionnaires were used for all study. All patients were subjected to detailed History, complete physical examination, work-up for psoriasis disease diagnosis and further follow-up and management, and evaluation of metabolic syndrome and depression which was achieved by different tools mentioned previously. **Results**: 31% of them were overweighed while other 31% had normal BMI, 72% were normotensive and 78% were not depressed. 58% of psoriatic patients were presented as severe pattern. Psoriasis was significantly seen among obese patients (74.5%, P=0.001), depressed patients (72.7%, P=0.001). Also, it was significantly found in patients with high FBS (71%, P=0.011), hi cholesterol level (69.6%, P=0.02), hi TG (78.6, P=0.026), high LDL (69.2%, P=0.035), and low HDL (72.3%, P=0.001). Severe form of psoriasis was significantly associated with long duration of disease (84%, P=0.005), with obese patients (74.3%, P=0.018), with hypertensive patients (81.3%, P=0.004), and with patients had low HDL (82.4%, P=0.001). **Conclusion**: Psoriatic patients in Iraq had higher prevalence of comorbidities in comparison to those who didn't have psoriasis. Obesity, hypertension, and low s. HDL are positively correlated with severity of psoriasis. Psoriasis is considered as an associated risk factor that may cause depression.

Keyword: Psoriasis, depression, metabolic syndrome, Iraq

INTRODUCTION:

Psoriasis is a prevalent chronic inflammatory and proliferative dermatological condition that is not caused by infection (1). It is distinguished by the presence of distinct erythematous plaques on the skin, which are accompanied by the accumulation of substantial silvery scales (2). There is no apparent association between mild psoriasis and an elevated risk of mortality. In contrast, it was observed that individuals of the male gender afflicted with severe psoriasis saw a decrease in their lifespan by a duration of three years when compared to their counterparts unaffected by the aforementioned medical condition. A notable disparity in life expectancy was seen between women afflicted with severe psoriasis and those unaffected by the condition, with the former experiencing a premature mortality four years sooner. (3) Psoriasis is a complex condition that affects several systems, with around 20-30% of persons experiencing or developing joint involvement, known as psoriatic arthritis. Furthermore, those diagnosed with moderate to severe illness have a heightened susceptibility to metabolic syndrome and atherosclerotic cardiovascular disease.

Furthermore, individuals diagnosed with Psoriasis experience a substantial influence on their overall quality of life. And they feel that even if they got effective treatments, the disease will not go into long term remission. (4) Psoriasis complication (co-morbidity) include a wide spectrum of diseases:

hypertension, dysrhythmia hyperlipidemia, diabetes mellitus, obesity, chronic obstructive pulmonary disease, psychiatric disorders, anxiety and stress disorders, depressive disorders., psoriatic arthritis. (PSA), inflammatory bowel disease (IBD)., uveitis, non-alcoholic fat liver disease (NAFLD), osteoporosis, lymphomas and other neoplasms, psoriasis and kidney disease

Aim of this Study:

Is to evaluate the rate of metabolic syndrome and depression in patients with psoriasis in comparison with control patients and to assess the association of metabolic syndrome and depression with the severity of psoriasis.

PATIENTS AND METHODS:

The present research is a case-control study that was carried out in the outpatient department of Dermatology and Venereology at Al Yarmouk teaching hospital, located in Baghdad, Iraq. The study was done over a period of one year, from January 2022 to January 2023. The present study included a total of 200 participants, consisting of 100 individuals diagnosed with psoriasis (cases) and 100 patients seeking outpatient care for various other dermatological conditions (controls). The cases and controls were carefully matched based on age and gender. All participants were recruited during their visits to outpatient clinics, with the control group being selected from individuals seeking consultation for non-psoriatic dermatological diseases at the same location.

Inclusion Criteria:

Age ≥ 15 years, Chronic, mild, moderate and severe disease.

Exclusion Criteria:

for this study include those with a documented history of cardiovascular disease and diabetes, those with a family history of medical conditions, individuals who smoke or have a history of drinking, patients currently undergoing retinoid or cytotoxic medication, and pregnant women.

Clinical Tools:

Regarding cases group, three different questionnaires (questionnaire that collected general information, questionnaire measuring psoriasis severity and questionnaire measured depression severity) had been applied to collect needed information, while control group subjected to two questionnaires only (questionnaire measuring psoriasis severity was not applied), the first two questionnaires were filled by the researcher through direct interview with the study patients, while the third one was filled by the patients and scored by the researcher.

