

## PSORIASIS AND ITS COMORBIDITIES: ROUTINE DERMATOLOGICAL CONSULTATION VS DESIGNED COUNSELING SESSION REGARDING COMORBID ASSOCIATIONS OF PSORIASIS

Rani Shahzadi<sup>\*1</sup>, Rabia Hanif<sup>2</sup>

<sup>\*1</sup>Head Nurse Children's Hospital Lahore

<sup>2</sup>Nursing Officer Children Hospital Lahore

<sup>1</sup>ranishahzadichich2017@gmail.com, <sup>2</sup>rabiahanif1001@gmail.com

DOI: <https://doi.org/10.5281/zenodo.20771473>

### Keywords

### Article History

Received: 20 April 2026

Accepted: 02 June 2026

Published: 20 June 2026

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Corresponding Author: \*

Rani Shahzadi

### Abstract

#### *Background*

The detailed analysis of psoriasis along with its associated comorbidities has been highlighted in the recent literature; however, preventive measures for psoriatic comorbidities have not been well indicated. Also, it has been reported in some recent literature that the patients lack knowledge about their comorbid associations and its management. The purpose of this study is to know the impact of patient education and counseling in comparison to routine OPD consultation for comorbid conditions.

#### *Objective*

To compare the impact of designed counseling session with routine consultation, regarding comorbid associations of psoriasis.

#### *Methods*

A quasi-experimental design was used to conduct this study at the Dermatology Department of Madinah teaching hospital in Faisalabad, Pakistan. Convenient sampling was used to select 30 psoriasis patients. A single-group pre-test and post-test study design was conducted where all the patients who have been through the process of routine consultation were counselled under this trial.

#### *Results*

The results were statistically significant ( $p < 0.05$ ) by paired sample t-test.

#### *Conclusion*

This study showed that the counselling sessions resulted in a great level of patient satisfaction with respect to awareness, knowledge, and perception. So, it should be a part of routine clinical consultation.

### INTRODUCTION

Psoriasis is characterized by a multisystem disease, which imparts quite adverse effects on the patient's life due to its associated comorbidities. The excessive and abnormal release of cytokines promotes systemic inflammation that cause comorbid conditions. It is associated with lifelong comorbid conditions such as diabetes,

hypertension, dyslipidemia, cardiovascular disease, and obesity. A cohort study conducted in UK over moderate to severe psoriasis patients found that the psoriasis patients have lifespan 6 years shorter than healthy individuals due to cardiovascular pathologies. The World Health Organization statistics presents that coronary

artery disease and vascular lesions are prevalent in diabetic and hypertensive patients with mortality rate high among psoriasis patients. The WHO also states the concept of metabolic syndrome with respect to atherosclerosis. (Gladman, 2017) Psoriasis and hypertension also proposed risk factor for cardiovascular disease such as myocardial infarction, ischemia, stroke, and cardiovascular death. Psoriasis and diabetes are also positively associated and further induce systemic inflammation due to production of cytokines. Psoriasis also disturbs the patients' blood lipid level and produce reactive oxygen species as well. The systemic inflammation is a pathway for non-alcoholic fatty liver disease, endothelial dysfunction, insulin resistance and myocardial infarction. (Yamazaki, 2021). It is a complex disease having both emotional and social affects that ultimately effects the quality of life. The stigmatization and sense of unacceptance lead to bad quality of life and poor mental health. It is quiet challenging for the clinician to provide holistic management to psoriasis patients due to lack of time and lack of training. The painful and debilitating symptoms are far away from the physical symptoms. It ultimately impacts the patients personal, professional, and marital life. These patients also get addicted to smoking and alcoholism which in turn ultimately effects the patient's life. (Yamazaki, 2021) (Aldeen T, 2016) Adult Treatment Panel III, the presence of  $\geq 3$  from 5 criteria's label indicates the patient having metabolic syndrome. Below are the individual risk factors of metabolic syndrome (Elmets, 2019).

