



## The Psychological Impact of Melasma on Patients Attending a Tertiary Care Health Facility in Pakistan; A Cross Sectional Study

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### ABSTRACT

**Objective:** This study aims to assess the psychological impact of melasma on patients visiting a tertiary care hospital in Pakistan using DASS-21 scale. **Methodology:** A cross sectional study was done at Dermatology department, Pak Emirates Military Hospital, Rawalpindi (over the total duration of 6 months (July to Dec, 2024)). A total of 392 patients visiting dermatology OPD of Pak Emirates Military Hospital, Rawalpindi were selected via non-probability consecutive sampling technique. Psychological impact of melasma was assessed via a self-reporting questionnaire DASS-21 using Depression, Anxiety and Stress as primary outcomes. **Results:** The scale identified depression among 22% patients with mean score of  $20.5 \pm 4.3$ , while rest of patients exhibit no or very little sign of depression. Anxiety was observed in 28% patients with mean score of  $16.2 \pm 3.8$ , and stress was reported in 37% of patients with mean score of  $22.7 \pm 4.9$ . Correlation between mean DASS-21 score of patients and duration of disease was found significant. **Conclusion:** Melasma patients experience significant impairment on quality of life. These symptoms appear to be related with duration of melasma. It is essential for health care providers to acknowledge and evaluate the psychological impact of melasma when counselling and treating the patients.

### INTRODUCTION

Melasma is a common skin condition that represents itself as brown patchy discoloration or freckles like spots on face, usually on bilateral cheeks. It involves the principal photoexposed skin regions, particularly the facial and neck areas. The commonly involved sites include the cheeks, chin, forehead, nose, upper lip, and temples; while the rarely involved sites may distress the sternal region and extensor arms.<sup>1</sup>

It is a benign condition and more prevalent in pregnant women. Melasma induced during pregnancy is sometimes resolved on its own, but mostly it persists, after multiple treatment failures leading to psychological morbidity. Melasma is still often called the pregnancy mask and is considered as the main consequence of female hormone stimulation on a predisposed genetic background.<sup>2</sup>

Overall prevalence of melasma in general population ranges between 1-50% varying among different ethnicity.<sup>3</sup> Prevalence of melasma in pregnancy is 40-

50%.<sup>4</sup> No study has been conducted so far in Pakistan to determine the exact burden of melasma, however one study in Pakistan showed prevalence of 45% in pregnant women.<sup>5</sup> It ranks highest among incidence of pigmentary disorders followed by freckles and vitiligo.<sup>6</sup> Melasma, though could be genetic, is caused by a variety of other factors, it mainly affects women with sun exposure, pregnancy, iron deficiency anemia, hormonal imbalance, or cosmetics with specific ingredients.<sup>7</sup>

Many treatment options are available for melasma, though the pigmentation caused by melasma is refractory to most of the treatments. However, treatments included are topical creams, chemical peels, laser and light therapies, microneedling and oral medications.<sup>8</sup>

Results usually take time, requiring multiple sessions of procedures and ongoing maintenance. The condition is more amenable to treatment if treated early in the course of its evolution. Even after receiving adequate treatment, melasma may relapse on exposure to



the summer sun or because of changes in hormonal or endogenous factors. So lifestyle modifications, sun protection, cosmetic camouflage and combination therapies also help.<sup>9</sup>

Melasma can cause significant psychological impact on patients. Visibility of the lesions on face leads to various emotional and mental health challenges, such as anxiety, depression, social withdrawal, low self esteem, feeling of helplessness and quality of life is greatly compromised. Psychological support along with dermatological treatment can be crucial in helping patients manage the emotional challenges associated with melasma.<sup>10</sup>

“Quality of life (QoL) is defined as the capacity to perform daily activities appropriate to person’s age and his/ her major role in the society”.<sup>11</sup> The immense effect of melasma on patients’ quality of life is quite obvious. Therefore, understanding the importance of timely assessment and intervention can highly improve the patients quality of life. Many tools have been developed to assess the psychological impact of melasma on patients. Commonly used tools are Melasma Quality of life Scale (MELASQOL), Dermatology Life Quality Index (DLQI), Skindex-16, Patient Health Questionnaire-9 (PHQ-9), and Depression Anxiety Stress Scale-21 (DASS-21).<sup>12</sup>

Different studies have been conducted in Pakistan comparing various treatment options for melasma and impact on patients’ psychological well being has been tested using other scales like MELASQOL and DLQI. However no research on melasma could be found that used DASS-21 to assess quality of life. This study aims to assess the psychological impact of melasma on patients visiting a tertiary care hospital in Pakistan using DASS-21 scale.

