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Research Article

Analysis of Quality of Life in Relation with Physical and Psychological Morbidity in Patients of Psoriasis

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Abstract

Objective: To study the effect on quality of life and to study the prevalence of metabolic syndrome in psoriatic cases compared to healthy controls.

Methods: After approval from ethics committee, hospital based cross sectional study was performed in outpatient clinic of a government setup on 80 patients of psoriasis and 80 controls after written informed consent. Physical morbidity due to metabolic syndrome was diagnosed by the presence of 3 or more of the modified National Cholesterol Education Program's Adult Treatment Panel III criteria and psychological morbidity due to impaired quality of life was assessed by the questionnaire on Dermatology Life Quality Index (DLQI) and Hospital Anxiety and Depression Scale (HADS). This was compared between the patients with psoriasis and healthy controls. Psoriasis was categorized according to Psoriasis Area and Severity Index (PASI) into mild, moderate and severe (<5, 5-10 &>10 respectively).

Results: A cross-sectional study comprising of 80 cases (M-62 F-18), 80 controls (M-47 F-33), metabolic syndrome was found to be more prevalent in psoriasis cases compared to controls (26.25% vs. 12.5% odds ratio = 2.49). Cases were also found to have more prevalence of hypertension, hypertriglyceridemia and type 2 diabetes. Quality of life was significantly impaired (P value - <0.0001%) in cases as compared to controls. Anxiety and depression were observed more in cases (P value - <0.0001%) in comparison to controls.

Conclusion: This study demonstrates the higher prevalence of metabolic syndrome in cases and significant effect over their quality of life compared to healthy controls. Thus, periodic evaluation of psoriasis patients for metabolic syndrome and psychological assessment is require to improve their quality of life.

Keywords: Psoriasis; Metabolic Syndrome; Quality of Life; HADS; DLQI; PASI

Introduction

Psoriasis is a chronic skin disease which is characterized by the presence of papules and plaques, which are well defined, erythematous and scaly. It is a non-infectious and inflammatory disease of genetic basis. In India, it affects approximately 1-2% of the population. Recently, it has come to light that psoriasis not only involves the skin but also other systems of the body leading to metabolic syndrome which includes hypercholesterolemia, insulin resistance, central obesity and hypertension. The positive association between psoriasis and cardiovascular diseases has also been seen, leading to the development of risk of myocardial infarction in young age. There are some other factors which may aggravate this association such as ill habits (smoking, tobacco chewing, alcohol, etc.), stress, obesity and physical idleness [1].

Skin being the largest organ, determines our appearance, sexual attractiveness and helps a great deal in our social communication. Psoriasis impairing the external appearance leads to psychological trauma in patients affecting the quality of

life and eventually leading to anxiety or depression in long run. Astonishingly very few studies have been carried out, depicting psychological stigma the patient suffers from this chronic disease.

Psoriasis wrecks the Quality of Life (QOL) of the afflicted individuals. Thus, quantification of the impact of psoriasis over QOL, anxiety and depression will help in further management of the patient.

The aim of our study was to find out the prevalence of metabolic syndrome, psychological effect on the quality of life, in case of psoriasis patients compared to that of the healthy controls. We assessed and analyzed the above findings according to the severity and duration of psoriasis.

Materials and Methods

The cross-sectional study including 160 subjects (80 cases of psoriasis and 80 controls) was conducted in the outpatient clinic of the Department of Dermatology, Sir. T. Hospital, Bhavnagar, Gujarat.

We included patients who were 18 years or older and excluded those who had been on systemic therapy within last 3 months i.e. Acitretin, Cyclosporine, Methotrexate or Phototherapy, as drugs like Methotrexate or cyclosporine can affect lipid profile. Additionally, systemic therapies can alter the severity of psoriasis, metabolic parameters and psychological well being.

