

# Clinical and Epidemiological Study of Melasma in Men Attending Tertiary Referral Hospital in South India

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## Abstract

**Background:** Melasma is one of the most common causes of acquired facial hypermelanosis that affects both genders and all races. Unlike melasma in women, which has been studied in detail, there is a paucity of studies on the clinico-epidemiological pattern of melasma in men.

**Aim:** To study the clinical profile and epidemiology of melasma in males.

**Materials and Methods:** This is a single-center observational study in which 108 male patients with melasma, belonging to the age group 20–60 years, were selected. A detailed clinical history was taken with the help of a well-structured proforma, which specifically included history of occupation, number of hours of sun exposure, family history, use of any topical or systemic medications, and history of any chronic illness. Following which, a wood lamp examination was done.

**Results:** The most affected age ranges were 31–35 years ( $n = 38$ , 35.18%), followed by 36–40 years ( $n = 27$ , 25%). The prevalence of melasma among males in this study was found to be 7.15%. In this study, 48.1% had Fitzpatrick skin type IV, 31.48% had Fitzpatrick skin type III, 12.03% had Fitzpatrick skin type V, and 6.48% had Fitzpatrick skin type VI. 33.3% expressed a positive family history. Occupational sun exposure was seen in 80.55% of the cases, whereas 19.44% of patients reported exposure to heat at work place for a significant portion of the day. In this study, the majority of the patients ( $n = 32$ , 29.6%) had no history of topical application prior to the onset of the disease. 22 patients (20.37%) had associated type 2 diabetes mellitus, 8 patients (7.4%) had associated thyroid disorder (hypothyroidism), and 4 cases (3.7%) had associated chronic kidney disease. Epidermal melasma was found in the majority of cases (51.85%) on Wood's Lamp examination; 22 cases (20.37%) had a mixed type of melasma, and 12 cases (11.1%) had a dermal type of melasma. Among the cases, 51 (47.2%) had a melasma area and severity index score between 5 and 10.

**Conclusion:** Though the prevalence of melasma is more in India, very few men are diagnosed with it. This could be due to comparatively less cosmetic concern among males in this part of the state and a fewer number of patients attending the outpatient department. The principal risk factors for melasma are sun exposure and family history. Epidermal melasma was found in the majority of cases.

**Key words:** Melasma, Men, South India

## INTRODUCTION

Melasma is a common facial dyschromia that often motivates the search for dermatological care.

The term melasma is derived from the Greek word “*melas*”, which means black. It is a frequently seen entity in clinical practice and presents as hyperpigmentation that occurs in sun-exposed areas, mostly on the face, occasionally on the neck.<sup>[1]</sup>

Melasma is often seen in women (90%) with pregnancy or use of oral contraceptives in their reproductive years.<sup>[2,3]</sup> Though more common in women, it is also reported in men, especially in dark-skinned individuals living in areas with high ultraviolet (UV) radiation.

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Melasma is a cosmetic problem with severity ranging from mild to severe hypermelanosis and can have a major negative impact on quality of life in men as much as it does in women. Melasma mostly affects the face, causing an emotional burden and low self-confidence in their social lives.<sup>[4]</sup> For men, melasma can also be a source of embarrassment because of its association with women and pregnancy.<sup>[5]</sup>

Not many epidemiological studies related to melasma in men are reported, as very few men sought medical attention in the past. However, nowadays, there is an increased concern among men regarding their physical appearance. This has resulted in an enhanced number of men with melasma seeking medical intervention.

## MATERIALS AND METHODS

The present descriptive study was undertaken in all male patients with melasma who attended the Dermatology, Venereology, and Leprosy Department, Mamata Academy of Medical Sciences, a teaching hospital in Bachupally, Hyderabad, India, from February 2023 to September 2023. A detailed clinical history was taken with the help of a well-structured proforma, which specifically included history of occupation, number of hours of sun exposure, family history, use of any topical or systemic medications, and history of any chronic illness. A Woods lamp examination was done on all the patients.

### Inclusion Criteria

All men of age ranging from 20 to 60 years attending the outpatient department (OPD) of the Department of Dermatology who were clinically diagnosed with melasma were included in the study.

