

## A CLINICO-EPIDEMIOLOGICAL STUDY OF MELASMA AT A TERTIARY CARE CENTRE IN INDIA

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### Abstract

**Background:** Melasma is a human melanogenesis dysfunction that results in localized, chronic acquired hyper melanosis of the skin. It occurs symmetrically on sun exposed areas of the body and affects especially women. The objective was to study the sociodemographic factors and clinical presentations that precipitate melasma in Indian population. **Materials and Methods:** This cross-sectional study was done with 120 patients of melasma diagnosed clinically at the tertiary care centre over a period of 2 years. **Result:** The mean age of the patients with melasma was 33.1 years. The male to female ratio was 1:2. The mean age at onset was 28.6 years. The patients of melasma were most commonly housewives (51.6%) followed by students (15.8%) The commonest site of onset was malar area (76.6%) followed by nose (11.6%). Collectively this constituted of 88.2 % patients. Out of 120 patients 77 (64.2%) were using one or more cosmetics over face prior to onset. Burning sensation, itching and erythema on sun exposure were seen in 6 (5%) patients only. The patients of melasma were most commonly housewives (51.6%) followed by students (15.8%) Predominant population in melasma was comprised of indoor workers. (90.8%) The commonest sites involved were malar area in 115 (95.8%) patients followed by nose (67.5%) and forehead (41.6%). The colour of the lesion in melasma patients was light brown in most of the cases (60%) followed by mixed light to dark brown. Malar (58.3%) and Centro facial (45.8%) melasma were commonest and only one case was founded as mandibular type. Pigmentation was epidermal type (58.3%) followed by mixed (41.7%). **Conclusion:** The duration of occupational sun exposure may not be linked with melasma prevalence. Sunscreen use seems inadequate in Indian patients; use of steroid-containing medications is more common. We found 34.2% involvement of men. Higher percentage of involvement of men in our study may be attributed to the rising concerns and awareness in urban population.

## INTRODUCTION

Melasma is a human melanogenesis dysfunction that results in localized, chronic acquired hyper melanosis of the skin. It occurs symmetrically on sun exposed areas of the body and affects especially women.<sup>[1]</sup> The prevalence of melasma varies between 1.5% and 33.3% depending on the population.<sup>[2,3]</sup> Its prevalence in pregnancy is around 50-70%.<sup>[4,5]</sup> The average age of melasma patients was 33.45 years in a study by Achar et al,<sup>[6]</sup> compared to 42.3 years, reported in a study from Singapore.<sup>4</sup> Melasma is reported to be more common in women. Achar et al,<sup>[6]</sup> al found about 19.87% involvement of men

compared to Sarkar et al., conducted an etiological and histological study in Indian males with melasma and found that men represent 20.5-25.83% of the cases.<sup>[7]</sup> Study by Achar et al,<sup>[6]</sup> showed that the mean age of onset was 29.99 years and most patients consulted the doctor after 3.59 years of their disease, contrary to an earlier study, which noticed a later age of onset (38 years), but the duration of the disease for attending the clinic was the same.<sup>[8]</sup> A positive family history was observed, 33.33%, in the study by Achar et al,<sup>[6]</sup> which was in correlation with an earlier reported study, in which it varied from 20 to 70%.<sup>[9,10]</sup> In men, the malar pattern is more common than the Centro facial and mandibular patterns.<sup>[7,10,11]</sup> There was a dearth of studies that looked at the commonest

hyperpigmentation disorder melasma in Indian setting. The present study objectives were to identify socio-demographic factors and clinical presentations of melasma in an Indian setting.