A total of 80 patients of psoriasis of both genders were included in the study along with 80 controls, which included the relatives accompanying the patients of psoriasis and other patients attending the clinic, who were not suffering from psoriasis and conditions like diabetes and other endocrinal disorders which have their independent influence on metabolic disorder.

After obtaining the approval from Institutional Review Board (IRB) (Approval No: 624/2016) and informed consent, cases and control in this study were subjected to Quality of Life (QOL) assessment by questionnaire of Dermatology Life Quality Index (DLQI), Hospital Anxiety and Depression Scale (HADS) for psychological morbidity and physical morbidity Modified National Cholesterol Education Program's Adult Treatment Panel III criteria (NCEP ATP III) was used for diagnosis based on the presence of ≥3 criteria which includes serum triglycerides: >150 mg/dL, serum High-Density Lipoprotein (HDL) cholesterol: <40 mg/dL in men or <50 mg/dL in women, Fasting Blood Sugar (FBS): >100 mg/dL, blood pressure: systolic >130 mm Hg and diastolic >85 mm Hg, waist circumference: >102 cm in men and >88 cm in women [2].

The study groups were assessed by a dermatologist who recorded their demographic, biometric and the other relevant data, including age, sex, weight, height, body mass index, waist circumference, blood pressure, smoking, alcohol consumption habits, duration of disease, type and severity of psoriasis, presence and distribution of psoriatic arthropathy and concomitant medications.

Psoriasis was classified as - short (<1 year), intermediate (1-3 years) or long (>3 years) duration. Patients were classified as having mild, moderate or severe psoriasis based on the Psoriasis Area and Severity Index (PASI) score (<5, 5-10 and >10 respectively). Body Mass Index (BMI) was calculated as the ratio of weight in kg to the square of height in m^2. Waist circumference was measured by locating the uppermost part of the hip bone and placing a measuring tape around the abdomen snugly but without causing compression of the skin, ensuring that the tape was horizontal. Blood pressure was recorded after subjects had been at rest for at least 10 minutes. A venous blood sample was taken in all patients and controls, after overnight fasting (at least 8 h) to estimate the fasting blood sugar (enzymatic method) and fasting lipid profile (enzymatic method).

DLQI (© AY Finlay, GK Khan, April 1992) was completed in 1 to 2 minutes and was calculated by summing the score of each question. It had 10 questions each consisting of the score from 0 (Not at all), 1 (A little), 2 (A lot), 3 (Very much). The questions were such that they addressed the psychological aspects i.e. symptoms and feelings concerning the disease (psoriasis), daily activities, leisure, work & school, interpersonal relationships and treatment. The higher the score more the quality of life was impaired. It was compared with the PASI of the cases.

HADS (© R.P. Snaith and A.S. Zigmond, 1983, 1992, 1994) is a fourteen-item scale that generates ordinal data. Seven items relate to anxiety and seven relate to depression. Each item in the questionnaire was scored from 0 to 3. So, a person can have score

between 0 to 21 for either anxiety or depression. Then it was compared with the PASI of cases.

Statistical Analysis

Data analysis was done using the software Graph Pad InStat 3 Version 3.06. All the quantitative variables were measured in patients as well as in controls and then they were analysed with the Mann-Whittney test, as the data was found to be in non-gaussian distribution. Positive variables in physical and psychological morbidity were then analysed through chi-square test.

Result

The study comprised of 80 cases and 80 controls. Age of the patient ranged from 18 to 78 years. Duration of psoriasis was from 15 days to 40 years. Psoriasis Area and Severity Index (PASI) score ranged from 0.3 to 21.2 (Table 1). Graphical representation of age groups is given in Fig. 1.

In our study, we found the male preponderance (77.5%) in cases, with the majority of cases (66.25%) suffering for long-term (>3 years) from psoriasis. On analyzing the Psoriasis Area and Severity Index (PASI) scoring, majority of the patients (71.25%) had mild variety of psoriasis (PASI=<5) (Table 1).