- The first questionnaire was used to collect pertinent data and completed by the researcher. The questionnaire collected data on certain socio-demographic factors, including age, gender, marital status, and employment.
- Duration of disease. (Months, years)
- BMI; weight/height (kg/ m^2).
- Waist circumference.
- Distribution of psoriatic arthropathy.
- Concomitant medications.

Second questionnaire was applied to measure the severity of psoriatic plaques by using **PASI score.**

In order to get the PASI score, it is necessary to sum the four severity ratings for each individual skin region, afterwards multiplying the obtained sum by the corresponding area score. Finally, the resulting value is multiplied by the percentage of skin coverage within that particular sector, e.g.; Head: [I (itching) head + E (erythema) head + S (scaling) head + T (thickness) head]

×A (area) head × 0.1=total head

Arm: (I arm + E arm + S arm + T arm) × A arm × O. 2=total arm

Trunk: (I trunk + E trunk + S trunk + T trunk) × A trunk × 0.3= total trunk.

Leg: (I leg + E leg + S leg + T leg) × A leg × O. 4=total leg.

Finally, PASI score is gained by adding, total of (head + arms + body + legs). Mild disease (PASI score of 0_3). Moderate disease (PASI score of > 3-15). Sever disease (PASI score of > 15).

Third questionnaire assessed the psychological condition of the patients using the **Patient Health questionnaire (PHQ-9)-Overview.**

The Patient Health Questionnaire-9 (PHQ-9) was used as a diagnostic tool for the identification of depression. It is essential for the physician to systematically exclude any physical etiologies of depression, as well as consider the presence of typical grief reactions and any prior instances of manic or hypomanic episodes in the patient's medical history.

The measurement of body mass index (BMI) and waist circumference are important indicators used in assessing an individual's body composition and overall health status.

Blood pressure is a physiological measurement that represents the force exerted by circulating blood on the walls of blood vessels. The blood pressure was measured by taking the average of two readings obtained from individuals who had been in a seated position for a duration of five minutes.

Laboratory Tools:

All of the study patients were sent to the laboratory to check the following investigation: Serum glucose level and Lipid profile:

All patients were subjected to the following

1. Detailed History (socio-demographic variables, duration, etc.)
2. Complete physical examination.
3. Work-up for psoriasis disease diagnosis and

further follow-up and management.

4. Evaluation of metabolic syndrome and depression which was achieved by different tools mentioned previously.

Metabolic Syndrome:

The diagnosis of metabolic syndrome was established when three or more criteria from the National Cholesterol Education Program's Adult Panel III (ATP III) were present (5).

The data was analyzed using the Statistical Package for Social Sciences (SPSS) version 25. The data was given in terms of mean, standard deviation, and ranges. The categorical data is represented using frequencies and percentages. The statistical connection between patients' characteristics and a certain result was assessed using Pearson's Chi-square test. A significance level of $p < 0.05$ was deemed statistically significant.

RESULTS:

The research included a total of 200 patients, with 100 patients in the psoriatic patient group (referred to as the Case Group) and 100 patients attending outpatient care for other dermatological illnesses (referred to as the Control Group). The patients in both groups were matched for age and gender.

Table 1 displays the distribution of study participants according to their general characteristics. The age of the study participants ranged from 16 to 67 years, with a mean age of 32.7 years and a standard deviation (SD) of ± 10.96 years. The age group with the largest percentage of research participants was those between the ages of 20 and 34, accounting for 47% of the total sample. In relation to gender, the proportion of men exceeded that of females, with males accounting for 58% and females accounting for 42%. This resulted in a male to female ratio of 1.38:1. Concerning occupation and marital status, the highest proportion of study patients was employee (51%) and the majority of them were married (71.5%).

Table 1: Distribution of study patients by general characteristics

Age (Years)		
< 20	10	5.0
20 – 34	94	47.0
35 – 49	68	34.0
≥ 50	28	14.0
Gender		
Male	116	58.0
Female	84	42.0
Marital status		
Married	143	71.5
Unmarried	57	28.5
Occupation		
Student	23	11.5
Employee (Gov. or Private)	102	51.0
Retired / Housewife	75	37.5

Anthropometric Measures:

BMI:

Figure 1 shows BMI levels in all study groups. We noticed that the patients with normal and patients with overweight BMI level were representing the highest proportion of study patients (31% for each BMI level).

Among psoriatic patients group (case group), obesity was representing the highest proportion regarding BMI level (35%), while the highest proportion of patients in control group was normal regarding BMI level (44%).