### Exclusion Criteria

- Patients with facial nevus or any other hyperpigmentation since childhood, patients with a history of previous exposure to interventions like laser in the past 6 months
- Patients who are known cases of any other photosensitive disorders, like systemic lupus erythematosus
- Patients who were taking drugs known to cause hyperpigmentation, such as phenothiazines, chlorpromazine, tricyclic antidepressants, phenytoin, minocycline, chloroquine, or any kind of hormonal therapy, within 4 weeks before the study enrollment were excluded from the study.

### Study Procedure

All patients clinically diagnosed as with melasma in OPD were evaluated for demographical features like age of onset, duration of disease, duration of sun exposure, cosmetic

usage, family history of disease (primary relative with melasma), history of drug usage, or presence of chronic disease were documented.

A detailed cutaneous examination was performed, which included Fitzpatrick's skin type, the pattern of melasma, and the details of the examination findings were documented. Based on the distribution of melasma in the four regions: centrofacial (cheeks, forehead, upper lip, nose, and chin); malar (cheeks and nose); mandibular (ramus of the mandible); and combination patterns, the patients were assigned to four groups.

The melasma area and severity index (MASI) score was calculated and documented.

A Wood's lamp examination was performed on all patients to find the type of melasma. The study participants were divided into epidermal, dermal, mixed, and indeterminate patterns of melasma based on the amount of enhancement noted by Wood's lamp examination. They were classified as epidermal when pigment enhancement was noticed, dermal when there was no enhancement, and mixed when slight enhancement was noted. Patients in whom the enhancement was not very clear because of darker skin were put under indeterminate group.

Laboratory investigations such as complete blood count, liver function tests, fasting and postprandial blood sugars, and hormonal assays (T3, T4, thyroid-stimulating hormone, luteinizing hormone, and testosterone) were done wherever necessary based on the patient's history and clinical examination. Specific treatment for melasma was given as per the standard of care for management.

## RESULTS

The prevalence of melasma among males in this study was found to be 7.15%, as 389 patients were diagnosed with melasma out of 5439 male patients attending Dermatology OPD during the study period. One hundred and eight male patients with melasma were analyzed in the present study. The age group most affected by melasma among men was the adult population with an age range of 31–35 years ( $n = 38$ , 35.18%), followed by the age group 36–40 years ( $n = 27$ , 25%) [Table 1].

In this study, 52 patients (48.14%) had Fitzpatrick skin type IV, 34 patients (31.48%) had Fitzpatrick skin type III, 13 patients (12.03%) had Fitzpatrick skin type V, and 7 patients (6.48%) had Fitzpatrick skin type VI [Table 2].

Among the cases in this study, 36 cases (33.3%) expressed a positive family history, i.e., the presence of melasma in a

first-degree relative [Table 3]. Further, 87 patients (80.55% of the cases) had a history of occupational sun exposure, whereas in 21 patients (19.44%) there was minimal sun exposure but exposure to heat at work place for a significant portion of the day. Among the 87 cases with positive occupational sun exposure, maximum cases 51 (47.22%) had sun exposure of 7–8 h/day [Table 4].

In this study, the majority of the patients ( $n = 32$ , 29.6%) had no history of topical application before the onset of the disease. 24 patients (22.2%) had reported herbal product application, followed by 20 (18.5%) patients who applied steroid creams for fairness before the disease onset [Table 5]. It was observed that 22 patients (20.37%) had associated type 2 diabetes mellitus and 8 patients (7.4%)

had associated thyroid disorder (hypothyroidism). It was also seen that 4 cases (3.7%) had associated chronic kidney disease (CKD) [Table 6].

In this study, a maximum number of patients 46 (42.59% of cases) presented to our OPD within 1 year of the occurrence of the disease, followed by 25 patients (23.14%) who presented within 1–2 years of the disease [Table 7]. The majority of cases, i.e., 54 cases (50%) had a malar pattern of melasma [Figure 1], 29 cases (26.85%) had a centro-facial pattern of melasma [Figure 2], and 4 cases (3.7%) had a mandibular pattern of melasma [Table 8].