## METHODOLOGY

A cross-sectional study was conducted in a tertiary health care facility in Rawalpindi-Pakistan. The study was carried out after getting approval by ethical committee of the hospital with ref# A/28/ERC/109/24. The data was collected in the dermatology OPD by the researcher from July till Dec 2024. Since incidence of melasma is variable among different age groups and between pregnant and non pregnant patients, maximum population proportion was used to calculate the sample size. Sample size was calculated using Cochran’s formula with maximum population proportion of 50%, 95% confidence interval and 5% margin of error. A total of 400 patients whether pregnant or not, were included and written informed consent was taken from the patients at start of the study. A non-probability consecutive sampling technique was used. Male and female patients, aged between 15-45 years, both pregnant and non pregnant were included in the study.

Patients suffering from any systemic, psychiatric and other skin disorders were excluded from the study.

Data was collected via a scale called “Depression Anxiety Stress Scale 21 (DASS21)”.<sup>13</sup> It is a simple scale comprising of 21 items about quality of life affected by any skin disease. The Depression, Anxiety and Stress Scale - 21 Items (DASS-21) is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress. Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content. The items of DASS-21 are attached as per ‘Anx A’. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest / involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic non specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset / agitated, irritable / over-reactive and impatient. Scores for depression, anxiety and stress are calculated by summing the scores for the relevant items. DASS-21 accumulative score was calculated for each patient.

The primary outcome was measured by DASS-21 score. The score for depression is ranged as no depression (0-9), mild (10-13), moderate (14-20), severe (21-27) and extremely severe (28+). For anxiety the score ranges as normal (0-7), mild (8-9), moderate (10-14), severe (15-19) and extremely severe (20+). For stress the score is interpreted as normal (0-14), mild (15-18), moderate (19-25), severe (26-33) and extremely severe (34+). The data was entered and analyzed using SPSS.25 (Statistical Package for Social Sciences). All data is shown as mean  $\pm$  SD or frequency and %. Pearson correlation coefficient was applied to find the relation between DASS-21 score and duration of the disease. A p-value of  $\leq 0.05$  was considered as statistically significant.

## RESULTS

Out of total 400 patients, 8 patients were excluded from the study because of incomplete questionnaire. 392 questionnaires were included, among them 88 were male and 304 were female with mean age of  $30 \pm 4$ . Majority of patients belonged to the age bracket of 26-35 years (48%) as shown in following table.

**Table 1**  
*Frequency of patients according to gender and age*

Gender	N (%)	Age	N (%)
Male	88 (22%)	15-25	125 (32%)
Female	304 (78%)	26-35	189 (48%)
		36-45	78 (20%)

Mean score of DASS-21 of these patients was calculated as shown in the table. The assessment scale identified depression among 22% patients, while rest of patients

exhibits no or very little sign of depression. Anxiety was observed in 28% patients and stress was reported in 37% of patients. However, no patient reported to be suffering from extremely severe form of depression, anxiety or stress. Table 2 shows the mean score of depression, anxiety and stress in study population.