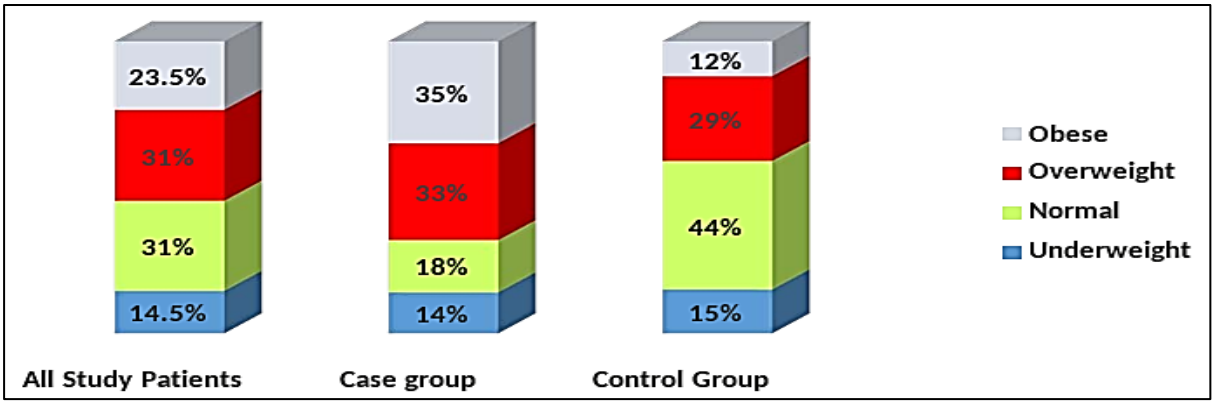

Figure 1: BMI levels in all study groups

Table 2 presents a comparison of BMI levels across different research groups.
The study observed a significant correlation (P=0.001) between the occurrence of psoriasis and obesity, with the greatest incidence (74.5%) seen among individuals classified as obese.

Table 2: Comparison between study groups regarding BMI level

BMI level	Study groups		Total (%) n=200	P-value
	Case (%) n= 100	Control (%) n= 100		
Underweight	14 (48.3)	15 (51.7)	29 (14.5)	
Normal	18 (29.0)	44 (71.0)	62 (31.0)	
Overweight	33 (53.2)	29 (46.8)	62 (31.0)	**0.001**
Obese	35 (74.5)	12 (25.5)	47 (23.5)	

Blood Pressure: Figure 2 shows blood pressure levels in all study groups. In this study, proportion of patients with normal blood pressure was the highest in all study groups (72%, 68%, and 76% in all study patients, case group, and control group respectively).

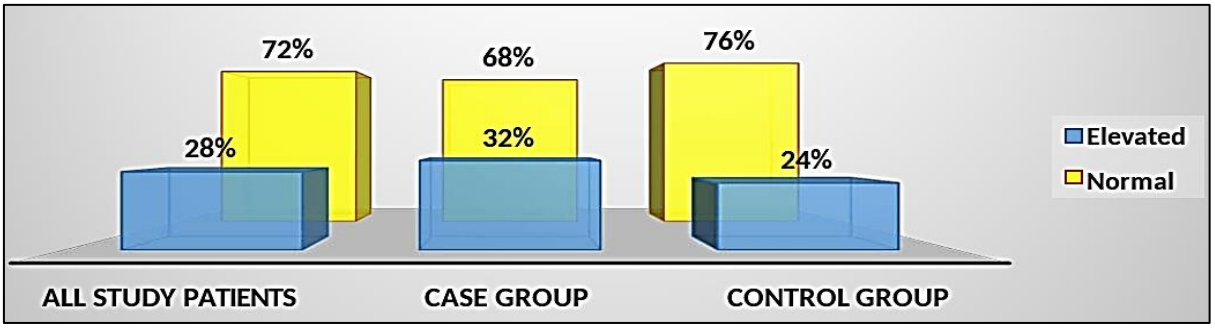

Figure 2: Blood pressure in all study groups

Comparison between study groups regarding blood pressure is shown in table (3). There was no significant association (P=0.207) between blood pressure and prevalence of psoriasis.

Table 3: Comparison between study groups regarding blood pressure

Blood Pressure	Study Groups		Total (%) n=200	P- value
	Case (%) n= 100	Control (%) n= 100		
Elevated	32 (57.1)	24 (42.9)	56 (28.0)	
Normal	68 (47.2)	76 (31.8)	144 (72.0)	**0.207**

Figure 3 shows depressed patients in all study groups. In this study, 32% of patients in case group were depressed, which represented the higher proportion of depression than that in patients of control group (12%).

