

Research Article**Exploring the profound effects of melasma on the quality of life of patients in the Dermatologic Landscape of Islamabad**

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ABSTRACT

Background: Melasma is a chronic pigmentary disorder characterized by irregular brownish macules primarily affecting sun-exposed facial areas. **Objective:** This study aimed to evaluate the effect of melasma on the quality of life (QoL) among patients in Islamabad using the Dermatology Life Quality Index (DLQI) and to assess the correlation between disease severity, measured by the Modified Melasma Area and Severity Index (MASI), and QoL outcomes. **Methods:** A cross-sectional study was conducted at Shifa International Hospital Islamabad between December 2022 and February 2024. A total of 125 clinically diagnosed melasma patients aged 12–60 years were enrolled. MASI scores were used to grade severity (low, moderate, high), and DLQI scores were used to quantify QoL impairment. Data were analyzed using SPSS version 26, with correlation and regression analyses performed to explore relationships between MASI, DLQI, age, and gender. **Results:** The mean age of participants was 31.1 ± 6.36 years; 74.4% were female and 25.6% male. The mean MASI and DLQI scores were 6.90 and 10.85, respectively, indicating moderate disease and significant QoL impairment. A strong positive correlation was

observed between MASI and DLQI scores ($r = 0.711$, $p = 0.01$). Regression analysis revealed that melasma severity ($p < 0.001$) and younger age ($p = 0.012$) were significant predictors of poorer QoL, while gender showed no significant association ($p = 0.868$). **Conclusion:** Melasma exerts a substantial psychosocial impact on affected individuals, particularly younger patients and those with higher disease severity. The findings highlight the need for holistic management strategies that address not only the dermatologic but also the emotional and social dimensions of melasma care in Pakistani patients.

Keywords: Melasma, Quality of Life, Dermatology Life Quality Index (DLQI), Modified Melasma Area and Severity Index (MASI), Pigmentary Disorders

INTRODUCTION

Melasma is a skin problem experienced by many females of the reproductive age group. It is characterized by brown color patches or freckles on the exposed surface of the skin, mostly the face[1]. It can affect the physical appearance of a person. Even though the exact pathogenesis of melasma is not known, certain known factors

play a significant role in the expression of the disease. These include UV radiation exposure, genetics, hormones, phototoxic drugs, and some cosmetics. Different studies have shown the occurrence of this disease in the pigmented skin phenotypes e.g. southeast Asia, Africa, China, etc[2] It is also common in Brazilians and Hispanic populations from American regions[1,2]. The incidence of melasma varies from 1%-50% in different populations but the incidence is unknown in the Pakistani population[1] Dealing with melasma can be tricky, and it often takes much time and different methods to treat it and keep it in check. The choice of treatment methods depends on how the disease shows up, what the patient prefers, how long the treatment will take, and the possible side effects[3]. Often a combination of treatments is required. Yet there has been resistance developing to the treatment. Because melasma often affects the face and is tricky to treat, it can assert psychological effects on the affected individual[4,5] People with melasma might feel ashamed, have less confidence, experience a lack of pleasure in life (anhedonia), and find it harder to connect with others and focus on their work[5,6] This emotional impact is significant and is a big part of dealing with melasma. The presentation, incidence, resistance, and time for the treatment contribute to the devastating effects of melasma on the quality of life of an affected individual [6].

Objective

The purpose of this study is to document the impact of melasma on the quality of life (QoL) in the Pakistani population, especially in the people of Islamabad. Dermatology Quality Life Index (DQLI) and modified Melasma Score (MASI) were employed to ascertain the correlation between the two variables and their impact on different factors like age and gender.

Methodology

This was a cross-sectional analytical study conducted in the Dermatology Department of Shifa International Hospital Islamabad over 14

months, from December 2022 to February 2024. The study aimed to evaluate the impact of melasma severity on patients' quality of life using validated clinical and psychometric scales. A total of 125 patients fulfilling the inclusion criteria were enrolled through non-probability consecutive sampling. Each participant was assigned a unique identification number to ensure proper documentation and minimize duplication.

Inclusion Criteria and Exclusion Criteria

Patients of both genders, aged 12 to 60 years, with a confirmed diagnosis of melasma who attended the dermatology outpatient department and provided informed consent were included. Exclusion criteria included patients with other pigmentary disorders, those undergoing concurrent dermatological treatment, individuals with systemic diseases influencing pigmentation, and patients unwilling to participate or follow up.

