Original Article

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Correlation of quality of life and severity in patients with melasma

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Abstract

Background: Melasma is a disorder of acquired facial hyperpigmentation, typically affecting young females. It is known to cause a great psychological impact and a significant negative effect on a patient's quality of life.

Objectives: To explore the correlation between the quality of life in melasma patients and the severity of melasma.

Methods: This hospital-based, analytical, cross-sectional study was conducted from 2020 October to 2021 December in the Department of Dermatology, Venereology and Leprology of Kathmandu Medical College after institutional ethical clearance, in 101 patients recruited by convenience sampling. The quality of life was calculated using the Nepali version of the Dermatology Life Quality Index (DLQI) questionnaire and severity of melasma was calculated using modified Melasma Area and Severity Index (mMASI). Data analysis was done by SPSS v.24.

Results: The study included 101 patients of melasma with a young female preponderance. Seventy-eight (75.7%) being female and 43 (42.6%) being between the age of 21-30 years. The mean DLQI score was 10.39 ± 3.22; interpreted as having a 'very large effect on a patient's life.' While the mean mMASI score was calculated to be 5.53 ± 2.69; interpreted as a melasma severity score (MSS) of 'moderate severity.' A significant positive moderate correlation r = 0.431 ($p < 0.001$) was observed between mMASI and DLQI.

Conclusion: Melasma is a common pigmentary disorder that has a very large effect on the patient's quality of life and this correlates directly with the severity of melasma.

Key words: Melasma; Modified melasma area and severity index; Quality of life.

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INTRODUCTION

Melasma is acquired facial melanosis characterised by asymptomatic, hyperpigmented macules due to local hyper-melanogenesis. It primarily affects women with Fitzpatrick III-VI skin phototypes.[1] Genetic factors, ultraviolet light exposure, specific hormone level (adrenocorticotropic hormone and melanocytic stimulating hormone, among others), drugs, or cosmetics use has been implicated as aetiological factors. On the basis of the depth of melanin pigment accumulation, melasma can be classified into epidermal, dermal, and mixed types and based on the distribution pattern on the face, three types centrofacial, malar, and mandibular have been described.[2] Despite decades of research and practices, the management of melasma still remains challenging for both patients and physicians.

Melasma Area and Severity Index (MASI) is widely used severity measure in clinical studies. A modification eliminating homogeneity from MASI, termed modified Melasma Area and Severity Index (mMASI) has been

developed and used as a validated and reliable means of measuring melasma severity.[3,4] Melasma often causes a great negative impact on emotional well-being and overall quality of life. Given the asymptomatic nature, the toll of melasma on quality of life is not often considered in the management. The present study aimed to explore the correlation of quality of life and severity of melasma.

METHODOLOGY

This hospital-based, analytical cross-sectional study was conducted on 101 patients with a clinical diagnosis of melasma in outpatient department (OPD) of Dermatology, Venereology and Leprology in Kathmandu Medical College (KMC). A proposal was first submitted to the Institutional Review Committee of KMC and ethical approval was taken (Ref. 12082022). Patients clinically diagnosed with Melasma in Dermatology OPD, fulfilling the inclusion criteria and willing to consent to participate in the study were enrolled. Every patient was examined and diagnosed by a qualified registered dermatologist and was further subjected to examination by Wood's lamp and Dermatoscope. The study was conducted from 2020 October to 2021 December. A non-probability convenience sampling technique was applied and data was collected on printed proforma. The data collected included demographic and clinical parameters after an examination. Nepali version of Dermatology Life Quality Index (DLQI) was asked to be filled by each patient. Final data were analysed using IBM SPSS Statistics for Windows, version 24 (IBM Corp., Armonk, N.Y., USA). Mean and standard deviation (SD) were used for quantitative variables; while frequency and percent were calculated for qualitative variables. A p-value of <0.05 was considered significant.

DLQI is a compact practical questionnaire tool for the assessment of Quality of Life (QoL) in any dermatological disease. DLQI describes ten questions, each amounting to a score between 0-3; about basic human concerns which are simple and easy to understand by patients.[5]DLQI Score is interpreted as, 0-1: No effect on patient's life, 2-5: Small effect on patient's life, 6-10: Moderate effect on patient's life, 11-20 score: Very large effect on patient's life, 21-30: Extremely large effect on patient's life.

mMASI calculates the severity of melasma in each of the four regions of the face (forehead, right and left malar region, and chin) with a total mMASI score ranging from 0 to 24, and higher scores indicating more severe disease. It is a subjective assessment based on two variables: percentage of the total area involved (A) and darkness (D); Scoring system: "A", Area of involvement rated 0 to 6: 0 indicates absent; 1, <10%; 2, 10% to 29%; 3, 30% to 49%; 4, 50% to 69%; 5, 70%to 89%; 6, 90% to 100% and "D", Darkness rated 0 to 4: 0 indicates absent; 1, slight; 2, mild; 3, marked; 4, severe. mMASI total score given as 0.3 x A (Forehead) x D + 0.3 x A (Left Malar) x D+ 0.3 x A (Right Malar) x D+ 0.1 x A (Chin) x D.[4,6]

