# Melasma: A Clinical and Epidemiological Study

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**ABSTRACT**

**Introduction:** Melasma is a common pigmentary disorder seen predominantly in females, presenting as pigmented patches in exposed skin mostly on face. Its etiopathogenesis is unknown, however genetic, hormonal factors and UV radiation may contribute to its pathogenesis. Our present research aimed to study the epidemiology and clinical patterns of melasma**.**

**Material and Methods**: A total of 70 patients were enrolled for the study over a period of one year. The diagnosis of melasma was made clinically and based on the characteristic patterns of melasma, the patients were divided into centrofacial, malar or mandibular.

**Results:** The age of the patients ranged from 20 to 49 years. Majority of cases were seen in the age group of 30-39 years (47.1%). The duration of disease ranged from 4 months to 8 years. Patients from rural areas (64.3%) outnumbered those from urban areas (35.7%). Out of 45 patients dwelling in rural areas, majority (68.9%) had a history of sunlight exposure in the form of working in fields with fewer (31.1%) patients having a history of staying mostly indoors. Statistical analysis showed a significant association of exposure to sunlight with the dwelling area ($p < 0.001$).A positive family history was observed in 5 (7.1%) patients. Centrofacial was the most common pattern (74.3%) observed in the present study. Wood's lamp examination showed epidermal type being the most common in 64.3%% followed by mixed and dermal type seen in 21.4% and 14.3% respectively.

**Conclusion**: The exact pathogenesis of melasma is unknown. The present study tends to analyse the epidemiology, clinical patterns, and etiological factors in the causation of this pigmentary disorder.

**Keywords:** Melasma, epidemiology, Centrofacial, Wood's lamp

## INTRODUCTION

Melasma is a common hyperpigmentary disorder characterized by symmetrical, marginated, light to dark brown patches that occur mostly in sun exposed areas of skin, mostly on the face, occasionally affecting the neck and forearms.The word melasma is derived from the Greek word "melas" meaning black and refers to its brownish clinical presentation. It accounts for 0.25 to 4% of the patients seen in dermatology clinics in South East Asia, and is the most common pigmentary disorder among Indians.[1,2]

The disease affects predominantly females especially in their reproductive years, however about 10% occurs in men also.[3] It is observed more frequently among individuals with skin type IV-VI, especially in women of Hispanic, Carribean and Asian origin living in areas of intense ultraviolet radiation[4]

The exact cause of melasma is unknown, however many factors have been implicated in its etiopathogenesis, mainly sunlight, genetic predisposition, pregnancy and certain drugs. A strong link is suggested between melasma and pregnancy as 50-70% of pregnant women seem to develop melasma[5,6] whereas women receiving oral contraceptives are found to develop melasma in about 38% of the cases.[7]Genetic factors are also involved as more than 30% of patients with melasma have a family history and melasma has been reported in identical twins without affecting other siblings.[8] The association of melasma with endocrinopathies and autoimmune thyroid diseases has also been suggested.[9]

On the basis of Wood's lamp examination melasma is classified into 4 types namely epidermal, dermal, mixed and indeterminate type.[10] The epidermal type showing intensification under Wood's lamp, is the most common type. In the dermal type there is no pigment intensification. In the mixed type the pigmentation becomes more apparent in some areas, while in others there is no change. Indeterminate type is where the pigment is apparent in the Wood's light, in individuals with skin type VI.[11] The clinical patterns of melasma include centrofacial, malar and mandibular.[12]

This study aimed at studying the epidemiology and clinical patterns associated with melasma.

## MATERIAL AND METHODS

The present study was conducted in the Post Graduate Department of Dermatology, Venerology and Leprology of SMGS Hospital, Government Medical College Jammu, in 2016 for a period of one year. A total of seventy patients with a clinical diagnosis of melasma were enrolled in the study.

A detailed history regarding demographic data was taken. The diagnosis of melasma was made clinically and based on the characteristic patterns of melasma the patients were divided into centrofacial, malar or mandibular. Also Wood's lamp examination was done to further classify the pattern of melasma into epidermal, dermal or mixed type.

## STATISTCAL ANALYSIS

The recorded data was compiled and entered in a spreadsheet (Microsoft Excel) and then exported to data editor of SPSS Version 20.0 (SPSS Inc., (Chicago, Illinois, USA) by Kolmogorov Smirnov test. Student's independent t-test was

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**How to cite this article:** Iram Qazi, Naina K Dogra, Devraj Dogra. Melasma: a clinical and epidemiological study. International Journal of Contemporary Medical Research 2017;4(10):2088-2090.

employed for comparison of continuous variables. A p- value of less than 0.05 was considered statistically significant. All p values were two tailed.

## RESULTS

The study comprised of 70 patients of melasma. The age of the patients ranged from 20 to 49 years. Most common age group affected was 30-39 years (47.1%). The mean age of presentation was 30.1 years.The duration of disease ranged from 4 months to 8 years with a mean duration of 2.1 years. Majority of patients belonged to rural area (64.3%) compared to the urban area (35.7%). Regarding occupation, majority of the patients (54.3%) were housewives followed by students (30%) and self employed (15.7%). Out of 45 patients dwelling in rural areas, 31 patients (68.9%) had a history of sunlight exposure in the form of working in fields and 14 patients (31.1%) had a history of staying mostly indoors.

Out of 25 patients dwelling in urban areas 5 patients (20%) had a history of working outdoors with significant exposure to sunlight(Table 1). Statistical analysis showed a significant association of exposure to sunlight with the dwelling area ($X^2$=15.38; p <0.001).

Out of 70 patients of melasma a positive family history was present in 5 (7.1%) cases only.