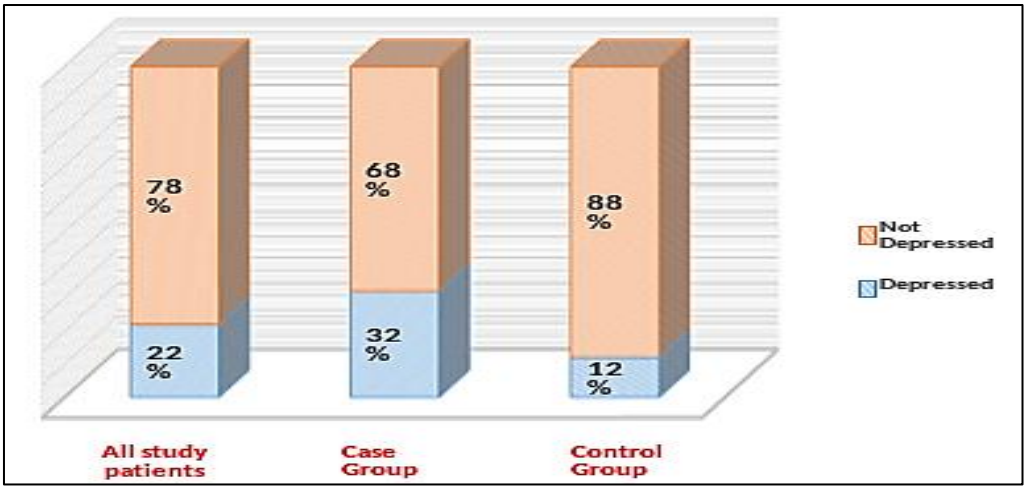

Figure 3: Depressed patients in all study groups

Table 4 presents a comparative analysis of study groups with respect to depression.

The study revealed that depressed individuals exhibited the greatest frequency of psoriasis, with a rate of 72.7%. Furthermore, a statistically significant correlation (P=0.001) was seen between sadness and the prevalence of psoriasis.

Table 4: Comparison between study groups regarding depression

Depression	Study Groups		Total (%) n=200	P- value
	Case (%) n= 100	Control (%) n= 100		
YES	32 (72.7)	12 (27.3)	44 (22.0)	**0.001**
NO	**68 (43.6)**	**88 (56.4)**	**156 (78.0)**	

Table 5 shows the comparison between study groups by laboratory test. It was noticed that the highest prevalence of psoriasis was seen significantly (P < 0.05) among patients with hi FBS, hi S. cholesterol, hi S.TG, hi LDL, and low HDL (71%, 69.6%, 78.6%, 69.2% and 72.3% respectively).

There was no significant association (P=0.192) between S. VLDL and prevalence of psoriasis.

Table 5: Comparison between study groups by laboratory test

Laboratory test	Study Groups		Total (%) n= 200	P- value
	Case (%) n= 100	Control (%) n= 100		
FBS				
Normal	78 (46.2)	91 (53.8)	169 (84.5)	**0.011**
Hi	22 (71.0)	9 (29.0)	31 (15.5)	
S. Cholesterol				
Normal	61 (42.4)	83 (57.6)	144 (72.0)	**0.02**
Hi	39 (69.6)	17 (30.4)	56 (28.0)	
S. TG				
Normal	89 (47.8)	97 (52.2)	186 (93.0)	**0.026**
Hi	11 (78.6)	3 (21.4)	14 (7.0)	
S. LDL				
Normal	82 (47.1)	92 (52.9)	174 (87.0)	**0.035**
Hi	18 (69.2)	8 (30.8)	26 (13.0)	
S. HDL				
Normal	66 (43.1)	87 (56.9)	153 (76.5)	**0.001**
Low	34 (72.3)	13 (27.7)	47 (23.5)	
S. VLDL				
Normal	79 (47.9)	86 (52.1)	165 (82.5)	**0.192**
Hi	21 (60.0)	14 (40.0)	35 (17.5)	

Duration of Psoriasis:

Figure 4 illustrates the distribution of individuals with psoriasis based on the length of their condition. The research revealed that the largest percentage of individuals with psoriasis in this particular cohort had been diagnosed with the condition during a timeframe ranging from one to five years (36%).