The association between psoriasis and obesity is positive due to the common inflammatory mediator leptin which further increases the production of proinflammatory cytokines such as IL-6 and TNF-alpha. This association is bidirectional with either obesity predisposing psoriasis or psoriasis-inducing obesity. Central obesity/visceral obesity is most commonly present among psoriasis patients and is a mutual risk factor for diabetes and CVD. According to guidelines, the central obesity will be stated as 40 inches in men and 35 inches in women and having a BMI of  $\geq 30 \text{ kg/m}^2$  (Elmets, 2019).

The association between psoriasis and type-2 diabetes mellitus is due to the common mediator, Th-1 cytokine that promotes insulin resistance. Moreover, obesity is also a risk factor for type-2 diabetes. According to American Diabetes Association, criteria for diabetes testing in asymptomatic adults, 2013 (Elmets, 2019).

Psoriasis and hypertension are associated due to disturbed renin-angiotensin system. The levels of angiotensin-converting enzyme ACE, as well as renin, elevate in the blood due to psoriasis which further disturbs the blood pressure. Moreover, both share common risk factors such as smoking and obesity (Ni & Chiu, 2014).

The association between dyslipidaemia and psoriasis is due to inflammatory mediators of psoriasis such as Th-1, the cytokines IL-1, IL-6, and TNF-alpha. These mediators alter lipoprotein composition, increase deposition of lipids and enhance the expression of cellular adhesion molecules. The mediators inhibit lipoprotein lipase activity which increase plasma triglycerides levels. Drugs having an unfavourable effect on lipid profile are retinoids and cyclosporin (Patel, 2018; Elmets, 2019)

The above-mentioned risk factors of metabolic syndrome usually lead towards non-alcoholic fatty liver disease (an excessive accumulation of triglycerides). These patients should be screened for liver enzyme tests. NAFLD can progress to non-alcoholic steatohepatitis due to TNF $\alpha$ /adiponectin ratio (Ni & Chiu, 2014).

Psoriatic arthritis is inflammation of joints due to psoriatic inflammation and it affects up to 40% of patients with psoriasis. Clinically, psoriatic patients usually present with dactylitis and enthesitis in the oligoarticular and polyarticular pattern. More than half of psoriatic patients with polyarticular variant shows nail involvement in the form of pitting, leukonychia, onychodystrophy, koilonychia, onycholysis, and splinter hemorrhages (Elmets, 2019) (Deodhar, 2014).

Psoriasis is independently affiliated with the pulmonary disorder (COPD), and the spirometric parameters varies as compared to the healthy individual. Ninety individuals with matched sex and age having psoriasis were assessed for the difference in the spirometric parameters. The

results of the study represented that the psoriatic patients had reduced vital capacity ratios as compared to the control group (Balci, 2016).

The relationship between psoriasis and COPD has been studied but the results are inconsistent. Using a 30-year literature search, a meta-analysis was undertaken to assess if psoriasis is linked to COPD. A higher incidence of COPD was discovered in psoriasis patients than in the general population, and the link was stronger in severe cases. Patients with psoriasis should quit smoking to lower COPD risk. It may also help reduce comorbidity and mortality by early identification of possible risks (Li, 2015). A meta-analysis and systematic review of cross-sectional & case-control studies comparing the risk of COPD in psoriasis patients against non-psoriasis participants were done. Seven papers were found to meet our inclusion criteria & were used in the analysis of the data. Patients with psoriasis have an increased chance of developing COPD, according to the findings of the study (Ungprasert, 2016). Psoriasis is a chronic skin inflammatory disease with a variety of co-morbid conditions, one of which is depression. As a result of the psychological toll psoriasis takes on, sufferers may feel isolated and alone. Depression and psoriasis are mutually reinforcing. Melatonin levels, genetic evidence, Inflammatory overlap, poor vitamin D3 are all frequent in both psoriasis & depression, according to supporting studies. Depression in psoriatic patients is fuelled by the fear of public rejection and self-stigmatization. Psoriasis is linked to depression, which influences quality of life. Better treatment outcomes can only be achieved by treating not only the physical but also the psychological impacts of psoriasis (Sahi, 2020).

