Journal of Pakistan Association of Dermatologists. 2022;**32(4)**:683-689.

Original Article

Correlation between quality of life and clinical severity of melasma in Pakistani women

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Abstract

Background Melasma is an acquired hypermelanosis affecting the sun-exposed areas of skin, most commonly the face and neck. There was significantly strong positive correlation between clinical severity of disease and disease related quality of life among patients with melasma and warranted routine assessment of melasma.

Objective To study was to find clinical correlation between quality of life and clinical severity of melasma in female patients presenting in a tertiary care hospital.

Methods This descriptive cross-sectional research was done at Department of Dermatology, Fatimah Jinnah medical university, Lahore including 80 females from 15-50 years suffering from melasma. These patients were evaluated by mMASI score for clinical severity of disease and MELASQoL score for effect on quality of life. Spearman correlation was used to evaluate correlation between clinical severity of melasma and quality of life.

Results The mean age of the patients was 32.4±7.5 years. Majority (n=64, 80.0%) of the women was married. Most common type of melasma was centrofacial which was observed in 31 (38.8%) women followed by mixed (35.0%) and malar (26.2%) pattern. 25 (31.2%) women were illiterate while 47 (58.8%) women had matriculation or above degree. The mMASI score ranged from 1.2 to 35.7 with a mean of 15.81±8.87 while the MELASQoL score ranged from 13 to 70 with a mean of 46.59±16.95. There was significantly strong positive correlation between clinical severity of melasma over mMASI score and quality of life over MELASQoL score (spearman correlation coefficient r=0.852; p-value<0.001). Similar connection was noted among different subgroups of patients based on patient's age, educational and marital standing and type of melasma.

Conclusion A strong positive correlation was observed between clinical severity of melasma and quality of life among patients presenting with melasma which warrants routine clinical assessment of such patients for severity of disease and associated effects on quality of life so that apart from treatment of disease, the psychosocial aspect of the disease is also addressed which will help in better patient management.

Key words
Melasma, correlation, clinical severity, quality of life.

Introduction

Melasma, a chronic hyper-pigmentary disorder is characterized by brown black macules over sun-exposed areas like cheeks, upper lips, nose and chin.[1] Etiology includes UV radiations, genetics, pregnancy, hormonal therapy, thyroid disorders, anticonvulsant and phototoxic drugs. Among treatment options, there are topical therapies including photo-protection,

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hydroquinone, tretinoin, corticosteroids and triple combination creams. Oral therapies like tranexamic acid, glutathione and procedural interventions like chemical peels, micro-needling and lasers are helpful in refractory cases.[2] Owing to facial distribution and relapsing nature despite treatment,[3] melasma imposes great psychological impact on the mental health irrespective of disease severity. This is shown by the fact that it involves 90% of women (compared to only 10% males[4] who are 2 times more prone to depression than men.[5]

Pigmentary disorders are common dermatological disorders, accounting for roughly 4% of all outpatient dermatology visits in tertiary care hospitals of Pakistan.[6] However, these pigmentary disorders including melasma, are often neglected as not being life threatening, yet they have potential for triggering suicidal thoughts and major depressive episodes. In a multicenter observational study conducted in 13 European countries, having nearly 5000 patients, suicidal idealization was present in 12.7% of all patients with dermatological diagnosis.[7] In Pakistan there is significant social stigmatization of dark complexion.[8] Treatment of melasma is challenging and recurrence is quite common, successful treatment improves quality of life. Psychological assessment of patient measured through quality of life scores need to be done before making clinical decisions on treatment modality.[9]

MASI score (Melasma Area and Severity Index), is an authenticated tool for accessing clinical severity of melisma.[10] In a study in Southern Brazil, Freitag and colleagues did not find any correlation between quality of life and melasma area and severity score (r=0.17; p=0.109). Similar findings were reported in studies reported by Polio *et al*. (rho=0.35) and Arora *et al*. (p=0.131, Spearman's rho R=-0.121).[11,12] Contrary to this, positive correlation has been reported by studies done by Sarkar *et al*. (r=0.809) and Aboutaleb *et al*. (r=0.36) especially with recent introduction of modified MASI. Nonetheless literature review provides conflicting evidence of MASI in determining quality of life in melasma patients.[14-17] This raises the need for quality of life measuring scores.