According to modified National Cholesterol Education Programme's Adult Treatment Panel III criteria (NCEP ATP III), metabolic syndrome was diagnosed in 21 (26.25%) of cases and 10(12.5%) of control. The difference observed was statistically significant($P<0.05$) with the odds ratio of 2.49 (Table 2). On comparing the components of metabolic syndrome, it was observed that systolic blood pressure with ($P=0.0002$) was most significantly affected in cases, as compared to controls followed by serum triglyceride (S. TG) levels ($P=0.0005$), fasting blood glucose (FBS) ($P=0.0018$), diastolic blood pressure ($P=0.014$) and lastly waist circumference ($P=0.043$) as mentioned in (Table 2). While the results of Body Mass Index (BMI) and Serum High-Density Lipoprotein (S. HDL) were not statistically significant when compared to controls. On analyzing the positive findings of components of metabolic syndrome with chi-square test, P value was not significant in any of them, but Odds Ratio (OR) was significant in case of Hypertension (OR = 2.607) and S. Triglyceride (OR = 1.857) as mentioned in (Table 3).

Quality of life was significantly impaired in cases as compared to controls (P=<0.0001) (Table 2). Analysis of DLQI scores, revealed the contribution of the heading Symptoms and Feelings most to be impaired in QOL while the heading Personal relationships was least contributing. On analyzing the DLQI scores, it was observed that out of 80 cases 44 cases had a small effect, 18 had moderate effect, while 10 had very large effect on their quality of life. In controls, only 49 of them had a small effect. No significant impact over the quality of life was observed in the controls, as compared to the cases of psoriasis (Table 4). On analyzing the data with chi-square test it was significant (P=<0.0001) (Table 4). A linear relationship was observed between PASI and DLQI of cases as seen in scatter diagram (Fig. 2).

Similar was the scenario with anxiety and depression in the cases, as it was statistically significant (P=<0.0001) (Table 2). But no relation was observed between HADS, metabolic syndrome and PASI scores of patients. In patients of psoriasis, it was observed that 6 of them had a borderline abnormality in the scores of both anxiety and depression. Abnormal scores were observed in HADS in patients of psoriasis, 7 of them in anxiety and 9 in depression. While with controls no significant abnormality was observed (Table 4). On analyzing the data with chi-square test, it was found to be significant both for anxiety as well as for depression ($P=0.0008$) & ($P=0.0003$) respectively (Table 4).