Psoriasis and its comorbidities have been widely discussed in the literature. But it was recognized that it is commonly managed as a simple skin condition despite all risk factors. The study performed by Aldeen & Powell (2016) on Patient Satisfaction generated evidence that patients were dissatisfied from consultation and wished to be treated holistically. Psoriasis still has not been recognized as a complex multisystem disease and management has not started

accordingly. In a recent study by Godse (2021), evidence has been generated that counselling is essential for the management of the disease. It helps them in improving their mental health and social interaction. They concluded that psoriasis should be managed in a multidisciplinary approach with a dermatologist and other specialist depending on the comorbidity. Moreover, the role of counselling was emphasized in this study. But another study claimed that it was challenging for dermatologists to provide a holistic approach to patients in routine clinical practice due to limited time and lack of clinical practice. And until now it was not studied that a psoriasis is a multisystem approach so holistic management should be provided.

Despite all the known and unknown areas of psoriasis, there is still a gap in claiming the effect of counselling in the awareness and prevention of comorbidities. In this experimental trial, we aimed at generating evidence of the role of counselling in the prevention of comorbidities. The guidelines given by Elmet, (2019) claimed that through shared decision making, the patient should be directly involved in the course and treatment of the disease. Health education should be provided, and awareness should be raised for the treatment modalities and prevention of comorbidities. (Aldeen T, 2016)

About 2-3 percent of the world's population has psoriasis, a persistent autoimmune skin disease. Inflammatory mediators and keratinocyte proliferation are two of its hallmark traits. Treatment options include topical, phototherapy, systemic, and biologics, to name just a few. Systemic treatments are more suited for those with severe psoriasis, although topical treatments are suggested for mild to moderate cases. Immunosuppressives, biological medicines, and recently licensed phosphodiesterase-4 inhibitors are among the systemic treatments. As new discoveries in the psoriasis pathogenesis pave the way for innovative medicines to target at the molecular level, there are several issues with current treatments. In addition to the novel compounds targeting Janus kinases inhibitors, a variety of small molecules, PDE-4 inhibitors, biologic, and immunomodulator were shown to

be effective in the study. To make therapy more effective, additional research is needed on the impact that genetic factors and microRNA play in psoriasis (Rapalli, et al., 2018).

Psoriasis therapy has been revolutionized by biologics targeting the Th1/Th17 cytokines. Biologic therapy's long-term hazards must be defined and understood so that patients can be guided in their treatment selection and those risks minimized to the greatest extent feasible (Al-Janabi and Yiu, 2022).

Psoriasis is characterized by scaly patches of red skin covered with silvery scales, as well as scaling and inflammation which can be unpleasant or irritating. Psoriasis can be treated with a variety of methods, including systemic medication, phototherapy, and topical therapy. Many of the side effects of these medicines might be lethal. There is an increased risk of developing additional disorders, like psoriatic arthritis, cancer, depression or anxiety and metabolic syndrome as well as cardiovascular disease and Crohn's disease among those with psoriatic skin disease. Herbal medicine is widely used due to its accessibility, low cost, & high efficacy. In addition to psoriasis therapy, several plants offer other potential qualities (Gaikwad, 2022).

To reduce the risk for cardiovascular disease, the patient should be screened every 4-6 years properly for CVD and referred to a specialist. Baseline evaluation should be performed like height, weight, blood pressure, blood sugar, HbA1C, lipid levels, abdominal circumference, and BMI based on individual risk factors (Kanda, 2021). Patients with psoriatic arthritis should be managed proactively with health education and routine screening as delay can lead to permanent joint damage.