Though several general tools for assessing quality of life are available, such as DLQI and SKINDEX-16, yet more specific tools like "MELASQOL" appear promising. MELASQOL (Melasma Quality of Life Scale), a 10-item questionnaire, based on SKINDEX-16, is the only specified tool validated for assessing quality of life in melasma patients. It has shown to perform superior to DLQI in assessing the quality of life in melasma patients as shown by numerous studies, esp. by Balkrishnan *et al*. and Kim *et al*. (r=0.37[MELASQOL] vs. 0.129 [DLQI]). Hence, it has been adopted by various countries.[12,18,19]

Rationale of our study is to objectify how much melasma is disturbing life of Pakistani women. The study compares the quality of life and clinical severity of melasma using MELASQOL score. So far in Pakistan, no study has determined the relationship between MELASQOL and modified MASI (melasma area and severity score), this is the first study directed towards studying the correlation between them. If statistically significant correlation is found, then it will be imperative that before making clinical decision regarding treatment, we need to assess patient psychologically along with apparent severity of melasma and if no correlation found then m MASI alone will be sufficient.

Methods

It was a descriptive cross-sectional research

conducted at department of Dermatology Sir Ganga Ram Hospital, Lahore on 80 female patients, selected by Non-Probability, Consecutive Sampling. Females 15-50 years of age, presenting with melasma (all types of melasma as per operational definition) consented to complete MELASQOL questionnaire were included. Cases of facial melanoses other than melasma such as lichen pigmentosus, lichen planus, fixed drug eruption, post-inflammatory hyperpigmentation and photo-contact dermatitis, Systemic causes of hyperpigmentation such as SLE, Addison and drugs. Patients suffering from previously diagnosed psychiatric disorder were excluded. Demographic details like age, gender, marital status, education status and address were obtained. The clinical severity of melasma was calculated using modified Melasma Area and Severity Index (MASI). The total index ranged from 0 to 48, higher the score more severe the disease. Score was calculated by same dermatologist trained to calculate MASI. Melasma quality of life scale (MELASQOL) questionnaire, was employed to objectify which was self-administered. It consisted of objective questions having Likert-scale of 1 to 7; in which l signified not bothered at all and 7 signified bothered all the time. MELASQOL score ranged from 10 to 70, with higher the score worst MELASQOL. The questionnaire was read out and filled by researcher herself for all the patients to minimize bias in the study especially due to educational status. All the collected data was entered and analyzed using SPSS version 24.0. Numerical variables i.e. age, mMASI and MELASQoL score presented as mean±SD. Categorical variables i-e types of melasma, educational and marital status have been presented as frequency and percentage. Spearman correlation has been determined for clinical severity of melasma and quality of life taking p-value ≤0.05 as statistically important. Data was stratified for age, types of melasma, educational and marital status to address eliminate bias and post-stratification Spearman correlation has been determined taking p-value ≤0.05 as statistically significant.

Melasma defined as macules (freckle-like spots) and larger flat brown patches having an irregular border presenting in centro-facial pattern (forehead, cheeks, nose and upper lips**),** malar pattern (cheeks and nose) lateral cheek pattern or mandibular pattern: jawline.

***Modified Melasma Area and Severity Index* (mMASI)** The clinical severity of melasma was calculated by modified Melasma Area and Severity Index (mMASI). It ranged from 0 to 48, with higher the score more severe the disease. The MASI score was calculated by researcher herself calculating following three factors: area (A) of involvement is was calculated from 0-6, while darkness (D) and homogeneity (H) were calculated from 0-4.The mMASI score was determined by adding the sum of the severity ratings for darkness and homogeneity, multiplied by the value of the area of involvement for each of the four facial areas (forehead, right and left malar, chin).

