The Effect of Melasma on the Quality of Life in a Sample of Women Living in Singapore

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ABSTRACT

Introduction: Melasma is a common disorder of acquired hyperpigmentation characterized by irregular brown macules and patches that occur primarily on sun-exposed areas. **Methods:** This was a prospective cross-sectional study that recruited 49 women clinically diagnosed with melasma from a tertiary dermatology referral center in Singapore. Trained investigators assessed the melasma severity objectively using the chromameter and mexameter and subjectively using the Melasma Area and Severity Index. The effect of melasma on the quality of life on the patients was assessed using the melasma quality of life scale and dermatology life quality index questionnaires. **Results:** The mean ± SD Melasma Area and Severity Index score was 12.1±6.5 (median 10.8). The mean ± SD melasma quality of life scale score was 25.6±15.3 (median 24.0). Melasma quality of life scale scores are significantly correlated (Spearman's coefficient = 0.597, p-value <0.001) with the dermatology life quality index scores. There was no correlation between Melasma Area and Severity Index with melasma quality of life scale or dermatology life quality index scores. There is no difference in the melasma quality of life scale scores with different demographic variables including age, duration of disease, levels of education, and employment. **Conclusion:** This study contributes to building evidence regarding the validity of melasma quality of life scale in accurately evaluating the effect of melasma on a patient's quality of life and the burden of disease in Singaporean women. (*J Clin Aesthet Dermatol.* 2016;9(1):21–24.)

Melasma is a common disorder of acquired hyperpigmentation characterized by irregular brown macules and patches that occur primarily on sun-exposed areas on the face and neck. Although the exact pathogenesis of melasma has not been fully elucidated, risk factors identified include exposure to ultraviolet radiation, genetic influences, hormonal therapy, phototoxic drugs, and anticonvulsant medications. This disfiguring cutaneous disorder can cause significant impact on the psychosocial well-being of patients.[1]

OBJECTIVES

The objectives of this study were to assess the characteristics, severity, and burden of melasma on daily living in a sample of Singaporean women.

METHODOLOGY

This was a prospective cross-sectional study that recruited 49 women clinically diagnosed with melasma from a tertiary dermatology referral center in Singapore. Inclusion criteria included female patients >15 years of age. The study period was November 11, 2011, to January 1, 2013. The institution ethics review board approved the study. The nature of the study was explained before informed consent was obtained. Trained investigators assessed the melasma severity objectively using the chromameter and mexameter and subjectively using the Melasma Area and Severity Index (MASI).[2]

Melasma clinical lesions were registered and scored using the MASI developed by Kimbrough-Green et al.[2] The total index ranges from 0 to 48, with the higher score indicating more severe disease. The MASI score is calculated by subjective assessment of the following three factors: area (A) of involvement, darkness (D), and homogeneity (H), with the forehead (f), right malar region (rm), left malar region (lm), and chin (c),

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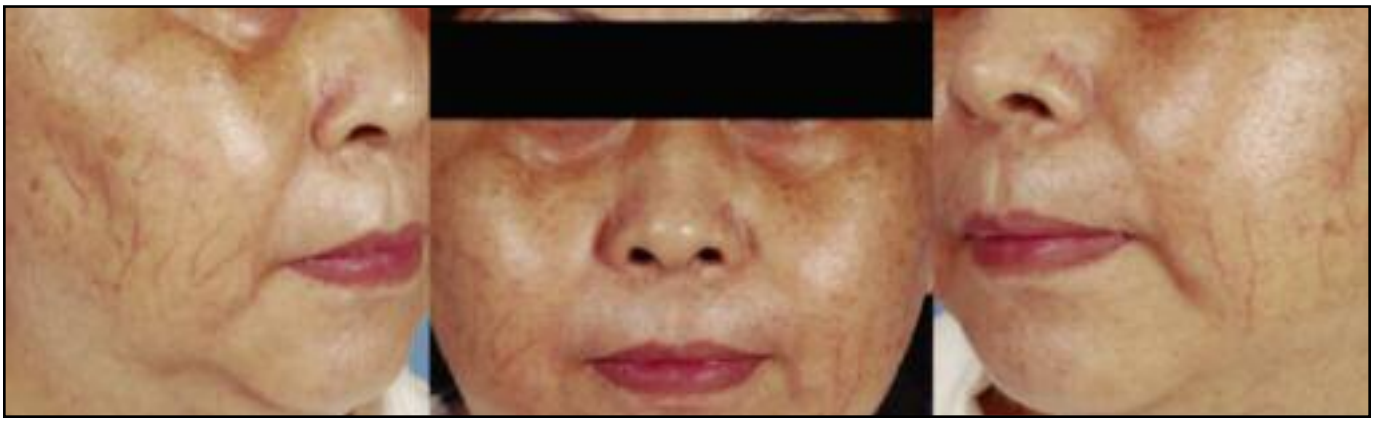