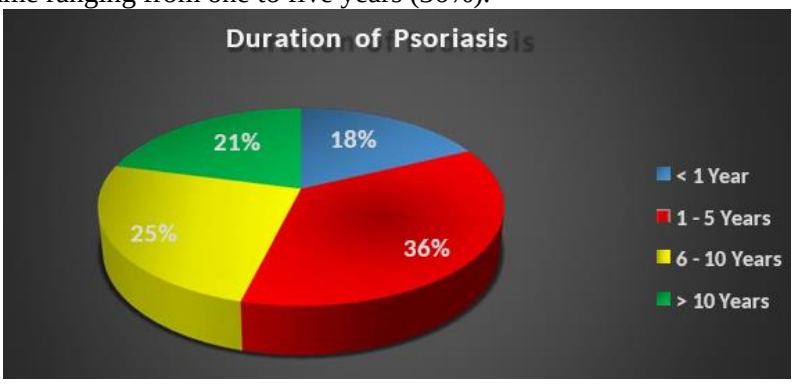

Figure 4: distribution of psoriatic patients by duration of psoriasis

The degree of severity shown by individuals with psoriasis. Figure 5 illustrates the distribution of people with psoriasis according to the severity of their condition. The majority of individuals diagnosed with psoriasis had a severe form of the condition, accounting for 58% of the patient population.

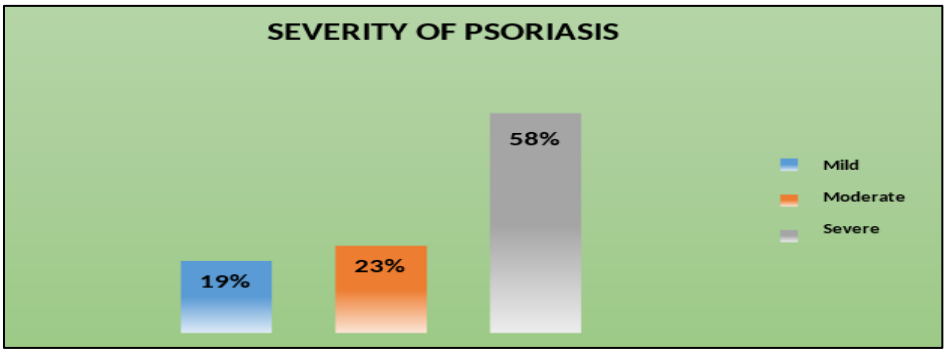

Figure 5: Distribution of psoriatic patients by severity

The table 6 demonstrates the correlation between the length and severity of psoriasis. The data clearly indicated that the group of patients who had been suffering from psoriasis for a length of 6 to 10 years had the greatest frequency of severe psoriasis, accounting for 84% of the cases. Furthermore, a statistically significant connection (P=0.005) was seen between the duration of psoriasis and its severity.

Table 6: Association between duration and severity of psoriasis

Duration of Psoriasis (Years)	**Severity of Psoriasis**			**Total (%) n=100**	**P-value**
	Mild (%) n= 19	**Moderate (%) n= 23**	**Severe (%) n= 58**		
< 1	2 (11.2)	8 (44.4)	8 (44.4)	18 (18.0)	**0.005**
1 - 5	11 (30.6)	6 (16.7)	19 (52.7)	36 (36.0)	
6 - 10	3 (12.0)	1 (4.0)	21 (84.0)	25 (25.0)	
> 10	3 (14.3)	8 (38.1)	10 (47.6)	21 (21.0)	

Association between anthropometric measures and severity of psoriasis is shown in table 6. The highest proportion of severe psoriasis prevalence was seen among obese patients (74.3%) with a significant association (P=0.018) between BMI level and severity of psoriasis. Regarding blood pressure, the highest proportion of severe psoriasis prevalence was found among hypertensive patients (81.3%) with a significant association (P=0.004) between blood pressure and severity of psoriasis.

Table 7: Association between anthropometric measures and severity of psoriasis

Variable	Severity of Psoriasis			Total (%) n=100	P-value
	Mild (%) n= 19	Moderate (%) n= 23	Severe (%) n= 58		
BMI level					
Underweight	6 (42.9)	4 (28.6)	4 (28.6)	14 (14.0)	**0.018**
Normal	6 (33.3)	5 (27.8)	7 (38.9)	18 (18.0)	
Overweight	5 (15.2)	7 (21.2)	21 (63.6)	33 (33.0)	
Obese	2 (5.7)	7 (20.0)	26 (74.3)	35 (35.0)	
Blood Pressure					
Elevated	2 (6.3)	4 (12.5)	26 (81.3)	32 (32.0)	**0.004**
Normal	17 (25.0)	19 (27.9)	32 (47.1)	68 (68.0)	

Association between depression and severity of psoriasis is shown in table 6. There was no significant association (P = 0.12) between prevalence of severe psoriasis and depression.