Quality of Life It was assessed using the melasma quality of life scale (MELASQoL) questionnaire, which was self-administered. It included 10 objective questions, designed having Likert-scale of 1 to 7, in which score 1 means not bothered at all while 7 means bothered all the time. MELASQOL score ranged from 10-70, with a highest the score worst MELASQOL.

Results

The age of the patients ranged from 18 years to 50 years with a mean of 32.4±7.5 years. Majority (n=64, 80.0%) of the women was married. Most frequent type of melasma was centrofacial which was observed in 31 (38.8%)

Table 1 Baseline characteristics of study sample.

Characteristics	*Participants n=80*
Age (years)	32.4±7.5
18-34 years	44 (55.0%)
35-50 years	36 (45.0%)
Marital Status	
Un-Married	16 (20.0%)
Married	64 (80.0%)
Educational Status	
Illiterate	25 (31.2%)
Primary	4 (5.0%)
Middle	4 (5.0%)
Matric and above	47 (58.8%)

women followed by mixed (35.0%) and malar (26.2%) pattern. 25 (31.2%) women were illiterate while 47 (58.8%) women had matriculation or above degree as shown in **Table 1**. The mMASI score ranged from 1.2 to 35.7 with a mean of 15.81±8.87 while the MELASQoL score ranged from 13 to 70 with a mean of 46.59±16.95. There was significantly strong positive correlation between clinical severity of melasma over mMASI score and quality of life over MELASQoL score (spearman correlation coefficient r=0.852; p-value<0.001) as shown in **Table 2**. Similar correlation was observed across various subgroups of patients based on patient's age, educational and marital status and type of melasma as shown in **Table 3**.

Discussion

Melasma is a common presentation occurring in all skin types, relatively more common in darker skin type (Fitzpatrick skin type III and IV).[1] MASI and modified MASI scores have extensively been used for the assessment of clinical severity of melisma.[11] The Melasma Quality of Life scale (MELASQoL) is used to evaluate quality of life in melasma patients. Formulated in English now its Spanish, Brazilian Portuguese, French, and Turkish versions are also available.[19] Recent literature claimed a significant strong positive association of clinical severity of disease with quality of life

Table 2 Means of mMASI and MELASQoL scores and correlation between clinical severity of melasma and quality of life.

	n	*Mean±Std. Deviation*	*Spearman Correlation Coefficient (r)*	*P-value*
Clinical Severity (mMASI)	80	15.81±8.87	0.852	<0.001*
Quality of Life (MELASQoL)		46.59±16.95		

* p-value is significant

Table 3 Means of mMASI and MELASQoL scores and correlation between clinical severity of melasma and quality of life across various subgroups.

Subgroups	*n*	*Mean mMASI*	*Mean MELASQoL*	*Correlation (r)*	*P-value*
Age					
18-34 years	44	14.24±7.89	43.00±15.92	0.813	<0.001*
35-50 years	36	17.72±9.71	50.97±17.35	0.822	<0.001*
Marital Status					
Un-Married	16	16.16±9.06	46.56±18.37	0.917	<0.001*
Married	64	15.72±8.89	46.59±16.73	0.844	<0.001*
Educational Status					
Illiterate	25	18.15±9.00	50.84±13.80	0.839	<0.001*
Primary	4	14.85±7.82	53.75±13.94	0.800	0.200
Middle	4	10.50±9.81	23.50±6.46	0.800	0.200
Matric and above	47	15.09±8.74	45.68±17.81	0.872	<0.001*
Type of Melasma					
Centrofacial	31	17.69±10.46	47.90±17.60	0.862	<0.001*
Malar	21	14.56±7.89	45.10±18.83	0.828	<0.001*
Mixed	28	14.66±7.47	46.25±15.16	0.822	<0.001*