The risk factors of metabolic syndrome should be managed accordingly i.e., obesity status (height, weight, BMI, and waist circumference) should be measured annually among moderate to severe psoriasis patients (Nelson, 2013). Risk for dyslipidaemia & Hypertension is particularly associated among those having severe psoriasis and screening should be performed periodically. While the hypertensive patients on beta-blockers may experience the worst psoriasis. Patients who are at

risk of hypertension should be screened every 3-5 yearly. Psoriatic patients with disturbed lipid profiles can be best managed with anti-TNF drugs (Ni & Chiu, 2014; Ramos & Voorhees, 2021). The psoriatic patients on cyclosporin may experience high blood pressure. Similarly, the risk of diabetes is usually high among severe psoriasis patients so the targeted health history and HbA1C should be performed and referred to a primary care provider for further assessment and management, screening will be performed every 3 years. With both diabetes and psoriasis, patients on anti-TNF and insulin may experience hypoglycaemia, so their doses should be managed accordingly. Moreover, health education should be provided about healthy lifestyle behaviours (diet, exercise, and smoking cessation) to all at-risk patients with metabolic syndrome (Korman, 2020). Particularly to the smoking and alcohol ingestion, there is an increased risk for psoriasis severity. So, these patients should particularly be counselled about smoking cessation and limited alcohol intake for holistic health and proper referral to experts for successful discontinuation (Elmets, 2019).

The skin of psoriatic patients should be actively assessed for any malignancy and age-related screening should also be performed. The systemic agents for psoriasis can cause renal disease so care should be taken when patients are placed on nephrotoxic medications. The patient should be referred to an appropriate health care provider for further comorbidities (Elmets, 2019). Psoriasis, a systemic disease has a profound negative effect on interpersonal relationships, work participation, and sexual health. The patients should be educated and screened for anxiety/ depression and referred to a health care professional as well. Meditation, exercise, and healthy lifestyle activities should be recommended to such patients. Therefore, holistic health should be provided to all patients having psoriasis. While the screening intervals will be adjusted based on individual risk factors and overall health (Elmets, 2019).

The most important thing that is useful in the management of psoriasis is counselling. The physicians need to understand and spend sufficient time with the patient and educate them

about psoriasis and comorbidities. For long-term treatment, awareness should include, information, self-monitoring, care, screening, reinforcement, Motivation, reminders, counselling, psychological therapy, family therapy, crisis intervention, supportive care, and telephone follow-up. (Anon., 2002)

Patient education is key, in improving the quality of life with lifestyle modifications such as intake of a healthy diet, avoiding junk food, regular exercise, weight loss, reducing alcohol consumption and smoking, and regular monthly check-ups. Patients should be made aware of a healthy lifestyle to reduce the risk of comorbidities and its complication. Unhealthy lifestyles such as alcohol consumption, smoking, obesity, and lack of sleep are more aggravating factors of stress and repeating key concepts during follow-up visits allows integration of knowledge and consolidation. (Derek SY Lim, 2018)

## METHODOLOGY

A quasi-experimental design was used to conduct this study at the Dermatology Department of Madinah teaching hospital in Faisalabad, Pakistan. This was One group pre-test and post-test study design where the intervention was applied to all selected patients. A self-designed questionnaire

was filled before and after the intervention to assess the difference in mean value. The questionnaire was based on variables such as disease type, patients' knowledge about comorbid associations, patients' satisfaction with information provided yet, patients urge to learn more about the disease and knowledge about the preventive measures. A patient information leaflet was designed in Urdu language according to the designed counseling session, to revive the information in case of one get forget. After the intervention, we asked for the satisfaction of patient with respect to the grading of not at all, to some extent, a lot.

## Inclusion criteria

- Patients diagnosed with any type of psoriasis by dermatologist.
- Psoriatic patients (male and female) having age of 18years and older.

## Exclusion criteria

- Psoriatic patients who cannot communicate with us in Urdu language independently and consciously.
- Patients who do not wish to participate in the study.