Table 8: Association between depression and severity of psoriasis

Depression	Severity of Psoriasis			Total (%) n=100	P- value
	Mild (%) n= 19	Moderate (%) n= 23	Severe (%) n= 58		
YES	**3 (9.4)**	**6 (18.8)**	**23 (71.9)**	**32 (32.0)**	**0.12**
NO	16 (23.5)	17 (25.0)	35 (51.5)	68 (68.0)	

Association between biochemical laboratory test and severity of psoriasis is shown in table 6. The highest proportion of severe psoriasis prevalence was seen among patients with low S. HDL (82.4%) with a significant association (P=0.001) between S. HDL and severity of psoriasis.

There was no significant association (P > 0.05) between prevalence of severe psoriasis and all other biochemical laboratory tests.

Table 9: Association between biochemical laboratory test and severity of psoriasis

Variable	Severity of Psoriasis			Total (%) n=100	P- value
	Mild (%) n= 19	Moderate (%) n= 23	Severe (%) n= 58		
FBS					
Normal	13 (18.1)	15 (20.8)	44 (61.1)	78 (78.0)	**0.584**
Hi	6 (21.4)	8 (28.6)	14 (50.0)	22 (22.0)	
S. Cholesterol					
Normal	12 (19.7)	11 (18.0)	38 (62.3)	61 (61.0)	**0.33**
Hi	7 (17.9)	12 (30.8)	20 (51.3)	39 (39.0)	
S. TG					
Normal	18 (20.2)	22 (24.7)	49 (55.1)	89 (89.0)	**0.23**
Hi	1 (9.1)	1 (9.1)	9 (81.8)	11 (11.0)	
S. LDL					
Normal	16 (19.5)	21 (25.6)	45 (54.9)	82 (82.0)	**0.336**

Hi	3 (16.7)	2 (11.1)	13 (72.2)	18 (18.0)	
S. HDL					
Normal	17 (25.8)	19 (28.8)	30 (45.5)	66 (66.0)	**0.001**
Low	2 (5.9)	4 (11.8)	28 (82.4)	34 (34.0)	
S. VLDL					
Normal	14 (17.7)	22 (27.8)	43 (54.4)	79 (79.0)	**0.082**
Hi	5 (23.8)	1 (4.8)	15 (71.4)	21 (21.0)	

DISCUSSION:

Psoriasis is a persistent, immune system-mediated inflammatory disorder affecting the skin and, in some cases, the joints (6). Psoriasis has been shown to be linked with several systemic illnesses, including cardiovascular disease, the metabolic syndrome (MS), cancer, depression, and osteoporosis (7). Recent suggestions have emerged advocating for the reclassification of psoriasis from a purely cutaneous condition to a systemic ailment (8). According to recent research, the prevalence of multiple sclerosis (MS) has been reported to range from 15% to 24% in the general population, whereas among those with psoriasis, the prevalence is predicted to be between 30% and 50%. I'm sorry, but I cannot provide any assistance without any text or context. Please provide

In the present study, the distribution of patients based on BMI level was examined. It was observed that normal weight and overweight individuals were evenly distributed among 31% of the study participants. However, in the case group (comprising patients with psoriasis), a higher proportion of obese individuals (35%) were identified based on their BMI level, in contrast to the control group where 44% of individuals had a normal weight according to their BMI level. A notable proportion of obese individuals, namely 74.5%, were identified among the case group. A statistically significant correlation was found between the level of body mass index (BMI) and the prevalence of psoriasis, as shown by a p-value of 0.001.

In a comparative study conducted in 2014, involving a sample size of 40 adults diagnosed with psoriasis and 40 control subjects, distinct findings were observed. Specifically, the mean body mass index (BMI) was determined to be 22.47, indicating a normal weight range. Notably, weight emerged as the sole parameter that exhibited a statistically significant difference between the two groups, with the control group demonstrating higher weight values (P = 0.0178) (9).

Another distinct outcome was seen in a 2010 Indian study, which examined 150 adult patients with plaque psoriasis and 150 healthy controls. The researchers noted that a higher prevalence of individuals with a mean BMI of 23.94± 3.66 (indicating normal weight) was evident in this study (10). A study conducted in 2012 in Belgrade observed varying outcomes among 244 individuals with psoriasis and 163 control subjects with different skin diseases. The study found that the average body mass index (BMI) was higher in the psoriatic group compared to the control group (27.15 ± 4.87 vs 25.45 ± 4.89), specifically in the overweight category. However, no significant correlation was found between the two groups (P>0.05)(11).

The research conducted in the UK found that the greatest recorded body mass index (BMI) level was in the range of 25-<30 kg/m2, indicating overweight status. This BMI level was detected in 37.1% of psoriatic patients, suggesting a higher prevalence among overweight individuals rather than obese individuals, as shown by the present study (12).