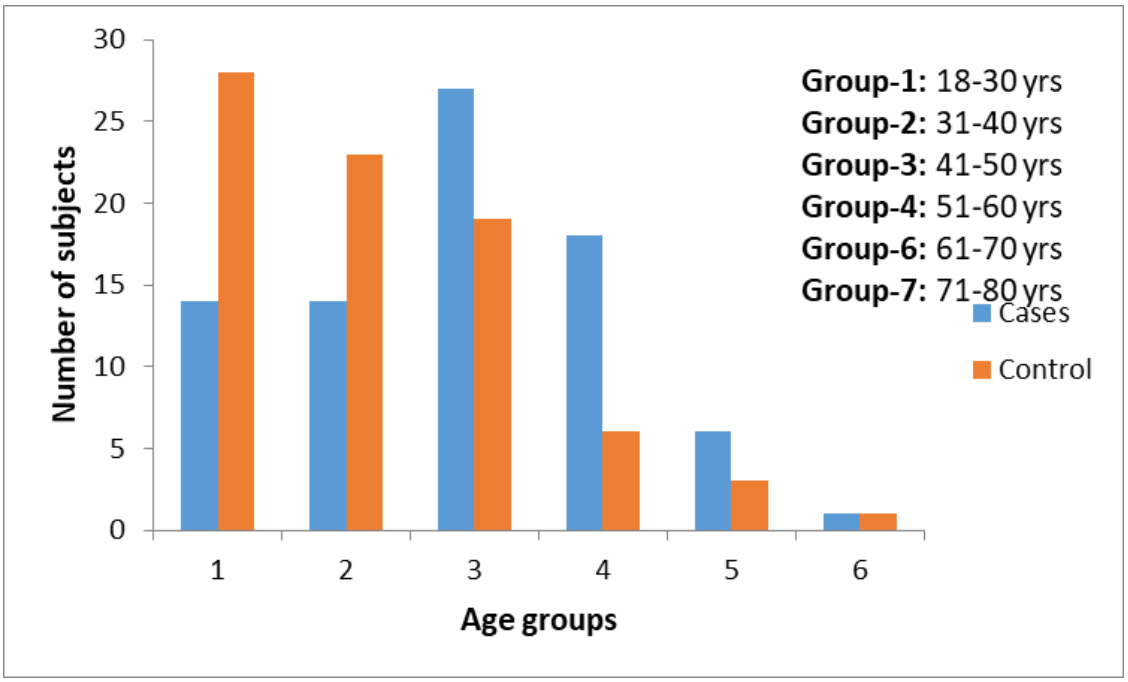

Figure 1: Graphical representation of age groups.

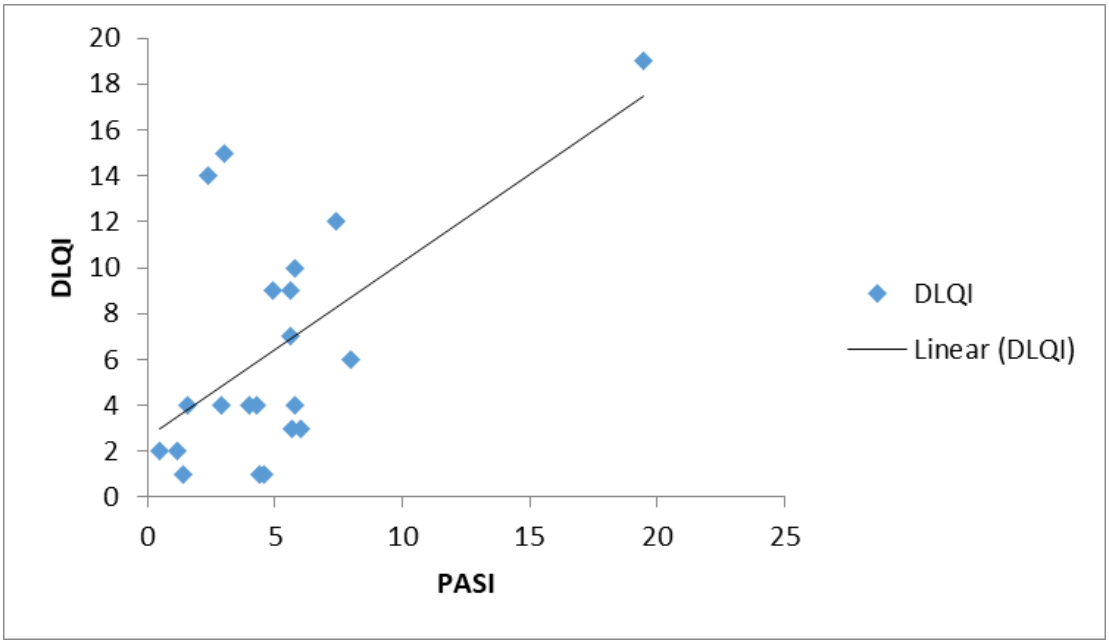

Figure 2: A linear relationship was observed between PASI and DLQI of cases as seen in scatter diagram.

