

# Self-Medication in Patients with Melasma: Risk Factors and Consequences

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## ABSTRACT

**OBJECTIVE:** To assess self-medication in melasma cases by examining their reasons and consequences.

**METHODOLOGY:** This descriptive cross-sectional study included 300 melasma cases were selected by convenience sampling from outdoor Dermatology and Medicine Department Rawal Institute of Health Science Islamabad (January-June 2018).

Patients already under care of dermatologist and with severe systemic illness, also, patients with underlying endocrine disease or systemic conditions leading to hyper pigmentation, cases with drug induced pigmentation and receiving oral contraceptive pills were excluded. Demographic details, self-medication type, reasons, complications and alternative therapy were documented. Data analyzed by SPSS V-17 with significant  $p < 0.05$ .

**RESULTS:** Among 300 melasma cases, 227(75.6%) reported self-medication with 213(93.8%) females and 14(6.2%) males, mean age 30+5.7 years and melasma duration 3.55+3.6 years. Superficial melasma 156 (68.8%) and deep 64(28%). Sun-block used by 29(12.8%). Oral self-medication 15(6.6%), alternative medicine 70(30.8%), mud application 42(18.5%), whitening creams 149(65.6%) and therapy by beautician 136(60%). Hospital access lack in 14(6.2%), lack of money 7(3%), distrust on doctors 3 (13.2%), perceived as minor disease 176(77.5%). Reason for consultation was no improvement in 84 (37%), partial improvement 50(22%) and worsening 93(43%). Complications observed were acne in 91(40%), skin thinning 14(6.2%) and hirsutism 44(19.4%). Associations were acid peptic disease 21(9%), family history 28(12%) and pregnancy 8(3.5%). Mean expenditure was 4,160 rupees/month.

**CONCLUSION:** Self-medication by whitening creams and therapy by beautician is frequent among melasma cases followed by herbal therapy, mud application, oral and topical medication. Delayed presentation and associated complications of self-medication i.e. acne, hirsutism, skin thinning, folliculitis and telangiectasias need to be addressed. Authors recommend sun-block and early dermatology consultation to prevent complications, recurrence and improve quality of life.

**KEY WORDS:** Self-Medication, Melasma, Risk Factor.

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## INTRODUCTION

Melasma is an acquired condition of skin characterized by hyper-melanosis. Word Melasma is derived from Greek word "melas" (black color), formerly known as cholasma<sup>1</sup>. The sun-exposed areas i.e. cheeks, chin, upper lip and forehead are prone to melasma<sup>2</sup>. Melasma is a frequently observed dermatological condition having prevalence of 8.8% in United States; however, prevalence is up to 40% among Asian women<sup>3</sup>. Almost 90% cases with melasma are females and it is frequently seen in the reproductive years.

Melasma results from the increased synthesis of the melanosomes in the melanocytes and its transfer to keratinocytes<sup>4</sup>. The pathophysiology of melasma is multifactorial and still uncertain<sup>2</sup>. Frequent

associations of melasma are excessive sun exposure, genetic predisposition, light brown skin type, endocrine disorders (Addison's, Hashimoto thyroiditis), pregnancy, anti-epileptics, phototoxic drugs, steroids, cosmetics and oral contraceptive use. Three patterns of melasma as per area of facial involvement are centro-facial, malar and mandibular. It can also be divided as epidermal, dermal and mixed types. The melanin can be visualized by woods lamp examination (wave length 340-400nm), and the pigmentation can be present in epidermis, dermis or both. The accentuation of lesions during woods lamp examination differentiates the variants of melasma<sup>5</sup>. Melasma has no reported malignant transformation, however as it involves face frequently there is significant impact of melasma on quality of life. A

Korean study demonstrated significant impact of melasma on quality of life (QOL)<sup>6</sup>. The treatment of melasma aims at reduction of exposure to UV radiation and strategies that reduce the melanin production. Long term therapy is required with high recurrence rates among the patients of melasma. Most of the cases with melasma have delayed approach to dermatologist and also there is frequently observed self-medication. There is limited research available from our region regarding melasma. This study has been conducted to study the various types of self-medication used for melasma, the predisposing factors and impact of self-medication on the disease itself. The results of this study may help us adapt the measures to improve the factors for early approach, appropriate management and disease outcome.

## **METHODOLOGY**

This descriptive cross-sectional study was conducted from January to June 2018 at outdoor Dermatology and Medicine Department, Rawal Institute of Health Sciences Islamabad after ethical approval from institutional committee. Total 300 adult cases of melasma of both genders (>18 years age) presenting to dermatology clinic were selected by convenience sampling. Patients already under care of dermatologist and with severe systemic illness, underlying endocrine disease (i.e. Addison's disease) or systemic conditions leading to hyper pigmentation (i.e. chronic renal failure, hemochromatosis), Cases with drug induced pigmentation and receiving oral contraceptive pills were excluded. Informed consent was obtained from each case.

The demographic details, education, socioeconomic status and detailed history were documented. Patients were clinically examined. Melasma was classified on the basis of woods lamp examination findings i.e. Superficial/ epidermal (accentuation of light present), dermal (no accentuation of light) or mixed (patchy enhancement of light).

The skin type was also labeled as I to VI in each case according to Fitz Patrick Scale i.e. a numerical classification for human skin color to estimate the response of different skin types to ultraviolet light<sup>7,8</sup>. The duration of melasma, type of self-medication, use of alternative medicine therapy, reasons for self-medication and consulting the dermatologist, approximate amount of money spent/ month, associated conditions and source of information to seek help from dermatologist was documented on a specially designed proforma.