RESULTS

This study included 101 patients with 78 (75.7%)female and 23 (22.3%) male. The majority 43 (42.6%), were of the age group 21-30 years. The mean duration of the disease was 4.86 ± 2.3 years. Most of the study population 38 (37.6%) had a secondary school level of education, while 28 (27.7%) had Higher secondary and Bachelors level education each respectively. Most of the patients were involved in the business (29, 28.2%), followed by service holders (27, 26.2%), homemakers (12, 11.7%), health workers (10, 9.7%), and farmers (7, 6.85%) respectively.

A majority (38, 36.9%) of patients worked both outdoors and indoors, followed by 36 (35%) who mostly worked indoors, and 27 (26.2%) who mostly worked outdoors. Exacerbation of melasma was reported in the summer season by 51 (50.5 %), and while only by 9 (8.9%) in the winter season. The most common precipitating factor was sun exposure in 65 (64.4%), followed by pregnancy in 21 (20.8%), stress in 18 (17.8%), and application of cosmetics in 10 (9.9%), while intake of oral contraceptive pills was reported by 7 (6.9%). Similarly, a family history of melasma was reported by 14 (13.9%) in the study population.

A majority (61, 60.4%) of the study population had Fitzpatrick skin Phototype type V, followed by type IV in 26 (25.7%), and type III in 14 (13.9%). Centrofacial pattern was observed in 51 (50.5%) was the most common pattern followed by malar in 45 (44.6%) and mandibular distribution in 5 (5%). On Wood's lamp examination majority (45, 44.6%) were epidermal type, followed by mixed type in 42 (41.6%). Whereas dermoscopic examination revealed the majority (71, 70.3%) to be epidermal followed by mixed type in 27 (26.75%) (Figures 1, 2).

The mean DLQI score was 10.39 ± 3.22 and the mean mMASI score was 5.53 ± 2.69. A significant correlation between mMASI and DLQI was observed in this study with a positive moderate correlation; r = 0.431 (p <0.001, Figure 3). Similarly, a statistically significant negative correlation; r = -0.0297 (p <0.001) between education and quality of life (DLQI) was observed.

However, no significant correlation between different demographic variables including age, age of onset, sex, duration of disease, and clinical pattern of melasma was found with quality of life scale scores or severity scores.