Characteristics	Cases
Psoriasis Area and Severity Index (PASI), Mean + SD	4.76+ 4.03
Mild (PASI <5), n (%)	57 (71.25)
Moderate (PASI 5-10), n (%)	17 (21.25)
Severe (PASI >10), n (%)	6 (7.5)
Duration of Psoriasis, Mean + SD (Years)	8.53 + 7.8
Short (<1 year) n (%)	8(10)
Intermediate (1-3 years) n (%)	19 (23.75)
Long Standing (> 3 years) n (%)	53 (66.25)

Table 1: Psoriasis Area and Severity Index (PASI) score.

Mean ± SD of different parameters	Cases	Control	P-value (Mann-Whittney)
Body Mass Index, (kg/m²)	24.36± 4.56	25.14± 4.97	0.3731
Serum Triglyceride, (mg/dL)	139.88± 67.55	109.24± 54.39	**0.0005**
Systolic blood pressure, (mm Hg)	125.63± 10.20	120.08± 8.96	**0.0004**
Diastolic blood pressure, (mm Hg)	81.50± 5.07	79.45± 5.08	**0.014**
Fasting blood sugar (FBS), (mg/dL)	105.96± 41.06	92.96± 17.70	**0.0018**
Serum HDL, (mg/dL)	47.18±9.83	51.25± 15.32	0.3027
A. Male	46.96 ± 10.4	46.55 ± 12.23	0.85
B. Female	48.88 ±8.67	58.05 ± 16.71	0.072
Waist Circumference, (cm)	92.07±11.27	88.66± 11.79	**0.043**
A. Male	91.85 ±10.74	87.30 ±11.5	**0.0328**
B. Female	93.27 ± 13.38	88.57 ± 10.71	0.2016
DLQI	5.66 ± 4.14	1.94± 1.77	**<0.0001**
Anxiety	3.50 ± 4.54	0.2125 ± 0.69	**<0.0001**
Depression	3.77 ± 4.41	0.3750±1.036	**<0.0001**
Metabolic Syndrome	**Cases n (%)**	**Control n (%)**	**P-value (Chi-square test)**
Present	21 (26.25%)	10 (12.5%)	**0.0455**

Table 2: Statistically significant (P<0.05) with the odds ratio.

Study Parameters	Cases n (%)	Control n (%)	P-value (Chi-square test)	Odd's Ratio (OR)
Waist Circumference (>102 cm males, >88 cm females)	27 (33.75)	28 (35)	0.8678	0.9461
Hypertension (≥130/85 mm hg)	16 (20)	7 (8.75)	0.0714	**2.607**
S. Triglyceride (≥150 mg/dL)	24 (30)	15 (18.75)	0.1407	**1.857**
S. HDL (<40 mg/dL males, <50 mg/dL females)	25 (31.25)	28 (35)	0.7369	0.8442
Type 2 diabetes mellitus (FBS ≥100 mg/dL)	26 (32.50)	20 (25)	0.3825	**1.444**

Table 3: The findings of components of metabolic syndrome.

Dermatology Life Quality Index				
Sr. No.	**Score (Inference)**	**Cases n (%)**	**Controls n (%)**	**P-value (Chi-square test)**
1.	0-1 (No effect)	8 (10)	29 (36.25)	**<0.0001**
2.	2-5 (Small effect)	44 (55)	49 (61.25)	
3.	6-10 (Moderate effect)	18 (22.5)	2 (2.5)	
4.	11-20 (Very large effect)	10 (12.5)	0	
5.	21-30 (Extremely large effect)	0	0	

Hospital Anxiety and Depression Scale							
Sr. No.	**Score (Inference)**	**Cases n (%)**		**Controls n (%)**		**P-value (Chi-square test)**	
		Anxiety	**Depression**	**Anxiety**	**Depression**	**Anxiety**	**Depression**
1.	0-7 (Normal)	67 (83.75)	65 (81.25)	80 (100)	80 (100)	**0.0008**	**0.0003**
2.	8-10 (Borderline abnormal)	6 (7.5)	6 (7.5)	0	0		
3.	11-21 (Abnormal)	7 (8.75)	9 (11.25)	0	0		

Table 4: Data with chi-square test.