## MATERIALS AND METHODS

This descriptive, cross-sectional study was conducted in the Out-patient department (OPD) of Dermatology and Venereology, All India Institute of Medical Sciences, New Delhi, over a period of 2 years from November 2013 to October 2015. A total of 120 patients of melasma diagnosed clinically were included. Inclusion criteria was 1. Patients diagnosed to have melasma; 2. Patients of all ages and both sexes and irrespective of treatment status; 3. Patients who consent for the study. Exclusion criteria was 1. Patients who do not consent for the study. All patients satisfying the inclusion criteria presenting to dermatology OPD were recruited for the study after obtaining informed consent. A detailed history was taken using a uniform proforma including duration, site of onset, and history of photosensitivity/drug intake prior to onset, local application, use of cosmetics, history and duration of sun exposure, history of scrubbing and psychological distress (Visual analogue scale). All patients were subjected to clinical examination. Clinical photographs were taken in uniform lighting. Diagnosis was verified by a qualified dermatologist. Diagnosis was clinical in this part of the study. The findings were noted in a way they could be compared to other studies. The study was conducted after obtaining IEC clearance of the institution. The results are presented using percentages.

## RESULTS

[Table 1] shows the descriptive characteristics of melasma patients (N-120). Mean age of patients was 33.1 years and 93 patients (77.5%) being between 20 and 40 years. (age range in study 1 to 50 years). There were 41 males and 79 females. The male to female ratio was 1:1.9. The mean age at onset was 28.6 years with patients having onset between the ages of 11 to 47 years. Most common age of onset was in third decade (50%). Duration of disease ranged from 1 month to 23 years. Average disease duration was 4.6 years with majority (36.7%) of patients having a duration of more than 5 years. The patients of melasma were most commonly housewives (51.6%) followed by students (15.8%). Predominant population in melasma was comprised of indoor workers. (90.8%) Outdoor workers were very less in number (9.2%) and were predominantly males. The commonest site of onset was malar area (76.6%) followed by nose (11.6%). Collectively this constituted of 88.2 % patients. Burning sensation, itching and erythema on sun exposure were seen in 6 (5%) patients. All were females. Two of them gave history of using topical steroids over face while 5 of these patients gave history of using fairness creams. Out of 120 patients 77 (64.2%) were using one or more cosmetics over face prior to onset. Patients using two or more cosmetics were relatively less 23 of 120 (19.1%).

[Table 1&2] show the clinical presentations of melasma in this study. The commonest sites involved were malar area in 115 (95.8%) patients followed by nose (67.5%) and forehead (41.6%). The colour of the lesion in melasma patients was light brown in most of the cases (60%) followed by mixed light to dark brown. Malar (58.3%) and Centro facial (45.8%) melasma were commonest and only one case was founded as mandibular type. Pigmentation was epidermal type (58.3%) followed by mixed (41.7%).

**Table 1: Descriptive characteristics of Melasma patients in the study (N-120).**

Variable	Male no.	Female no.	n (%)	Variable	Frequency (n)	%
<b>Age and gender distribution</b>				<b>Occupation</b>		
≤10 years	0	0	0 (0)	Housewife	62	51.6
11-20 years	1	3	4 (3.3)	Student	19	15.8
21-30 years	28	18	46 (38.3)	Office work	09	7.5
31-40 years	12	35	47 (39.1)	Teacher	7	5.8
41-50 years	0	23	23 (19.1)	Shopkeeper	4	3.3
<b>Age at onset</b>				Accountant	2	1.6
≤10 years	0	0	0(0)	Others	17	14.1
11-20 years	7	11	18 (15)	<b>Site of Onset</b>		
21-30 years	29	31	60 (50)	Malar area	92	76.6
31-40 years	5	24	29 (24.2)	Nose	14	11.6
41-50 years	0	13	13 (10.8)	Forehead	5	4.1
<b>Duration of melasma</b>				Cheeks	7	5.8
<6 months	5	5	10 (8.3)	Chin	5	4.2
6-12 months	9	5	14 (11.6)	Temple	1	0.8
12-24 months	9	9	18 (15)	<b>Symptoms of photosensitivity</b>		
>24 months	0	4	4(3.3)	Yes	6	5
>36 months	4	9	13 (10.8)	No	114	95
>48 months	4	13	17 (14.2)	<b>Use of cosmetics prior to onset</b>		
>60 months	10	34	44 (36.7)	Yes	77	64.2