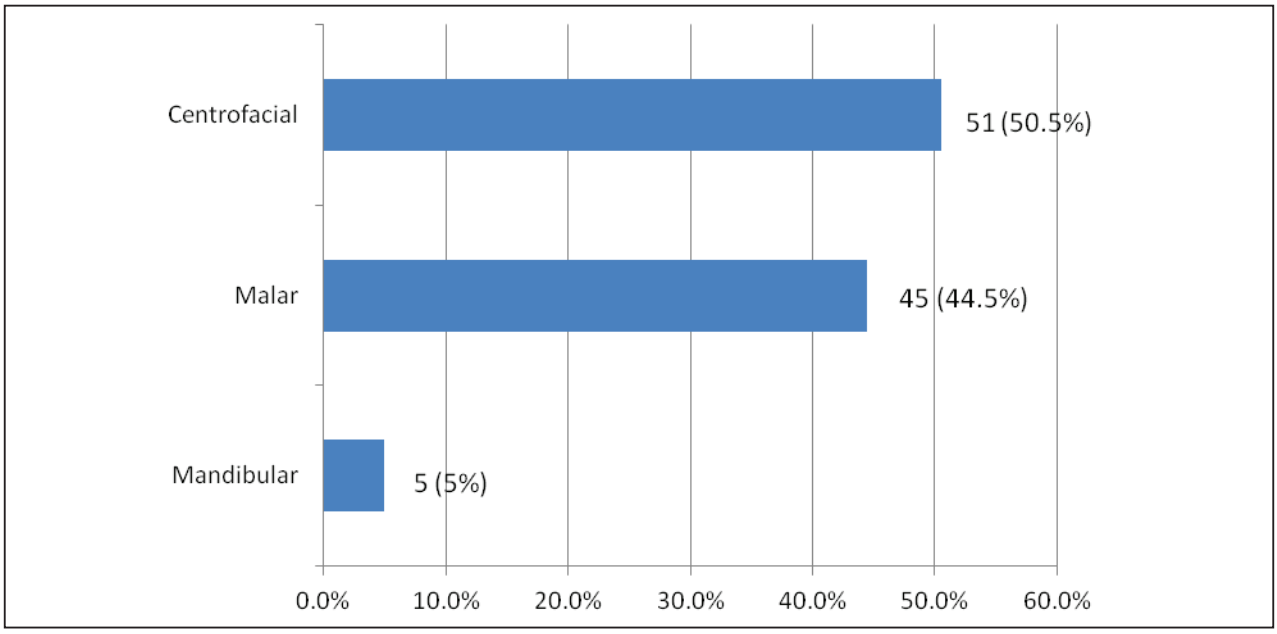

Figure 1: **Clinical pattern of distribution of melasma lesion over face**

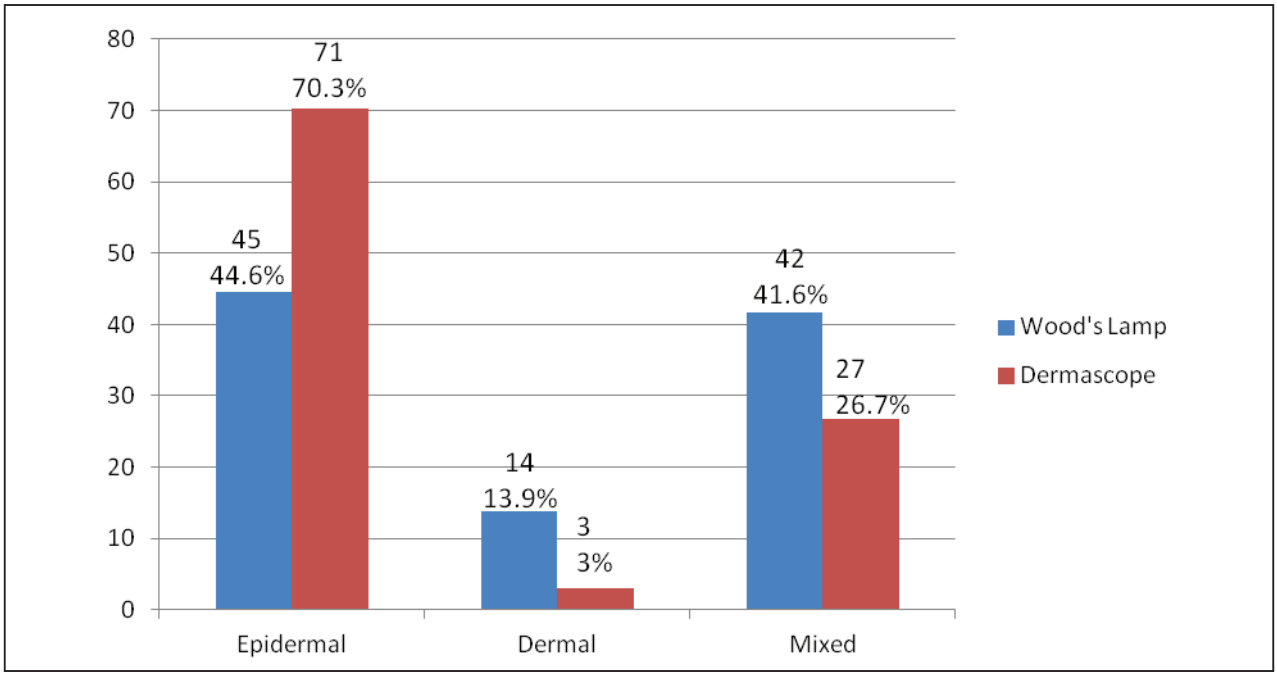

Figure 2: **Types of melasma based on pigment depth**

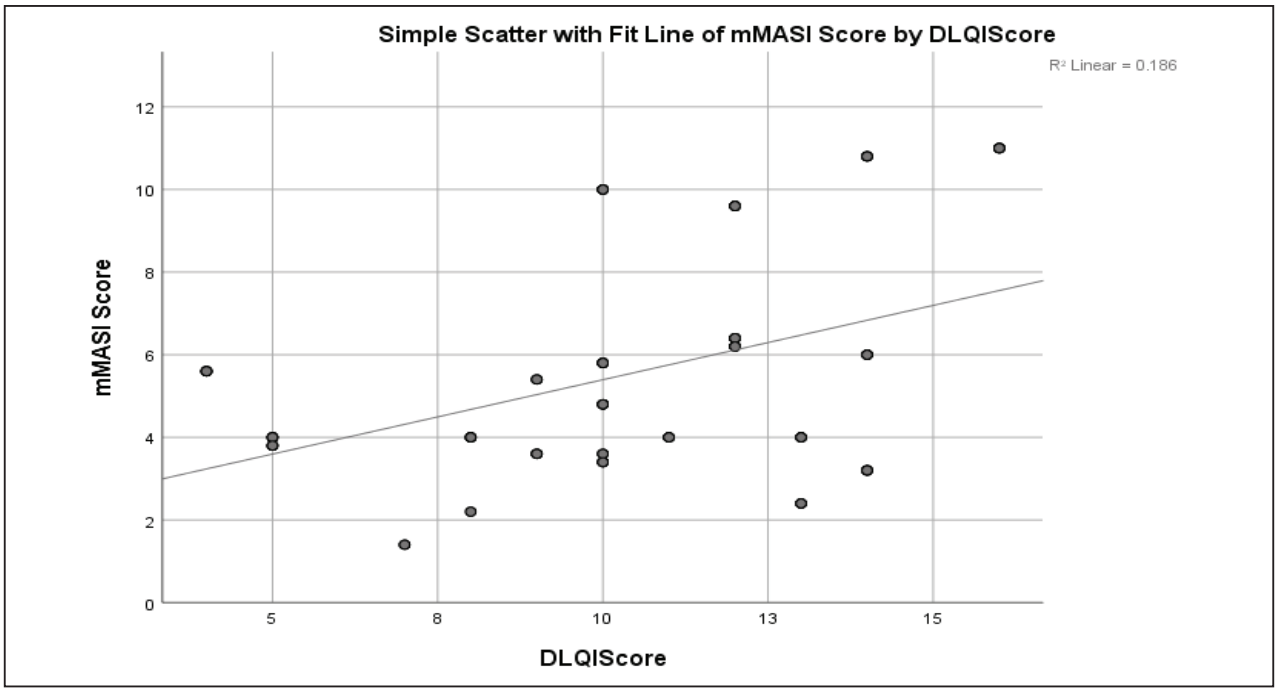

Figure 3: Correlation of mMASI and DLQI scores (r = 0.431, p <0.001)

DISCUSSION

Melasma is a common, persistent pigmentary disorder mostly affecting women with skin phototypes of III-V in Asian subcontinent. Melasma is often recalcitrant to treatment and frustrating for both physicians and patients.

The age of the patients in the present study ranged from 21 to 55 years, with a female preponderance, comparable to the studies by Achar et al., Krupashankar et al. and Yalamanchili et al.[7-9] This could be attributed to better help-seeking behaviours in young female for aesthetic concerns as well as aggravating physiological factors like hormonal influence and pregnancy.

The mean mMASI score for these patients was 5.53± 2.6. The 'melasma severity score (MSS) of moderate severity,' which was comparative to a study done in the western part of Nepal, which was 6.6 ± 5.2; and contrasting to a study done in Singapore, which calculated mean mMASI score to be of severe MSS which was 12.2 ± 6.5.[6,10,11]

The mean DLQI score for patients with melasma in this study was 10.39 ± 3.22, implying 'very large effects on the patient's life which is comparable to the study done in western Nepal.[10] Similar study done in central Nepal, suggests a much lower mean DLQI score of 5.64 ± 5.41 in a study of various facial melanosis while an even lower mean DLQI of 1.46 was reported by Suthanther et al. from a study done in South India.[12-13] The inclusion of other causes of facial melanosis and a predominant study population of married homemakers, perhaps with a lower aesthetic related socio-psychological burden may support the lower impact on quality of life in the study.