Discussion

Psoriasis is a systemic inflammatory disease, which involves proinflammatory cytokines such as tumor necrosis factor-α and interleukin-6 that are also known to contribute to the features of Metabolic Syndrome (MS) such as hypertension, dyslipidaemia and insulin resistance. Several observational studies have recently demonstrated that, psoriasis is associated with systemic disorders such as cardiovascular disease, MS, carcinomas, chronic obstructive pulmonary diseases, inflammatory bowel diseases, depression and osteoporosis. Chronic Th-1 and Th-17-mediated inflammation with dysregulation of cytokines for e.g. tumor necrosis factor-α and interleukin-6, not only promotes epidermal hyperplasia in psoriasis, but may also antagonize insulin signalling, alter adipokine expression, mediate insulin resistance and obesity. Overlapping inflammatory pathways and genetic susceptibility may be a potential biologic link underlying this association. Immune pathways which drive psoriasis are also prominent disease mediators for atherosclerosis and thrombosis, thus we can say psoriasis and metabolic syndrome are considered as branches of the same tree. Psoriasis not only impacts physical aspects but also affects psychological aspects of the patient. Owing to chronic nature of the disease and distribution of skin lesion over the exposed parts of the body, psoriasis has a profound effect on the mental status of the patient. Thus, evaluation of psoriasis based on clinical severity alone would not suffice, rather a more holistic approach considering the quality of life of the patient, psychological assessment along with clinical treatment modalities would be more helpful. Many studies have been carried out till now regarding the association of metabolic syndrome and its components with psoriasis. In our study we observed a higher prevalence of metabolic syndrome in patients of psoriasis than control [26.25% vs 12.5%, Odds Ratio (OR) 2.49] which is similar to other studies carried out by Kothiwala, et al., [42.1% vs 21.4% or 2.67], Gisondi, et al., [30.1% vs 20.6% or 1.65], Nisa and Qazi [28% vs 6% or 6.09] and Love, et al., [40% vs 23% or 2.16] [2-5].

No association was observed between metabolic syndrome and duration of psoriasis. Such findings were observed by Gisondi, et al., which included patients of psoriasis of duration longer than 6 months [3]. Kothiwala, et al., observed similar findings along with the relationship of severity of psoriasis and metabolic syndrome in the cross-sectional study, of 140 patients of psoriasis and 140 controls [2]. Sommer, et al., carried out a hospital-based study in Germany noted that hospitalized treatment-resistant chronic plaque psoriasis with greater body surface area involvement had direct correlation with the metabolic syndrome as compared to controls [6]. Similar trend of increase in metabolic syndrome, along with the increase in severity of psoriasis was observed by Langan, et al., [7]. Increased prevalence of metabolic syndrome in patients of psoriasis especially with high PASI score (>10) was observed by Nisa and Qazi [4]. However, not all the studies carried out have found a positive association between the metabolic syndrome and psoriasis. Pereira, et al., in a study on 77 patients with chronic plaque psoriasis from Mumbai, India and Lakshmi, et al., in a study of 40 patients with chronic plaque psoriasis from South India were not able to demonstrate any significant association between metabolic syndrome and psoriasis [8,9].

Components of metabolic syndrome were also the focus of our study and they were compared between the cases and controls. In our study, on analyzing the physical parameters, systolic blood pressure was significantly impaired in the cases as compared to controls ($P = 0.0004$). Also, the serum triglyceride levels and fasting blood sugar levels were significantly affected with ($P = 0.0005$) and ($P = 0.0018$) respectively. Thus, linear relation was observed between psoriasis, diabetes and hypertension (Table 2). Our findings were further substantiated by many other studies [2,8,10]. We also observed association of dyslipidemia, that is raised triglyceride levels in psoriasis patients as compared to controls (Table 2) alike to the study of Nisa and Qazi [4]. Langan, et al., also noted the association of obesity along with hypertension, raised fasting blood sugar and severity of psoriasis [7].