<b>Occupation</b>				No	43	35.8
Indoor	32	77	90.8			
Outdoor	9	2	9.2			

**Table 2: Clinical presentation of Melasma patients in the study (N-120).**

Variable	Male no.	Female no.	n (%)	Variable	Male no.	Female no.	n (%)
<b>Site of melasma</b>				<b>Type of melasma</b>			
Malar area	77	38	115 (95.8)	Centro facial	16	39	55 (45.8)
Nose	51	30	81 (67.5)	Malar	25	40	65 (54.1)
Forehead	36	14	50 (41.6)	Mandibular	0	1	1 (0.8)
Temple	30	18	48 (40)	Epidermal	23	47	70 (58.3)
Cheeks	21	10	31 (25.8)	Mixed	18	32	50 (41.7)
Malar area and nose only	25	13	38 (31.7)				
Cheeks only	1	0	1(0.8)				
<b>Colour of the lesion</b>							
Light brown	25	47	72 (60)				
Light to dark brown	12	13	25 (20.8)				
Dark brown	4	16	20 (16)				
Brownish-grey	0	2	2 (1.6)				
Bluish grey	0	1	1 (0.8)				
Slate-grey	0	0	0 (0)				

## DISCUSSION

Melasma is an acquired hyper-pigmentary disorder of the skin. It is the most common pigmentary disorder in Indian population.<sup>[12]</sup> Although the prevalence of melasma has not been investigated in most countries, melasma accounts for about 4 -10% of new cases in dermatology clinics.<sup>[13]</sup> A multicentre study in India revealed melasma in many women with a peak prevalence of about 30% in women aged from 40 to 65 years. The average age of melasma patients was 33.45 years in a study by Achar et al,<sup>[6]</sup> we also found similar result in our study, compared to higher mean age of 42.3 years, reported in a study from Singapore.<sup>[7]</sup> Melasma is more common in women. However, Indian studies have reported 20-25% of the cases in men.<sup>[7,11]</sup> We found 34.2% of patients in our study were men. Higher percentage of involvement of men in our study may be attributed to the rising concerns and awareness in the population.

Melasma exhibits variations in clinical patterns as reported in the previous studies from India. Malar (58.3%) and centro facial (45.8%) regions were predominantly observed among the patients included in our study. We found malar and centrofacial patterns almost similar in frequency contrary to the results by a north Indian study which showed centro facial in 76.7% of females.<sup>[14]</sup> Malar distribution (61%) was higher than centro facial (39%) in males our study; other studies also found the malar pattern common than the Centro facial and mandibular patterns in males.<sup>[6,7,10]</sup> We had a single case of mandibular pattern in a female. We did not come across other patterns like lateral cheek or brachial pattern. Classification of melasma,<sup>[15]</sup> is based on the depth of melanin pigment and helps in predicting the therapeutic outcome. However, Wood's light examination may not be accurate in determining the depth of pigment.<sup>[16,17]</sup> There is poor correlation between the classification based on Wood's light examination and histopathology. We classified

melasma into epidermal as light brown and mixed in the rest others. We found epidermal in 58.3% cases and mixed in 41.7% cases while Hassan et al., have found epidermal in 68.4% of their cases.<sup>[18]</sup> Melasma is a disorder with a great degree of psychosocial impact due to their easy visibility. Due to increased patient awareness, greater use of cosmetics and over the counter drugs, its incidence and importance is growing rapidly.

This study describes the epidemiological determinants of melasma. Data suggests that the duration of occupational sun exposure may not linked with melasma prevalence. Sunscreen use seems inadequate in Indian patients; use of steroid-containing medications is more common. We found 34.2% involvement of men. Higher percentage of involvement of men in our study may be attributed to the rising concerns and awareness in urban population.