RESULTS

A total of 28 patients with psoriasis were included in the study as in figure 7:

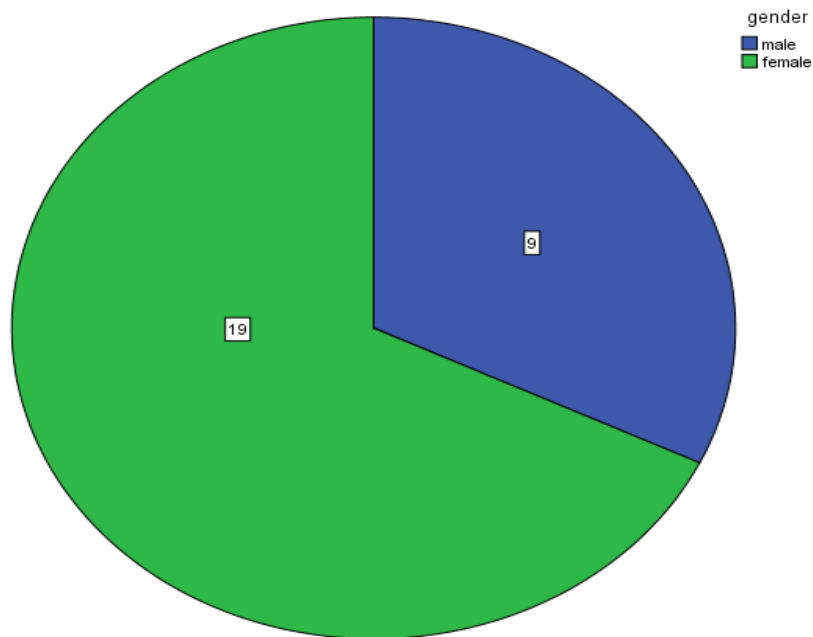


Figure 1. Number of male and female

All of them were diagnosed case of psoriasis as in figure 8:

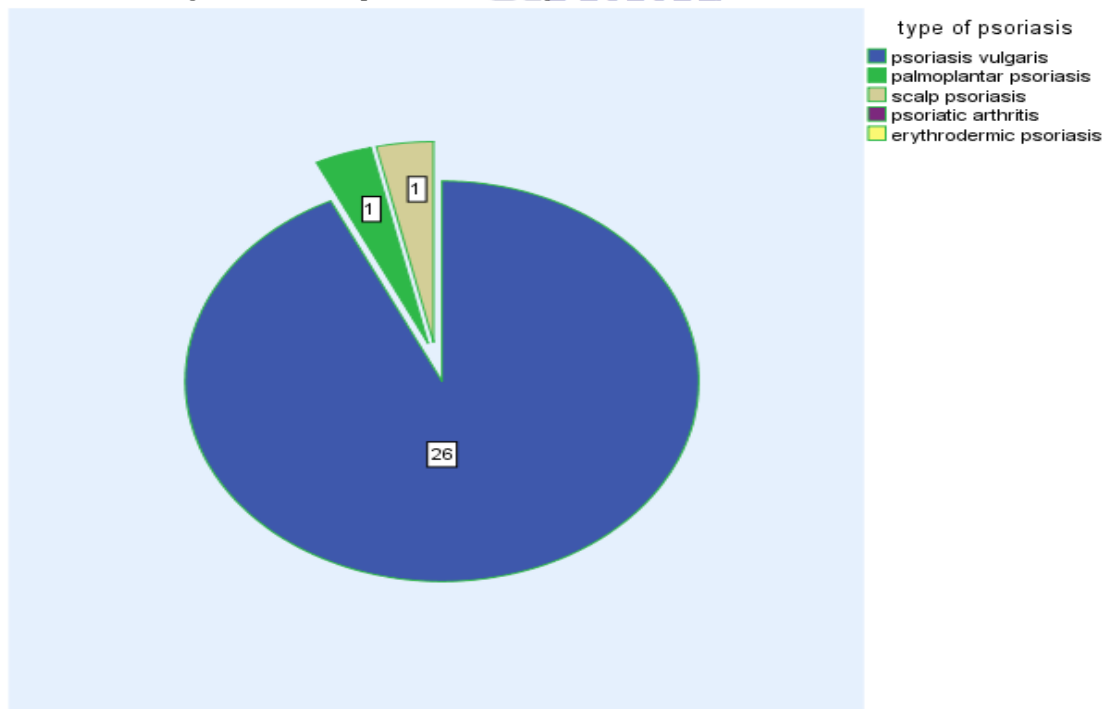


Figure 8, Type of Psoriasis

The duration of the disease is as in figure 9:

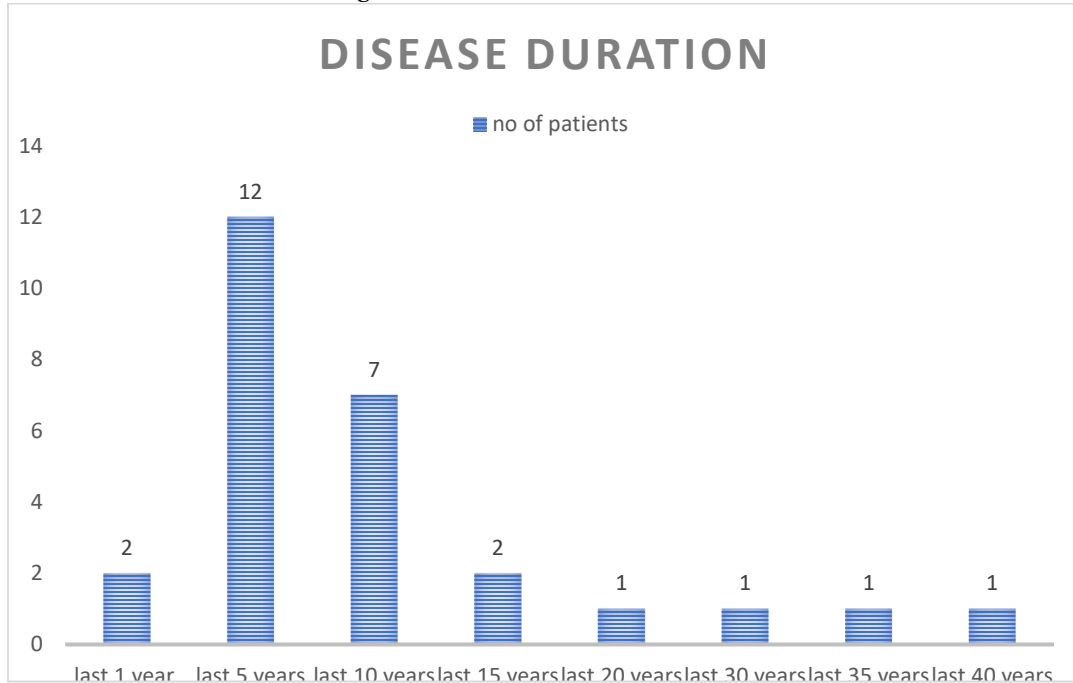


Figure 2. Disease duration

The personal and Family History of Patients chart is in figure 10:

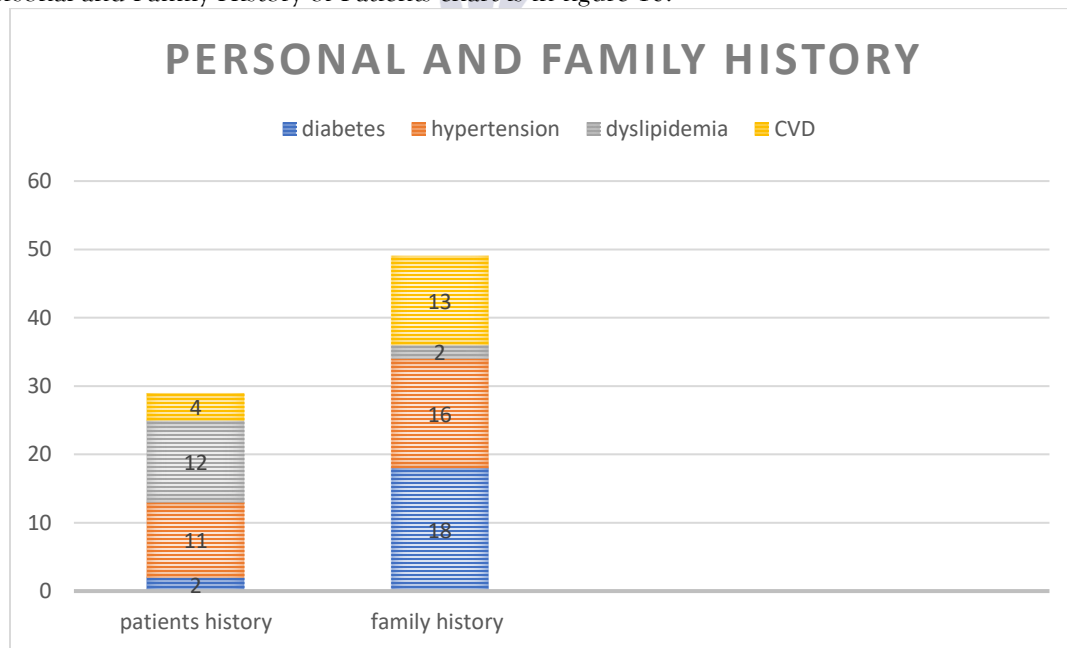


Figure 3. Personal and family history of psoriasis patient

The paired t-test was applied to find a difference between the pre-test and post-test scores, the mean distribution of scores was seen as in the table 1 (Anon., 2002). Paired samples t-test showed that

there is a significant decrease in the mean score of the post-test after the intervention as shown in the table 1:

	N	Mean		Std. Deviation
	Statistic	Statistic	Std. Error	Statistic
pre-test	28	13.2857	.42680	2.25844
post-test	28	11.6071	.31006	1.64067
Valid N (listwise)	28			

Table 1. mean and SD of pre-test and post-test

Table 2. Correlation between pre-test and post-test

	Paired Differences					T	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
pre-test - post-test	1.678	2.46537	.46591	.72260	2.63454	3.603	27	.001

Table 3. p value.

Paired samples t-test showed the significance of the data, as the p-value < 0.05 with a Confidence interval (CI) of 95%.

Individual responses before and after the intervention to know the impact of intervention as in table4 below:

	Pre-test			Post-test		
	Yes	No	Don't know	yes	No	Don't know
do you think that you can get more diseases due to it?	9	9	10	22	5	1
are you satisfied with the information provided yet?	25	3	-	28	-	-
do you want to know more about your illness?	23	6	-	17	11	-
do you think that you should be screened for diabetes, hypertension, and cardiovascular disease?	15	9	-	22	5	1
Do you think that your disease can get better with good diet?	21	7	-	27	1	-
Do you think that your disease can get better with exercise?	12	6	-	22	6	-

Table 4. Individual responses before and after the intervention.

A question was asked to analyze the patient's perception about psoriasis that it's a skin disease or systemic disease.

What is the nature of disease?	12 (skin disease)	11(systemic disease)	5	9 (skin disease)	19 (systemic disease)	Nil
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Table 5, Patients knowledge against psoriasis is a skin disease/systemic disease.

A satisfactory question was asked about the intervention, after the complete intervention. The results are in table6 below:

		Frequency	Percent
Valid	to some extent	6	20.0
	a lot	22	73.3
	Total	28	93.3
Missing	System	2	6.7
Total		30	100.0

Table 6, Satisfactory score of Patient.

DISCUSSION

Counseling has always been the good source of patient's satisfaction. The theory of

biopsychosocial model strongly emphasized the importance of counseling. Even, the modern health care system work on the concept of holistic

health where multidisciplinary team work to provide complete management to the patient.

Psoriasis was previously known as skin disease. Physicians and health care professionals provide management for cutaneous manifestations. But the patients start getting other disease that was similar in inflammatory process of psoriasis thus named as systemic inflammatory disease. These diseases were called comorbid conditions of psoriasis. A literature was studied in which the psoriasis was divided into groups. The 1<sup>st</sup> one of them were of those disease that link with psoriasis according to pathogenesis i.e., psoriatic arthritis and 2<sup>nd</sup> one of them were those that link with psoriasis according to metabolism i.e., metabolic syndrome. (Tahmina Haque, 2021)