Psychological morbidity in our study was analyzed by 2 questionnaires, Dermatology Life Quality Index (DLQI) and Hospital Anxiety and Depression Scale (HADS). There are various studies carried out, mentioning the importance of quality of life in patients of psoriasis. A review article by Bhosle, et al., mentions different tools that can be used for psoriasis for quality of life such as Psoriasis Index of Quality of life (PSORIQol), Psoriasis Life Stress Inventory (PLSI), Psoriasis Disability Index (PDI) [11]. A study which included 217 patients of psoriasis by Gupta, et al., had a significant finding of 9.7% of patients reporting a wish to be dead and 5.5% reported active suicidal ideation at the time of the study [12]. No such suicidal tendencies or death wish were noted in case of our study.

On evaluating DLQI, 35% of cases of psoriasis had impaired Quality of Life (QOL) in comparison to 2.5% of controls. In cases, the major factors contributing to impairment of QOL were their symptoms (itching, burning) and feelings (embarrassment, helplessness) while the least contributing was about their personal relationships. Overall, on comparing the psychological

assessment of cases and controls, impairment of QOL was highly significant (P = <0.0001) (Table 2,4). A linear correlation between PASI and DLQI was observed in our study as depicted in Fig. 2. Similar findings were observed by Rakhesh SV, et al., in a study of 50 patients carried out in South India [13]. They observed that clinical PASI scores correlated significantly with the overall Physical Disability (PDI), individual aspects of the PDI (except the treatment-related activities) and the measurement of stress incurred (PLSI).

A study of 100 patients of psoriasis 21-60 years of age, was carried out by Tee, et al., in Singapore. Anxiety and depression were quantified in them by HADS, where they noted an anxiety disorder in 17%, while a depressive disorder in 15% [14]. In our study, we noted anxiety and depressive disorder in 16.25% and 18.75% respectively on analyzing HADS of cases of psoriasis. While anxiety and depressive disorder were not at all observed (0%) in controls (Table-2,4).

Limitations

The study's cross-sectional nature limits its ability to establish causal relationships between psoriasis, metabolic syndrome and psychological morbidity. Longitudinal studies would be needed to track the progression of these associations over time. A larger sample size could provide more robust data and enhance the generalizability of the findings, particularly across diverse populations.

The exclusion of patients who had been on systemic therapy within the last three months (e.g., acitretin, cyclosporine, methotrexate) may have introduced bias, as these treatments could potentially affect metabolic parameters and psychological well-being. While this exclusion criterion may lead to a slight selection bias—potentially excluding patients with severe psoriasis who are more likely to be on systemic therapy—it does not invalidate the study's core findings. Instead, it enhances the ability to assess psoriasis-related morbidity independent of treatment effects. Future longitudinal studies that include treated patients with appropriate adjustments for systemic therapy effects could further validate these associations.

While the study controlled for certain factors like age and sex, other confounders such as socioeconomic status, comorbidities or lifestyle factors (e.g., diet, physical activity) were not explicitly controlled for, which may influence the study outcomes.

Conclusion

Psoriasis has a quite detrimental effect on patients and can make them psychologically handicap. Our study is unique in the way that we have compared patient's physical and psychological aspects to controls. Result being, overall prognosis of patients can be well explained.

The study concludes that psoriasis is associated with a higher prevalence of metabolic syndrome compared to healthy controls, with significant impairments in quality of life and increased rates of anxiety and depression in psoriasis patients. The findings emphasize the importance of periodic evaluation for metabolic syndrome and psychological assessment in psoriasis patients to improve their overall well-being. The study also highlights the need for a holistic approach to managing psoriasis, considering both physical and psychological aspects of the disease.

Conflicts of Interest

The authors have carried out the work on their own and the ICMJE form for Disclosure of Potential Conflicts of Interest have been submitted and none were declared.

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