Data Collection

All participants underwent detailed dermatological examination under standardized lighting conditions. The Modified Melasma Area and Severity Index (MASI) was used to determine disease severity by evaluating the area of involvement, darkness, and homogeneity of pigmentation. Based on MASI scores, patients were categorized into three groups:

- Low severity: <5
- Moderate severity: 5–15
- High severity: >15

To assess the psychosocial and functional impact of melasma, the Dermatology Life Quality Index (DLQI) questionnaire was administered in the local language by trained personnel. The DLQI measures the impact of skin diseases on daily activities, emotional well-being, and social interactions.

Data Analysis

Data were analyzed using IBM SPSS Statistics version 26. Descriptive statistics were applied to summarize demographic and clinical data, with quantitative variables expressed as mean \pm standard deviation (SD) and categorical variables

as frequencies and percentages. The relationship between MASI and DLQI scores was evaluated using Pearson correlation analysis. Multiple linear regression was performed to identify predictors of impaired quality of life, with MASI score, age, and gender as independent variables. One-way analysis of variance (ANOVA) was applied to assess differences in DLQI across severity categories. A p-value ≤ 0.05 was considered statistically significant.

Results

Data were collected from 125 patients, with a mean age of 31.10 ± 6.36 years, and ages ranging from 19 to 49 years. The median age was 30 years, and the mode was 27 years, indicating that most participants were in their late twenties to early thirties. Out of the total sample, 32 patients (25.6%) were male, while 93 (74.4%) were female, showing a clear female predominance. The mean Modified Melasma Area and Severity

Index (MASI) score was 6.90 ± 3.45 , suggesting that the majority of patients had mild to moderate disease severity. Based on MASI stratification, 53 patients (42.4%) had low severity (<5), 64 (51.2%) had intermediate severity (5–15), and only 8 (6.4%) had high severity (>15). Gender-wise distribution revealed that most males fell into the low (12%) and intermediate (13.6%) categories. At the same time, females were more widely distributed across all severity levels, including all eight cases with high severity (6.4%). The mean Dermatology Life Quality Index (DLQI) score was 10.86 ± 4.27 , with values ranging from 2.00 to 22.00, indicating a moderate impact of melasma on patients' quality of life. The median DLQI score was slightly higher among females (11) compared to males (10), and the interquartile range (IQR) was broader in females (7.0) than in males (5.5), suggesting greater variability in the degree of psychosocial impact among female participants.

Table 1. Basic Demographic and Clinical Characteristics of the Study Population (n = 125)

Variable	Category / Statistic	n (%) / Mean \pm SD / Range
Age (years)	Mean \pm SD	31.10 \pm 6.36
	Median (Mode)	30.00 (27.00)
	Range	19 – 49
Gender	Male	32 (25.6%)
	Female	93 (74.4%)
Melasma Severity Index (MASI)	Mean \pm SD	6.90 \pm 3.45
	Low severity (<5)	53 (42.4%)
	Intermediate (5–15)	64 (51.2%)
	High (>15)	8 (6.4%)
Gender-wise MASI distribution	Males: Low	15 (12.0%)
	Males: Intermediate	17 (13.6%)
	Females: Low	38 (30.4%)
	Females: Intermediate	47 (37.6%)
	Females: High	8 (6.4%)
Dermatology Life Quality Index (DLQI)	Mean \pm SD	10.86 \pm 4.27
	Range	2.00 – 22.00
	Median (Male / Female)	10 / 11
	Interquartile Range (Male / Female)	5.5 / 7.0

The simple scatter plot with a Fit line demonstrates the correlation between modified MASI and DQLI in (Figure a). The scatter plot

explains a strong relationship between variables modified MASI and DLQI.