Figure 1. An example of the calculation of a patient's MASI scoring

A(f)=2	D(f)=1	H(f)=1
A(rm)=5	D(rm)=3	H(rm)=2
A(lm)=6	D(lm)=3	H(lm)=2
A(c)=2	D(c)=1	H(c)=1

MASI = 18.1

corresponding to 30, 30, 30, and 10 percent of the total face, respectively. The area of involvement in each of these four areas is given a numeric value of 0 to 6 (0=no involvement; 1=<10%; 2=10–29%; 3=30–49%; 4=50–69%; 5=70–89%; and 6=90–100%). Darkness and homogeneity are rated on a scale from 0 to 4 (0=absent; 1=slight; 2=mild; 3=marked; and 4=maximum). The MASI score is calculated 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:

MASI = 0.3 A(f) [D(f) + H(f)] + 0.3 A(rm) [D(rm) + H(rm)] + 0.3 A(lm) [D(lm) + H(lm)] + 0.1 A(c) [D(c) + H(c)] (Figure 1).

The effect of melasma on the quality of life on the patients were assessed using the melasma quality of life scale (MELASQoL) and dermatology life quality index (DLQI) questionnaires, which were self-administered.[3,4]

STATISTICAL METHODS

The primary outcome was measured using the MelasQOL score. Internal reliability of the MelasQOL scale was assessed using Cronbach's Alpha coefficient. Spearman's rank correlation coefficient was used to test for any association between MASI and MELASQoL and DLQI. Spearman's rank correlation coefficient was used to test for association between MASI and reflectance spectroscopy scores. Mann–Whitney U test (also called Wilcoxon rank-sum test) were used to compare the MASI, DLQI and MelasQOL scores with age, duration of disease, employment, and educational levels. *P*-value less than 0.05 was considered statistically significant.

RESULTS

Forty-nine women with melasma were enrolled into the study. Forty-seven of them were Chinese, one Ceylonese, and one Eurasian. The mean ± SD age was 56.6±9.1 years, and the mean ± SD duration of disease was 17.5±9.5 years. Thirty-six of 40 (73.5%) had more than six years of education, and 33 of 49 (67.4%) were gainfully employed. The most common identified exacerbating factor of melasma was sun exposure (67.3%). The mean ± SD MASI score was 12.1±6.5 (median 10.8). The mean ± SD MELASQoL score was 25.6±15.3 (median 24.0). The mean ± SD DLQI score was 4.5±5 (median 2.0). There was significant correlation between the average Mexameter (melanin) and MASI score (Spearman's rho = 0.401, p-value = 0.004). There was no significant correlation between average Mexameter (erythema) and MASI scores. There was no significant correlation between average chromameter (L, a, b) and MASI scores. Cronbach's Alpha coefficient of 0.935 shows high internal reliability of the MelasQOL scale. MelasQOL scores are significantly correlated (Spearman's coefficient = 0.597, p-value <0.001) with the DLQI scores. There was no correlation between MASI with MelasQOL or DLQI scores. There is no difference in the MelasQOL scores with different demographic variables including age, duration of disease, levels of education, and employment.