## CONCLUSION

The duration of occupational sun exposure may not be linked with melasma prevalence. Sunscreen use seems inadequate in Indian patients; use of steroid-containing medications is more common. We found 34.2% involvement of men. Higher percentage of involvement of men in our study may be attributed to the rising concerns and awareness in urban population.

## REFERENCES

1. Miot LD, Miot HA, Silva MG, Marques ME. Physiopathology of melasma. *An Bras Dermatol.* 2009;84:623–635.
2. Pichardo R, Vallejos Q, Feldman SR, Schulz MR, Verma A, Quandt SA, Arcury TA. The prevalence of melasma and its association with quality of life in adult male Latino migrant workers. *Int J Dermatol.* 2009 Jan;48(1):22–6.
3. Werlinger KD, Guevara IL, González CM, Rincón ET, Caetano R, Haley RW, Pandya AG. Prevalence of self-diagnosed melasma among premenopausal Latino women in

- Dallas and Fort Worth, Tex. Arch Dermatol. 2007 Mar;143(3):424–5.
4. Rathore SP, Gupta S, Gupta V. Pattern and prevalence of physiological cutaneous changes in pregnancy: a study of 2000 antenatal women. Indian J Dermatol Venereol Leprol. 2011 Jun;77(3):402.
  5. Wong RC, Ellis CN. Physiologic skin changes in pregnancy. J Am Acad Dermatol. 1984 Jun;10(6):929–40.
  6. Achar A, Rathi SK. Melasma: a clinico-epidemiological study of 312 cases. Indian J Dermatol. 2011 Jul;56(4):380–2.
  7. Sarkar R, Jain RK, Puri P. Melasma in Indian males. Dermatol Surg Off Publ Am Soc Dermatol Surg Al. 2003 Feb;29(2):204.
  8. Halder RM, Grimes PE, McLaurin CI, Kress MA, Kenney JA. Incidence of common dermatoses in a predominantly black dermatologic practice. Cutis. 1983 Oct;32(4):388, 390.
  9. Resnik S. Melasma induced by oral contraceptive drugs. JAMA. 1967 Feb 27;199(9):601–5.
  10. Vázquez M, Maldonado H, Benmamán C, Sánchez JL. Melasma in men. A clinical and histologic study. Int J Dermatol. 1988 Feb;27(1):25–7.
  11. Sarkar R, Puri P, Jain RK, Singh A, Desai A. Melasma in men: a clinical, aetiological and histological study. J Eur Acad Dermatol Venereol JEADV. 2010 Jul;24(7):768–72.
  12. Pasricha JS, Khaitan BK, Dash S. Pigmentary disorders in India. Dermatol Clin. 2007 Jul;25(3):343–52, viii.
  13. Failmezger C. Incidence of skin disease in Cuzco, Peru. Int J Dermatol. 1992 Aug;31(8):560–1.
  14. Kumar S MBB, Kamra Nidhi. Melasma in North Indians: A clinical, epidemiological, and etiological study. Year 2014. Volume: 1(Issue Number: 2):Page: 95–9.
  15. Victor FC, Gelber J, Rao B. Melasma: a review. J Cutan Med Surg. 2004 Apr;8(2):97–102.
  16. Mahmoud BH, Ruvolo E, Hexsel CL, Liu Y, Owen MR, Kollias N, et al. Impact of long-wavelength UVA and visible light on melanocompetent skin. J Invest Dermatol. 2010 Aug;130(8):2092–7.
  17. Kim EH, Kim YC, Lee E-S, Kang HY. The vascular characteristics of melasma. J Dermatol Sci. 2007 May;46(2):111–6.
  18. Hassan I, Bhat Y, Aleem S, Anwar P. A clinico-epidemiological study of facial melanosis. Pigment Int. 2015;2(1):34.