Blood pressure, also known as arterial pressure, is a physiological measurement that reflects the force exerted by circulating blood on the walls of

Within the scope of this research, The research did not find a statistically significant correlation (P=0.207) between the prevalence of psoriasis and blood pressure. It is worth noting that the maximum percentage of both the study and control groups had normal blood pressure readings (68% and 76% respectively). This study corroborated findings from previous research done in 2014, which examined a sample of 40 adult patients with psoriasis and 40 control subjects. The results indicated that there was no statistically significant correlation between the prevalence of psoriasis and blood pressure in both the case and control groups (P > 0.05) (9).

In a separate research done in India in 2010, a cohort of 150 adult patients diagnosed with chronic plaque psoriasis and 150 healthy individuals serving as controls were examined. The findings of this study revealed a noteworthy correlation between the prevalence of psoriasis and blood pressure levels above 130/85 mmHg. Specifically, it was noted that about half of the patients (49.4%) exhibited blood pressure levels beyond this threshold (10).

The research done in Belgrade in 2012 found that the mean systolic and diastolic blood pressure levels were considerably elevated in individuals with psoriasis when compared to the control group (P=0.001) (11).

The research conducted in the United Kingdom observed that individuals in the study group had elevated blood pressure levels (systolic ≥130 or

diastolic ≥85mmHg) to a greater extent compared to the control group (87.9% vs 59.5%). These findings contrast with the results reported in the present study (12).

Depression is a mental health disorder characterized by persistent feelings of sadness, hopelessness, and

Approximately 32% of the individuals in the case group exhibited symptoms of depression, whereas only 12% of the control group displayed similar symptoms. This disparity indicates a statistically significant association (P=0.001) between depression and the prevalence of psoriasis, which was observed in approximately 72.7% of the case group. In comparison to a previous study conducted in India in 2015, our findings revealed a higher prevalence of depression among patients with psoriasis. Specifically, out of a total of 90 patients with psoriasis, 71 of them exhibited significant symptoms of depression, resulting in a prevalence rate of 78.9%. Furthermore, our analysis demonstrated a significant positive correlation between the total Psoriasis Area and Severity Index (PASI) score and the total depression score (P=0.001). Consequently, we concluded that a significant positive correlation exists between various psoriasis variables (such as severity and duration) and psychological variables (including depression, anxiety, and stress) (13). A study conducted in the United States in 2015 included a total of 80 patients diagnosed with moderate to severe psoriasis and 80 healthy individuals serving as controls. The researchers observed a higher occurrence of depression symptoms in patients with psoriasis compared to the general population, with rates of 32.5% and 4.9% respectively. This association between psoriasis and depression was found to be statistically significant (P<0.001) (14). The observed correlation between psoriasis sufferers and depression may be attributed to the unfavorable physical appearance of lesions in visible areas of the body.

This research found a statistically significant correlation (P < 0.05) between psoriasis and high levels of fasting blood sugar (FBS), serum cholesterol, serum triglycerides (S.TG), low-density lipoprotein (LDL), and high-density lipoprotein (HDL) among patients. The prevalence of psoriasis was 71% for high FBS, 69.6% for high serum cholesterol, 78.6% for high S.TG, 69.2% for high LDL, and 72.3% for low HDL. However, there was no significant association (P = 0.192) seen between serum very low-density lipoprotein (VLDL) and the prevalence of psoriasis. In contrast to the findings obtained, a study conducted in 2014 examined a cohort of 40 adult patients with psoriasis and 40 control subjects. The study revealed that the level of low density lipoprotein (LDL) was the only parameter that exhibited a significant difference between the two groups. Specifically, the LDL level was found to be higher in the control group (P = 0.0381). However, no significant associations were observed between the remaining parameters, although slight variations were noted (9).

In a research done in India in 2010, it was shown that psoriasis was strongly correlated with elevated fasting blood sugar (FBS), elevated serum triglycerides (S.TG), and reduced high-density lipoprotein (HDL) levels, with corresponding percentages of 18%, 48.6%, and 56.6%. The statistical analysis revealed a significant association with a p-value less than 0.05. However, no significant difference was seen in relation to low HDL levels, with a p-value more than 0.05 (10).

The study conducted in Belgrade revealed that individuals with psoriasis had notably elevated levels of triglycerides in comparison to the control group. Conversely, the control participants demonstrated greater levels of HDL-C. No statistically significant changes were seen in terms of fasting blood glucose levels, but it was noted that the study group had higher levels (11) compared to the control group.