The majority of cases, i.e., 56 cases (51.85%), had epidermal melasma on Wood's Lamp examination, 22 cases (20.37%) had mixed melasma, and 12 cases (11.1%) had dermal melasma. The rest of the cases (18) were classified as indeterminate [Table 9].

**Table 1: The age distribution of the patients in the study ( $n=108$ )**

S. No	Age in years	No. of cases
1.	20–25	3
2.	26–30	7
3.	31–35	38
4.	36–40	27
5.	41–45	16
6.	46–50	5
7.	51–55	6
8.	56–60	6

**Table 2: The Fitzpatrick skin types of the patients ( $n=108$ )**

S. No	Fitzpatrick skin type	No. of cases
1.	I	0
2.	II	2
3.	III	34
4.	IV	52
5.	V	13
6.	VI	7

**Table 3: The distribution of patients according to the family history of melasma**

S. No	Family history of melasma	No. of cases
1.	Present	36
2.	Absent	72

**Table 4: Duration of sun exposure among the patients ( $n=87$ )**

S. No	Duration of sun exposure (hours/day)	No. of cases
1.	1–2	3
2.	3–4	11
3.	5–6	8
4.	7–8	51
5.	9–10	13
6.	11–12	1

**Table 5: The history of application of various products before development of melasma ( $n=108$ )**

S. No	Product used	No. of cases
1.	Nil	32
2.	Topical steroid	20
3.	Steroid containing depigmenting cream	7
4.	Nonsteroidal depigmenting agent	9
5.	Counter irritants	16
6.	Herbal products	24

**Table 6: Associated diseases in the patients ( $n=108$ )**

S. No	Associated disease	No. of cases
1.	Nil	74
2.	Diabetes	22
3.	Thyroid disorder	8
4.	Chronic kidney disease	4

**Table 7: Duration of disease in the patients ( $n=108$ )**

S. No	Duration in years	No. of cases
1.	<1	46
2.	1–2	25
3.	>2–3	14
4.	>3–4	16
5.	>4–5	3
6.	>5	3

**Table 8: Distribution of melisma ( $n=108$ )**

S. No	Distribution	No. of cases
1.	Centrofacial	29
2.	Malar	54
3.	Mandibular	4
4.	Combination	21



Figure 1: Malar distribution of melasma



Figure 2: Centrofacial distribution of melasma

Among the cases, the majority of the men, i.e., 51 (47.2%), had a MASI score between 5 and 10 [Table 10]. This is followed by 34 (31.48%) men who had a MASI score between 1 and 5.

## DISCUSSION

The prevalence of melasma in India was found to be 20.5% in the study conducted by Sarkar *et al.* In our study, the prevalence was found to be 7.15% (389 cases of melasma among 5439 male patients attending dermatology OPD). The low prevalence could be due to comparatively less cosmetic concern among males in this part of the state and a fewer number of patients attending the OPD. However, Sarangi *et al.* reported a prevalence of 6.12% in their study, which is comparable to our finding.<sup>[6]</sup>

Table 9: Woods lamp examination (n=108)

S. No	Type of melasma	No. of cases
1.	Epidermal	56
2.	Dermal	12
3.	Mixed	22
4.	Indeterminate	18

Table 10: Distribution of MASI score among patients (n=108)

S. no	MASI score	No. of cases
1.	1–5	34
2.	5.1–10	51
3.	10.1–15	15
4.	15.1–20	4
5.	20.1–25	3
6.	25.1–30	1

MASI: Melasma area and severity index

In the present study, the mean age involved was 36.7 with an age group range of 21–60 years, which is similar to the study conducted by Sarkar *et al.*, where the mean age involved was 33.5 years with an age range of 19–53 years. This age group is maximally affected cosmetically by the disease, and risk factors for the disease like sun exposure and hormonal changes are present.<sup>[7]</sup>

The Fitzpatrick skin type classification has six different skin types based on skin color and reaction to sun exposure, which range from very fair (skin type I) to very dark (skin type VI). Depending upon whether the patient burns or tans at the first average sun exposure, six skin types have been identified.<sup>[8]</sup> In our study, the majority of the patients belonged to skin type IV, followed by type III. As melasma is a disease of local change in pigmentation, it is more strongly associated with melanized phenotypes, mainly the intermediate skin types III–V (Fitzpatrick classification). Extreme skin types usually show stable pigmentation.<sup>[9]</sup>

Among the cases in this study, 36 (33.3%) expressed a positive family history, i.e., the presence of melasma in a first-degree relative. This finding is similar to a previous study that observed family history in 37% of patients with melasma.<sup>[7]</sup> The studies by Keeling *et al.*,<sup>[5]</sup> and Sarangi *et al.*<sup>[6]</sup> also confirmed positive family history in men with melasma.