This study observed a significant correlation between the mMASI and DLQI scores, with a positive moderate correlation, similar to a finding by Ali et al. in a study in Pakistan correlating DLQI and MASI.[14] In contrast, a study done in the western part of Nepal which took into account MASI instead of mMASI, and a Singaporean study comparing MASI and DLQI as well as melasma quality of lifescale (MelasQoL), found no significant correlation respectively.[10,11]

A negative correlation between education and DLQI was observed in this study, which can be explained by a tendency to be actively informed and abide by the instructions of physicians in better-educated patients; which is in contrast to studies by Harumi et al. and Suthanther et al., which found no significant correlation in their studies.[11,13]

Similar to most other studies, no significant correlation between different demographic variablesincluding age, sex, age of onset, duration of disease and clinical pattern of melasma was found with quality of life scale scores

or severity scores.[10,11,13,15] A variable data of associations of such demographic factors like a significant negative correlation of age and parity, and a contrasting positive correlation of duration of disease with DLQI scores was observed by Uyanikoglu et al., while Morgaonkar et al. reported an association of shorter duration of disease (<1 year) with greater impact on QoL.[16,17]

CONCLUSION

Melasma is a common pigmentary disorder that has a very large effect on a patient's quality of life and this correlates with the severity of melasma. A standardised Nepali version of the Melasma-specific quality of life questionnaire (MelasQoL) may help better reflect it.

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