**Table 2**

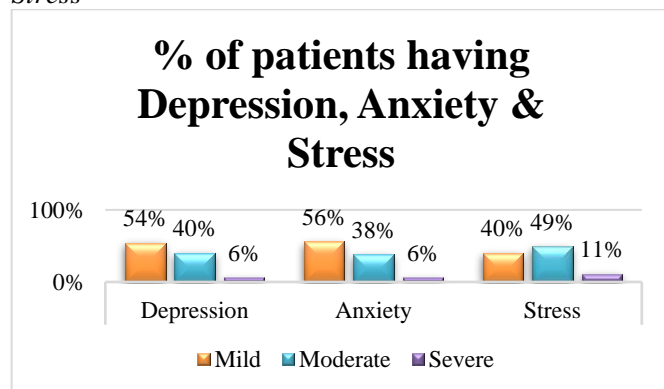
*Mean score of depression, anxiety, and stress calculated by DASS-21*

Symptoms	N (%)	DASS-21 Mean $\pm$ SD
Depression	86 (22%)	20.5 $\pm$ 4.3
Anxiety	110 (28%)	16.2 $\pm$ 3.8
Stress	145 (37%)	22.7 $\pm$ 4.9
Normal	51 (13%)	5.1 $\pm$ 2

Following figure shows the percentage of patients having mild, moderate or severe form of depression, anxiety and stress among patients suffering from these symptoms.

**Figure 1**

*Number of patients having Depression, Anxiety & Stress*



The Pearson correlation coefficient was used to look for any association between duration of the disease and impact on quality of life. Correlation between mean DASS-21 score of patients and duration of disease was measured and found out to be significant as shown in the following table.

**Table 3**

*Correlation between DASS-21 mean score and duration of disease*

Duration of the disease	Depression DASS-21 Mean $\pm$ SD	Anxiety DASS-21 Mean $\pm$ SD	Stress DASS-21 Mean $\pm$ SD	P-value
< 3 months 64 (16%)	14.6 $\pm$ 3.9	9.5 $\pm$ 3.7	15.4 $\pm$ 5.4	0.026*
3-6 months 82 (21%)	19.8 $\pm$ 3.1	16.6 $\pm$ 2.5	20.7 $\pm$ 3.8	
6-12 months 139 (35%)	22.4 $\pm$ 5.5	18.3 $\pm$ 4.1	25.3 $\pm$ 4.2	
> 1 year 107 (28%)	25.3 $\pm$ 4.8	20.4 $\pm$ 5.3	29.5 $\pm$ 6.3	

\*p-value < 0.05 is considered statistically significant.

## DISCUSSION

The results of our study showed that patients with melasma had mild depression and anxiety and a moderate amount of stress due to their condition. Skin disorders that involve depigmentation or darkening of skin markedly affect the patients quality of life. People tend to become overly worried about their imperfections particularly on visible areas like face.<sup>14</sup>

DASS-21 has been used world wide to assess psychological impact of various skin diseases like acne vulgaris, chronic spontaneous urticaria, eczema and genital dermatosis. Psychological impact of melasma has been studied world wide using different scales. A study conducted in Brazil showed that patients with melasma had moderate impact on their quality of life caused by the disease.<sup>15</sup> In two Nepalese studies, melasma proved to have a higher impact on patients' quality of life as compared to vitiligo, and it affected females more than males.<sup>16,17</sup>

In our studies, duration of disease has a significant relationship with impact on quality of life. Melasma doesn't have a good prognosis overall. Patients presented with less than 3 months of duration has lesser mean score but in patients having pigmentation longer than a year, the score increased significantly. Limited access to health care facilities in our country poses a significant challenge. Leading to seeking a advice from a friend or unqualified professionals. Since melasma is a chronic recurrent condition that can flare up throughout the person's life, it can increase the likelihood of adverse outcomes leading to depression, anxiety and stress in the patients.<sup>18</sup>

Based on the current study, it is recommended that for a disfiguring fascial condition like melasma, that significantly impairs patients' quality of life, there should be patients' counselling sessions, educational programs and suitable psychological intervention to ensure patients' complete well being. Emotional well being is the most affected domain in the patients affected by melasma.<sup>19</sup>

The current research is first of its kind in local population on this topic, where psychological impact was observed using DASS-21 scale in patients with melasma. A larger sample size using maximum population proportion was included as compared to previous studies. A strong correlation was found to be present between mean DASS-21 score and duration of the disease.

## CONCLUSION

Melasma patients experience significant impairment on quality of life. Patients in our study experienced mild depression and anxiety, and moderate stress. These symptoms appear to be related with duration of melasma. It is essential for health care providers to acknowledge

and evaluate the psychological impact of melasma when counselling and treating the patients.

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