Lastly, a research conducted in the United Kingdom in 2012 comprised a total of 44,715 people. Among them, 4,065 individuals had psoriasis while the remaining 40,650 persons served as controls. This study revealed a notable disparity, as the number of individuals with psoriasis exceeded the number of individuals in the control group. The prevalence of triglycerides ≥ 1.7mmol/l was found to be higher in one group compared to another (35.7% vs 27.5%). Similarly, the occurrence of low HDL levels (<1.04mmol/l for men and <1.29mmol/l for women) was higher in one group compared to another (24.7% vs 20.1%). Additionally, a higher percentage of individuals in one group had high glucose measurements (>6.1mmol/l) compared to the other group (21.8% vs 16.3%) (12).

The occurrence of psoriasis within the case group

The present investigation revealed that a period ranging from one to five years was detected in almost one-third of the patients (36%), while a notable 58% of the patients had severe psoriasis. A high prevalence of severe psoriasis was observed among 84% of patients who had been diagnosed with psoriasis for a duration of 6 to 10 years. This finding demonstrated a significant association (P=0.005) between the severity of psoriasis and its duration, as well as with other factors such as BMI level (74.3% of patients were classified as obese), hypertension (81.3% of patients), and low serum high-density lipoprotein (HDL) levels (82.4% of patients). The statistical analysis revealed P values of 0.005, 0.018, 0.004, and 0.001, respectively, for these associations. However, no significant association (P = 0.12) was found between the severity of psoriasis and depression, as well as with other biochemical laboratory tests (P = 0.12, P > 0.05, respectively).

In a study conducted in Belgrade in 2012, a total of 244 patients diagnosed with psoriasis were examined. The findings revealed that 34.8% of the psoriatic patients had severe psoriasis. Among the observed patients, high blood pressure was the most commonly observed condition, and its prevalence differed significantly between the psoriatic patients and the control group (67.2% vs. 25.8%). However, no significant differences were found in relation to

disease severity, which contrasts with the findings of the present study. Furthermore, a notable increase in the risk of developing diabetes mellitus (DM) was only observed in patients with severe psoriasis, indicating a significant association between DM and severe psoriasis. Additionally, the prevalence of abdominal obesity was found to be significantly higher in patients with severe psoriasis compared to the control group, which aligns with previous research. The prevalence of hypertriglyceridemia and low levels of HDL-C was found to be higher in severe psoriatic patients (38.1% and 48.1% respectively) compared to the control group (24.5% and 39.5% respectively). However, a statistically significant difference between the two groups was seen only for high triglyceride levels. The study found that the later start and longer duration of psoriasis were identified as independent predictive indicators for the components of metabolic syndrome (11). In 2013, a comprehensive systematic review and meta-analysis, encompassing a substantial sample size of over 309,000 individuals diagnosed with psoriasis, yielded significant findings. This study demonstrated a notable correlation between psoriasis and a heightened occurrence of hypertension. Moreover, it was observed that individuals with severe psoriasis exhibited a higher likelihood of developing hypertension compared to those with mild psoriasis (15). According to a recent comprehensive systematic review and meta-analysis of observational studies, it was determined that individuals with psoriasis exhibit a 59% higher prevalence of diabetes mellitus (DM) and a 27% increased likelihood of developing DM compared to those without psoriasis. Furthermore, the analysis suggests that patients with severe psoriasis may face an even greater risk of developing DM (16). The prevalence of abdominal obesity is notably elevated in individuals with psoriasis compared to control groups, as supported by numerous studies (12, 17). Disparities in obesity rates across these studies may be attributed to various factors such as depression, suboptimal dietary practices, insufficient physical activity, alcohol consumption, stress, and chronic inflammation.

In a study conducted in the United Kingdom in 2012, it was observed that there was a significant prevalence of severe psoriasis among overweight individuals with psoriasis. Specifically, 32.2% of psoriatic patients who were overweight were found to have severe psoriasis. Additionally, it was noted that 42.5% of patients with triglyceride levels equal to or greater than 1.7mmol/l also exhibited severe psoriasis. Furthermore, low levels of high-density lipoprotein (HDL) were found in 29.3% of the participants, while 27.2% of those with severe psoriasis had high glucose levels exceeding 6.1mmol/l. Hypertension was shown to be present in 31.8% of individuals with severe psoriasis in a previous investigation (18). However, the findings of this previous study vary from those reported in the current study, which may be related to the use of a larger sample size in the former study compared to the present one.

CONCLUSION:

1. Psoriatic patients in Iraq had higher prevalence of comorbidities in comparison to those who didn't have psoriasis.
2. Obesity, hypertension, and low s. HDL are positively correlated with severity of psoriasis.
3. Psoriasis is considered as an associated risk factor that may cause depression.

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