The principal risk factors leading to the occurrence of melasma identified till date are sun exposure and family history.<sup>[10]</sup> Other factors that play a role are genetic susceptibility, hormones, cosmetics, photosensitizing drugs, food items, thyroid diseases, hepatopathies, ovarian tumors, parasitic infestations, and stressful events.<sup>[10-13]</sup> In our study, 87 patients (80.55% of the cases)

had a history of occupational sun exposure, whereas in 21 patients (19.44%) there was minimal sun exposure but exposure to heat at work place for a significant portion of the day. This is slightly less than the results of a study by Sarangi *et al.*, where 93% of cases were found to have a positive occupational history. In our study, among the 87 cases with positive occupational sun exposure, maximum cases 51 (47.22%) had sun exposure of 7–8 h/day. Sun exposure is probably the most vital yet controllable aggravating factor in the causation of melasma, irrespective of the gender of the patient.<sup>[10]</sup> Both the type of radiation and the duration of exposure play a key role in pathogenesis. UV radiation (UVA and UVB) is known to cause melanocyte proliferation and epidermal pigmentation more intensely in melasmic areas than in unaffected skin.<sup>[14,15]</sup>

In this study, the majority of the patients ( $n = 32$ , 29.6%) had no history of topical application prior to the onset of the disease. 24 patients (22.2%) had reported herbal product application, followed by 20 (18.5%) patients who applied steroid creams for fairness before the disease onset. These findings are similar to those of another study where 67 (27.3%) patients had no history of application of topical medication before the start of the disease, followed by 60 (24.4%) patients who had applied some herbal product.<sup>[6]</sup> Elling and Powell found no association between the disease and the use of any chemical, suggesting that exogenous chemical exposures can't be considered the foremost etiological agent for the disease.<sup>[16]</sup>

20.37% (22 cases) showed association with type 2 DM, and 7.4% had associated thyroid disorder (8 cases) in our study. It was also seen that 4 cases (3.7%) had associated CKD. There is no study showing the prevalence of thyroid disorder in men with melasma or the association of diabetes in patients with melasma. However, studies by Pérez *et al.*, and Lutfi *et al.*, showed an association between melasma and autoimmune thyroid diseases in the general population.<sup>[17,18]</sup>

46 cases (42.6%) presented within 1 year. A study by Sarkar *et al.*, on men found the average duration to be 1.4 years.<sup>[7]</sup> The most common pattern of melasma observed was the malar type, followed by the centrifacial type. Similar results were found in studies by Sarkar *et al.*, Charupalli *et al.*, and Kristlova.<sup>[7,19,20]</sup>

The calculation of the MASI score is done by assessing three parameters: area (A), darkness (D), and homogeneity (H) of involvement, where the forehead (f) constitutes 30%, the right malar region (rm) 30%, the left malar region (lm) 30%, and the chin (c) 10%. The MASI score is determined

by adding the sum of the severity grades for darkness and homogeneity, which is then multiplied by the value of the area of involvement. A similar pattern was repeated for each of the four facial areas. The total score range is 0–48.<sup>[10]</sup> A higher score implies a higher severity of the disease. The following formula was used for the calculation:  $MASI \text{ total score} = 0.3A (f) \{D (f) + H (f)\} + 0.3A (lm) \{D (lm) + H (lm)\} + 0.3A (rm) \{D (rm) + H (rm)\} + 0.1A (c) \{D (c) + H (c)\}$ <sup>[21]</sup>

## CONCLUSION

Melasma is highly prevalent in both males and females in India. In spite of this, many men are undiagnosed and untreated. This could be due to less cosmetic concern among men and fewer number of men attending outpatient department for this concern. Among the diagnosed cases, we found epidermal melasma in majority of cases.

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