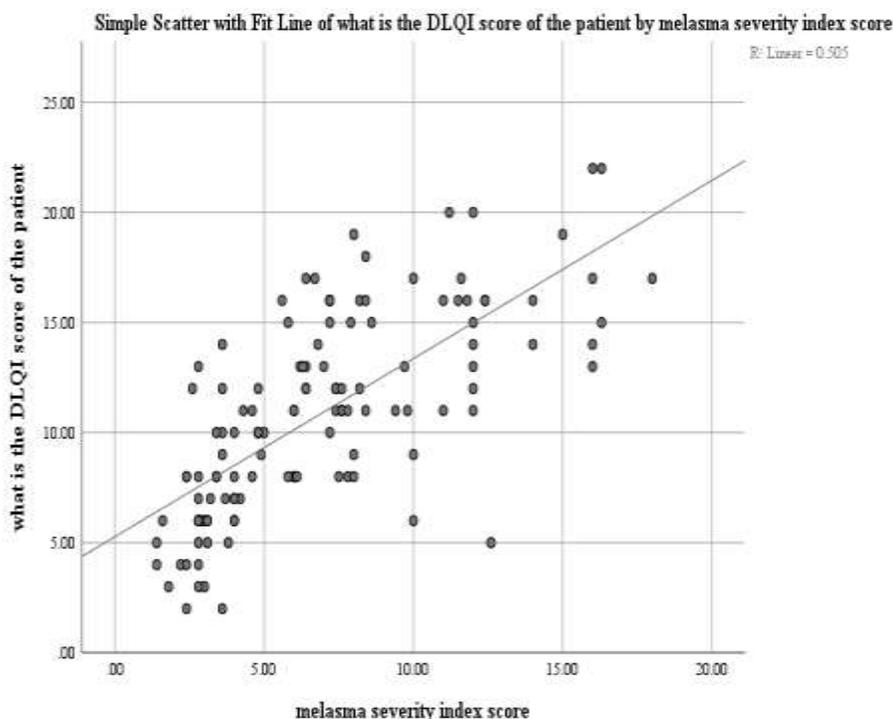


Table 2 demonstrates a strong positive correlation between the Modified Melasma Area and Severity Index (MASI) and the Dermatology Life Quality Index (DLQI) scores among the study participants

($r = 0.711$, $p = 0.01$). This indicates that higher melasma severity is significantly associated with poorer quality of life.

Table 2. Correlation Between Melasma Severity and Dermatology Life Quality Index (DLQI) Scores (n = 125)

Melasma Severity Index (MASI) Group	n (%)	Mean DLQI ± SD	Correlation Coefficient (r)	p-value
Low (<5)	53 (42.4%)	7.82 ± 2.95		
Intermediate (5–15)	64 (51.2%)	11.42 ± 3.87		
High (>15)	8 (6.4%)	16.25 ± 4.12	$r = 0.711$	0.01

Table 3 shows that females experienced a more pronounced impact of melasma on their quality of life compared to males across most domains of the Dermatology Life Quality Index (DLQI). Although the difference in itchiness between genders was not statistically significant ($p =$

0.066), females reported higher levels of discomfort and emotional distress. The effect of melasma on daily activities such as shopping or home care was similar in both groups ($p = 0.948$). However, a significant difference was observed in leisure activities ($p = 0.046$), with females

reporting greater restriction in social and recreational participation. Other areas such as work or study performance ($p = 0.298$), clothing choices ($p = 0.730$), and sports involvement ($p = 0.057$) showed no significant difference but

followed a trend of higher negative impact among females. Emotional aspects such as embarrassment ($p = 0.550$) and effects on intimate relationships ($p = 0.298$) were comparable between genders.

Table 3. Gender-Wise Distribution of Quality-of-Life Variables Among Patients with Melasma (n = 125)

Parameter	Male (n = 32)	Female (n = 93)	p-value
Itchiness of the skin	Not at all: 5 A little: 11 A lot: 12 Very much: 4	Not at all: 7 A little: 12 A lot: 45 Very much: 18	0.066
Skin-affected shopping or home caring	Not at all: 9 A little: 15 A lot: 5 Very much: 3	Not at all: 32 A little: 29 A lot: 25 Very much: 7	0.948
Skin-affected leisure activity	Not at all: 8 A little: 12 A lot: 9 Very much: 3	Not at all: 12 A little: 27 A lot: 41 Very much: 13	0.046*
Skin condition affected studies/work	Not at all: 20 A little: 12 A lot: 0 Very much: 0	Not at all: 61 A little: 19 A lot: 7 Very much: 6	0.298
Skin condition caused problems over last week	Not at all: 9 A little: 20 A lot: 2 Very much: 1	Not at all: 32 A little: 45 A lot: 11 Very much: 5	—
Skin condition influenced clothing	Not at all: 7 A little: 8 A lot: 13 Very much: 4	Not at all: 12 A little: 42 A lot: 31 Very much: 8	0.730
Skin condition affected sports	Not at all: 17 A little: 9 A lot: 6 Very much: 0	Not at all: 72 A little: 8 A lot: 13 Very much: 0	0.057
Skin condition affected close relative	Not at all: 9 A little: 17 A lot: 6 Very much: 0	Not at all: 22 A little: 37 A lot: 30 Very much: 4	0.110
Skin condition caused embarrassment	Not at all: 5 A little: 9 A lot: 11 Very much: 7	Not at all: 4 A little: 34 A lot: 38 Very much: 17	0.550
Skin condition affected intimate relationship	Not at all: 20 A little: 9 A lot: 3 Very much: 0	Not at all: 54 A little: 21 A lot: 15 Very much: 3	0.298

*

Significant at $p < 0.05$.