In our study, a question was designed to know the patient's perception for psoriasis that it's a skin disease or systemic disease. 12 out of 28 patients consider psoriasis as a skin disease while 5 were not sure that it's a skin or systemic disease while after the intervention, only 5 said that it's a skin disease. A study conducted in 2016 based on semi structured interviews concluded over the results that 70% practitioners recognized psoriasis as a complex disease, but they provide management according to the skin disease. If the doctors do so than how will be the patients recognize it as a systemic disease. (Chisholm, 2016)

After this, a series of questions were asked about the comorbidities. 9 out of 28 patients said that they can get more diseases due to psoriasis while 10 were not sure. But after the intervention, 22 out of 28 were sure that they could get more diseases.

23 out of 28 stated in pre-test that they want to know more about the disease and after the intervention, still 17 want to know more about the disease and its comorbidities. A study conducted in 2016 over 112 patients and they concluded that most of the patients were dissatisfied from the information provided by the dermatologist, and they wished to be treated holistically. (Aldeen T, 2016)

22 out of 28 reported in posttest that they should be screened for comorbidities while this digit was 15 out of 28 in pretest. A study conducted to know General Practitioner knowledge for screening

practice, and they concluded that GPs don't usually screen the patient for comorbidities, and they are not even aware for the risk factors. So how these practitioners will generate awareness among psoriatic patients. (Pauline A Nelson, 2013)

A study conducted by University of Toronto Psoriasis Cohort and Psoriatic Arthritis Clinic. They claimed that health professionals should educate patients about comorbid associations. Moreover, dermatologist and rheumatologist should document patient's medications and compliance towards medicines. Also, they justified the importance of patient education that it helps a lot in association with treatment in improving severity of disease and quality of life. (Gladman, 2017).

Our counselling session showed statistically significant results. After counselling, patients were more informed about the disease. The psoriatic patients also had disturbed mental health and dietary status than other individuals. (Naoko Kanda, 2020) A multidisciplinary approach to the treatment of psoriatic patients can cover a great milestone for the management of psoriasis. Psoriasis clinics should be linked with the psychiatry and nutrition departments of healthcare centres. Dermatologists need to be vigilant about these aspects and should refer the patients to the relevant clinic for therapy. This will help them to deal with mental health issues as well as dietary problems. (Chisholm, 2016)

After the intervention, a question was asked to know the satisfaction of patients. All the 28 patients were satisfied with this intervention. The strong communication between patients and physicians is a key for counselling and patients' education. It helps the patients in improving their health while aiming at controlling over negative thoughts, relief of anxiety and depression associated with the disease. The physicians should motivate patients to open their feelings and maintain sense of goodness. (Kiran Godse, 2021)

## CONCLUSION

This study showed that the counselling sessions resulted in a great level of patient satisfaction with respect to awareness, knowledge, and perception. So, it should be a part of routine clinical consultation. Psoriasis is characterized by a multisystem disease, which imparts quite adverse effects on the patient's life due to its associated comorbidities. It demands strong communication between patients and physicians to help them understand the disease. The limited knowledge and lack of counseling ultimately lead to poor quality of life. Therefore, we have integrated a counseling form according to the proper set of guidelines in this research project that will help us to know the impact of counseling in comparison to routine consultation regarding comorbid associations of psoriasis. We collected data from the Dermatology Department of the tertiary care teaching hospital of Faisalabad Pakistan. Convenient sampling was used to select psoriatic patients based on inclusion and exclusion criteria and was offered to sign informed consent. Data was analysed through SPSS version 20. A paired sample t-test was used to analyze the differences in mean pre-test and post-test values. This study showed that the counselling sessions resulted in a great level of patient satisfaction with respect to awareness, knowledge, and perception. So, it should be a part of routine clinical consultation.

## Limitations of research study

- As it's an undergraduate study, so it's limited to patients of Faisalabad only.
- No control group was selected due to small sample size.

## Recommendations

- There should be a proper psoriasis clinic for these patients.
- A multidisciplinary team should be organized to provide holistic management.
- Designed patient information leaflet for psoriasis patients.

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