** p-value is significant*

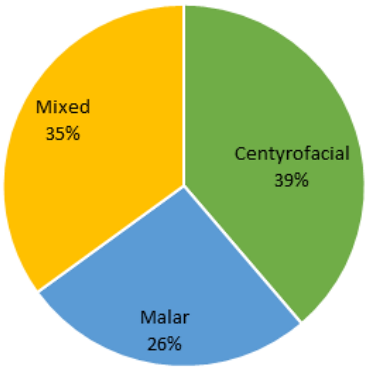

Figure 1 Clinical types of melisma.

among patients with melasma making it imperative to routinely assess melasma patients for their disturbed life quality and choose appropriate treatments based on efficacy and in turn better patient compliance.[12,19] However, the existing evidence was limited which necessitated the present study.

In our study, the mean age of the patients was 32.4±7.5 years. Anwer *et al*. (2019) reported mean age of 33.4±8.1 years among such patients presenting at Sir Ganga Ram hospital Lahore.[20] Saeed *et al*. (2014) found it to be 31.8±6.5 years among such patients at Mayo Hospital, Lahore.[21] A similar mean age of 30.4±5.8 years was observed by Ejaz *et al*. among patients presenting with melasma at Combined Military Hospital, Karachi.[22] Aman *et al*. (2017) also noted mean age of 30.4±9.2 years among melasma patients presenting at Services Institute of Medical Sciences/Services Hospital, Lahore,[6] while Ali *et al*. (2013) reported it to be 29.9±4.2 years among such patients presenting at King Edward Medical University/ Mayo Hospital, Lahore.[23] A similar mean age of 31.5±8.2 years, 32.4±7.4 years, 32±6.9 years, 33.4±7.5 years and 34.8±8 years has been reported by Morgaonkar *et al*. (2017), Kothari *et al*. (2018), Deshpande *et al*. (2018) among Indian such patients respectively.[14,24-26]

In the present study, centrofacial melasma was the most frequent and was observed in 31 (38.8%) women followed by mixed (35.0%) and malar (26.2%) pattern. Our findings are similar to Amir *et al*. (2016) who observed frequency of centrofacial (43.7%), mixed (32.3%) and malar (24.0%) distribution of melasma among patients presenting at Mayo Hospital, Lahore.[27] Another Indian study reported similar frequency of centrofacial (41.7%), mixed (31.6%) and malar (26.7%) melisma.[28] Kakru *et al*. (2017) documented same frequency of centrofacial (51.1%), malar (27.7%) and mixed (21.1%) melasma in Nepalese patients.[29]

We observed that there was significantly strong positive correlation between clinical severity of condition over mMASI score and quality of life over MELASQoL score (spearman correlation coefficient r=0.852; p-value<0.001). Similar correlation was observed across various subgroups of patients based on age, education, marital standing and type of melasma. Our results are in line with results reported by Sarkar *et al*. (2016) showing strong positive association between its clinical severity with disturbed quality of life (r=0.809; p-value<0.05) in Indian patients.[12] In a similar Indonesian study, Jusuf *et al*. (2019) reported significantly strong positive correlation between clinical severity of the disease and associated quality of life (r=0.797; p=0.049) in line with the present study.[30] The same was reported by Harumi *et al*. (r=0.597; p-value<0.001) in Singapore.[31]

The current research is first of its kind in local population on this topic. In the present study, a significantly strong positive association was observed between clinical severity of melasma and quality of life among patients, which necessitates routine clinical evaluation for severity of disease and its associated effects on quality of life so that in addition to clinical management of disease, the psychosocial aspect of the disease is also addressed which will ensure patient satisfaction and improved

compliance resultantly decreased treatment drop outs among such cases.

The present study is limited because the effect of clinical management of disease and reduction of its clinical severity on the quality of life is not considered further the effect of improved quality of life on patient's compliance and response to treatment is not studied which could have further highlighted the importance of this neglected aspect of patient's management. Such a study is highly recommended in future research.

Conclusion

There is a strong positive correlation between clinical severity of melasma and quality of life in patients, therefore psychosocial assessment is imperative for better treatment outcomes and improved quality of life.

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