DISCUSSION

Melasma can cause significant psychological problems in affected patients because of its cosmetically disfiguring nature. In 2003, Balkrishnan et al[3] developed a new health-related quality of life (HRQoL) instrument for women with melasma by merging Skindex-16 and other skin pigmentation questionnaires. This questionnaire differed from previous dermatological HRQoL

TABLE 1. MELASQoL and MASI scoring in different populations

	MISERY et al (FRENCH)	OCHI et al (SINGAPORE)	FREITAG et al (SOUTHERN BRAZIL)	DOMINGUEZ et al (LATIN)
MELASQoL	20.9	25.6 ± 15.3	37.5 ± 15.2	42
MASI	N/A	12.1 ± 6.5	10.6± 6.6	10

instruments, such as the DLQI and Skindex-16, which placed equal weightage on physical and psychological effects of skin disease.[4,6] The assessment of melasma with generic questionnaires presented a challenge as physical discomfort was negligible, but the psychosocial distress from dyspigmentation was often severe. MELASQoL was developed from questions more relevant to melasma-specific HRQoL issues and placed greater emphasis on the emotional and psychosocial aspects. It was shown to have high internal consistency, validity, and good discriminatory power when compared with DLQI and Skindex-16.[3]

In this study, MELASQoL showed high internal reliability (Cronbach's alpha coefficient 0.935) and significant correlation with DLQI scores (Spearman's coefficient = 0.597), further reinforcing the construct validity of this new scale as a measure of HRQoL in melasma patients.

In comparison to other dermatological conditions in Singapore, the DLQI of melasma (4.5) was lower than vitiligo (5.6), lichen planus (5.8), bullous pemphigoid (6.0), acne scarring (6.5), and pityriasis rosea (6.6).[7] It is conceivable that these conditions present with more severe physical symptoms, such as pruritus and tenderness, that could adversely affect DLQI.

In addition to the MASI scoring of melasma severity, other quantitative measurements have also been designed.[8] The authors' data showed significant correlation between the average Mexameter (melanin) and MASI scores (p-value=0.004). There was no significant correlation between average Mexameter (erythema), chromameter, and MASI scores. These results may reflect the inconsistency and limited reliability of reflectance spectroscopy in evaluating melasma severity.

Our data reported a MELASQoL score of 25.6 (mean) that was similar to a group of French women with a score of 20.9 (mean).[9] However, these results were lower compared to a group of Brazilian and Latin women with reported MELASQoL scores of 37.5 and 42, respectively (Table 1).[10,11] These differing results could possibly be explained by the heterogeneity of sampled populations including severity of disease, prior treatment history, socioeconomic factors, cultural influences, cosmetic application, and prevalence of disease. Although specific data is limited, the reported prevalence ranges from 8.8 percent among a group of Latin women in the Southern United States to as high as 40 percent in Southeast Asian populations.[12,13] It is conceivable that a higher prevalence of melasma in this geographical region may explain greater acceptance and a reduced perception of severity.

There was no correlation between MASI with MELASQOL scores, corroborating with other studies that the clinical severity was not the sole criterion used by patients to assess the burden of their skin condition.[3,11,15] Some authors have attempted to elicit demographic factors that influence MELASQoL scores to explain this discrepancy. Thus far, educational status has been most commonly identified.

Frietag et al[10] and Dominguez et al[11] described MELASQoL scores of patients with inferior educational status to be significantly higher than those with further education. The authors proposed that a poorer understanding of disease resulted in greater anxiety and hence patient education is paramount. However, in the study by Dominguez et al, the authors acknowledged that the group with lower educational levels had more severe melasma, reflecting a potential bias in analysis.[11] On the contrary, this study and Domagraci et al[14] reported no difference in MELASQoL scores regardless of educational levels and overall there is a lack of consistent data supporting its statistical significance.

CONCLUSION

Melasma is a chronic and recurrent pigmentation disorder. Unfortunately, the idea that is it merely a cosmetic curse leads to its under diagnosis and suboptimal treatment. Further demographic profiling of patients with regard to marital status, annual income, and previous history of psychiatric illness could elucidate factors that influence MELASQoL in Singaporean women. The MELASQoL has only been translated into Spanish, Brazilian Portuguese, French, and Turkish. It is imperative to translate and validate this into other languages, so as to accurately depict the burden of disease.

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