On Wood's lamp examination, epidermal type of pigmentation was the commonest type seen in 45 patients (64.3%)followed by mixed and dermal type seen in 15 (2 1.4%) and 10 (14.3%) patients respectively (Table 2).

Regarding the patterns of melasma, centrofacial pattern was the most common seen in 52 (74.3%) patients (Table 3). The next common pattern seen was malar observed in 14 (20%) patients followed by mandibular pattern seen in 4(5.7%) patients. Among the patients of melasma, majority of the patients with centrofacial pattern (48.1%) and mandibular pattern (75%) belonged to age group of 30-39 years whereas majority of patients with malar pattern (64.3%) of melasma belonged to age group of 20-29 years. Statistical analysis showed no association of pattern of melasma with the age distribution ($X^2$=4.35; P=0.354); (Table 4)

| Exposure to Sunlight | Rural | | Urban | |
|---|---|---|---|---|
| | No. | %age | No. | %age |
| Yes | 31 | 68.9 | 5 | 20.0 |
| No | 14 | 31.1 | 20 | 80.0 |
| Total | 45 | 100 | 25 | 100 |
| $X^2$=15.38; P-value<0.001 | | | | |

**Table-1:** Showing association of exposure to sunlight with dwelling

| | Frequency | Percentage |
|---|---|---|
| Epidermal Type | 45 | 64.3 |
| Dermal | 10 | 14.3 |
| Mixed | 15 | 21.4 |
| Total | 70 | 100 |

**Table-2:** Wood's lamp examination among study cases

| Pattern | Frequency | Percentage |
|---|---|---|
| Centofacial | 52 | 74.3 |
| Malar | 14 | 20.0 |
| Mandibular | 4 | 5.7 |
| Total | 70 | 100 |

**Table-3:** Showing pattern of melasma among study cases

| Age (years) | Centofacial | Malar | Mandibular | Total |
|---|---|---|---|---|
| 20-29 | 22 (42.3%) | 9 (64.3%) | 1 (25%) | 32 |
| 30-39 | 25 (48.1%) | 5 (35.7%) | 3 (75%) | 33 |
| 40-49 | 5 (9.6%) | 0 (0%) | 0(0%) | 5 |
| Total | 52 | 14 | 4 | 70 |
| ($X^2$=4.35; p=0.354) | | | | |

**Table-4:** Showing association of pattern of melasma with age

## DISCUSSION

Melasma is a common pigmentary disorder that manifests as symmetric hyperpigmented macules and patches on the face. The exact etiology of melasma is unknown, however several factors have been reported to be associated with melasma which include ultraviolet radiation, genetic factors, pregnancy, skin type, cosmetics, nutrition, phototoxic and photoallergic medications, oral contraceptives, estrogen and progesterone therapy, ovarian tumors, thyroid dysfunction, and vascular factors.

In the present study the age of the patients ranged from 20 to 49 years with the mean age of 30.1 years. Majority of cases belonged to the age group of 30-39 years (47.1%). Our results were comparable with the previous studies on melasma where the age of the patients ranged from 11 to 49 years with the mean age of 29.99 years.[13] The duration of disease ranged from 3 months to 8 years. Similar results were observed by Sarvjot V et al, 2009 where the duration of disease ranged from 2 to 8 years with a mean age of 4.8 years.[14]

In the present study, patients with rural background outnumbered those with urban background. Out of 70 patients, 45 (64.3%) belonged to rural area and remaining 25 (35.7%) to urban area.This is in accordance with a study conducted by Hassan I et al, 2015 on facial melanosis who found that out of 208 patients, 132 belonged to rural areas with the remaining patients living in urban areas. Most common occupational group was found to be housewives indulging in farming activities.[15]

Out of 45 patients dwelling in rural areas, majority 31 (68.9%) patients had a history of sunlight exposure in the form of working in fields. In a previous study, 78.57% of male patients and 48.84% of females had a history of sun exposure.[16] A significant correlation was found between exposure of sunlight and dwelling in rural areas. This may explain the higher frequency of patients of melasma in rural areas as compared to urban areas in our study.

A family history of melasma was present in 5 out of 70 (7.1%) patients.However, a previous study observed a higher prevalence of family history (37%) in patients of melasma[17]

On wood's lamp examination the commonest pattern of melasma found was epidermal (64.3%) followed by mixed

pattern (21.4%). Dermal type of melasma was seen in least number of cases (14.3%). Similar findings in previous study showing epidermal pigmentation in maximum patients of facial melanosis (68.4%) followed by dermal pigmentation in the remaining cases.[15]

Regarding the patterns of melasma, the most commonest pattern observed was centrofacial seen in 52 (74.3%) followed by malar 14 (20%) and mandibular pattern seen in14 (20%) and 4 (5.7%) patients respectively. This is in agreement with the previous study conducted by Achar A and Rathi SK, 2011 who observed centrofacial melasma as the commonest pattern seen in 173 out of 312 patients (54.44) followed by mandibular pattern seen in 43.26% patients with malar pattern seen in least number of cases.[13] However, no association was found between patterns of melasma and age group of patients.

## CONCLUSION

In this study we analysed the epidemiological factors and clinical patterns associated with melasma. It was observed predominantly in reproductive age group with a disease duration of 4 months to 8 years. Patients from rural areas outnumbered those from urban areas and among these patients majority had a history of significant sunlight exposure implicating the role of UV exposure in the etiopathogenesis of melasma.

On Wood's lamp examination the commonest pattern observed was epidermal and the most commonest clinical pattern observed was centrofacial.

The limitations of our study were smaller sample size and diagnosis by clinical means only.

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**Source of Support:** Nil; **Conflict of Interest:** None

**Submitted:** 26-09-2017; **Accepted:** 24-10-2017; **Published:** 07-11-2017