Discussion

The results of our research impart valuable insights into the demographic and clinical aspects of Melasma patients. It also signifies the relationship between DQLI and modified MASI score and the predictors. The study population consisted of 125 patients, demonstrating a relatively young mean age of 31.10, with a marked range of 19-49 years. The majority of the patients were attributed to be female with a significant (74.4%) in numbers. This contemplates a higher prevalence of melasma in women. Melasma is strongly associated with increased levels of estrogen and progesterone which are higher in women. Pregnancy, oral contraceptives, and hormone replacement therapy are also seen as common triggers to cause melasma in women. The gender distribution and age range were observed to be consistent with the existing literature on melasma demographics [7]. The mean modified melasma severity index score (MASI) was 6.9008, ranging from 1.40 to 18.00. This indicated considerable variability in the severity of melasma among the study participants. The finding demonstrated that females have a higher median MASI score than males, aligning with the previous research highlighting the gender-specific nature of melasma. Women also have a greater genetic predisposition to melasma more commonly activated or exacerbated by hormonal imbalance or sun exposure.

Across nearly all measured aspects, women report a greater impact from their skin condition compared to men. This includes areas such as itchiness, leisure activities, and embarrassment. Although some differences did not reach statistical significance, the trends indicate that women are more likely to experience severe symptoms and psychosocial impacts due to skin conditions. This may be related to several factors, including hormonal differences, social expectations, and possibly a greater sensitivity to skin appearance[8]. Women were more likely to report that their skin condition significantly affected their leisure activities, clothing choices, and intimate relationships. The statistically significant difference in the impact on leisure

activities ($p = 0.046$) suggests that women may face greater social or psychological barriers due to their skin condition. This could be influenced by societal pressures on women to maintain a certain appearance, leading to greater emotional distress and lifestyle adjustments.[9] The data suggests that skin conditions may have a broader and more profound impact on women's health-related quality of life. This is evident in areas such as sports participation and the influence on clothing choices, where women were more likely to report significant disruption. The approach to managing skin conditions in women might need to incorporate more comprehensive support systems, addressing not only the physical symptoms but also the emotional and social challenges.[10] The DLQI scores showed a mean score of 10.856 ranging from 2.00 to 22.00. The positive significant correlation between DLQI and modified MASI (P value of 0.00) highlights the impact of the severity of melasma on the quality of life of patients. It signified that as the severity of melasma increased, a concurrent DLQI score was also increased. This implies that individuals with high modified MASI scores tend to experience a greater impact on their dermatology quality of life. In previous studies, it was also implied that melasma causes a moderate reduction in quality of life while it couldn't find a significant correlation between DQLI and MASI [11]. In multiple regression analysis, age and MASI score significantly influenced DLQI scores. The positive coefficient of modified MASI suggests that higher melasma severity was associated with a negative impact on a patient's DQLI. This finding suggests that the severity of melasma has detrimental effects on the psychological and emotional well-being of the patients that need to be catered to while providing treatment. It also highlights the need for comprehensive strategies to manage the patient looking beyond the physical aspect of the disease and addressing the psychosocial aspect as well. In contrast, the negative coefficient of age implied that the younger population had a more pronounced experience than the older one, probably due to the psychosocial factors associated with skin

conditions. This finding warrants further exploration to elucidate the mechanism driving the age-related disparity. There are possible reasons affecting the younger generation as they give more importance to body image perception, coping pressure, and social pressure between different age groups. Young individuals are more engaged on social media and the professional sphere may be more susceptible to the psychological ramifications of visible skin conditions. The limitation of this study includes a cross-sectional design that limits our ability to establish causation, and the study may be subject to recall bias. The longitudinal trends and additional factors such as psychological well-being and treatment modalities could be explored in future research.

Conclusion

This study offers significant insights into the demographic and clinical characteristics of melasma, with a particular focus on the gender disparities and the impact of melasma severity on patients' quality of life. The findings underscore that women are disproportionately affected by melasma, not only in terms of prevalence but also in the psychosocial impact, which appears to be more profound in females. The correlation between higher modified MASI scores and poorer Dermatology Life Quality Index (DLQI) outcomes highlights the need for holistic treatment approaches that address this condition's physical and emotional dimensions.

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