Data was entered and analyzed by SPSS version-17. Mean and standard deviation calculated for quantitative variables (age, duration of melasma and money spent); frequencies and percentages for

qualitative variables (gender, types of self-medication, reason for consult). Data presented as tables.

## **RESULTS**

Amongst 300 cases of melasma, 227(75.6%) had history of self-medication that were further evaluated. Among these 227 cases there were 213(93.8%) females and 14(6.2%) males. Mean age was 30+5.7 (18-43). Mean duration of melasma was 3.55+3.6 years, range was 1 month to 20 years. Among the 227 cases of melasma with self-medication, fewer cases 64 (28%) presented with less than one year of melasma duration, 120 (53%) had 1-5 years duration and 43 (20%) had more than five years duration. Melasma stage was superficial in 156(68.8%), deep in 64(28%) and both superficial and deep in 7(3%). Skin types observed were type II in 30(13%), type III in 56 (24.7%), type IV in 113(49.8%) and type V in 28 (12.3%), while there was no case of skin type I and VI (table I).

As per education status, 28 (12%) cases were illiterate, primary education in 28 (12%), middle grade education in 8 (3.5%), matric in 42 (18.5%), graduation in 85 (37%), and post-graduation in 28 (12%). Total 146(64%) cases were from low socioeconomic class (below poverty line) and 81(36%) were above.

Only 29(12.8%) cases used the sun-block as per their daily routine. Regarding modes of self-medication, 15 (6.6%) used oral medications for melasma. Use of alternative medicine, i.e. Hikmat, Herbal or Homeopathic was found in 70(30.8%). History of mud application was found in 42(18.5%) cases. Over the counter whitening creams were used by 149(65.6%) and 136(60%) received various procedures by beauticians for melasma (e.g. Skin bleach, whitening therapy, facials, scrubbing, masks, etc; table II).

According to patients, the reasons for self-medication and not seeking help from dermatologist included lack of access to facility in 14(6.2%), lack of money 7(3%) and lack of trust on doctors 30(13.2%), while 176 (77.5%) believed melasma to be minor disease that doesn't need to be consulted. 84 (37%) consulted when they didn't observe improvement by self-medication, 50(22%) observed partial improvement and 93(41%) seek help because of worsening by self-medication. Various complications secondary to self-medication observed were acne in 91(40%), skin thinning in 14(6.2%), hirsutism in 44(19.4%), both in 14(6.2%), while 64(28%) cases had no complications. Associated systemic conditions observed were acid peptic disease in 21(9%), positive family history of melasma 28(12%) and associated pregnancy 8(3.5%). The mean amount of money spent on self-medication

was 4,160 rupees, with maximum expenditure up to rupees 50,000/month.

## DISCUSSION

Melasma, the acquired hyper-melanosis of skin is a frequent reason for dermatologist consultation all over the world. Melasma is observed among all ethnic and population groups. However, its prevalence varies all over the world. It is prevalent among Eastern Asia, Pakistan, India, Middle East and Mediterranean-African population being the pigmented phenotypes. And among Americans, Americas, it is common among Hispanic-Americans and Brazilians in view of high ultraviolet radiation exposure<sup>9,10</sup>.

The most important correlation is between melasma and female gender. Current study had 213(94%) females and 14(6%) males with melasma. Studies show that the disease is 7-9 folds common in women than men that agrees with results of current study. A Brazilian study by Ishiy PS 2014<sup>11</sup> conducted on 515 cases reported melasma in 58% women vs. 42% men. The female predominance in melasma can be explained by hormonal factors in melasma pathogenesis, that include pregnancy, oral contraceptive and hormone replacement therapy, perimenopausal state<sup>12,13</sup> and increases expression of estrogen and progesterone receptors in various layers of skin<sup>14</sup>. Fewer studies have addressed melasma in males; the contributory factors in males being sun exposure, use of cosmetics, infections, hepatic disorders, exogenous testosterone stimulators and familial hyper pigmentation. Raised levels of circulating Luteinizing hormone and decreased testosterone observed in males with melasma<sup>15,16</sup>.

Another strong link is suggested between melasma and pregnancy since 50-70% women seem to develop melasma during pregnancy. Similarly, 38% of women receiving oral contraceptives seem to develop melasma<sup>17</sup>. Other studies suggest that the correlation between melasma and pregnancy reach almost up to 40% of cases. The overall prevalence of melasma among Pakistani women is still unknown however a study conducted by Ikram S 2018<sup>18</sup> and Amin N 2016<sup>19</sup> reported that among the pregnancy associated skin changes, frequency of melasma was 63.5% in outdoor patients. The hormonal influences of estrogens, progesterone and melanocortin explain association of melasma with female gender and pregnancy<sup>20</sup>. Current study had 3.5% pregnant women presenting with melasma. Though melasma is frequently seen in pregnant women, fewer present to dermatologist and tend to delay the medication and other therapies till completion of pregnancy.

Regarding melasma and age, this study shows that

145 (64%) melasma cases fall in the age group 20-40 years. Certain studies prove that it's not the age being related to melasma; but the type of melasma appearing in different age groups, i.e. extra facial melasma being common in menopausal women. Significantly reduced prevalence of after 50 years of age could be due to reduction in melanocytes secondary to aging<sup>21</sup>. Current study had the mean age 34 years with the maximum age of 48 years being observed. Predominance of younger patients presenting with melasma reflects higher prevalence of melasma among younger age and also the concerns about physical appearance and skin pigmentation in younger age group.

The mean duration of melasma was 3.5 years with the maximum duration of 20 years in current study. A study conducted by Achar A 2011<sup>13</sup> reports similar duration of presentation to hospital. In current study, 64 (28%) patients had melasma for less than one year, 120 (53%) 1-5 years and 43 (20%) for more than 5 years duration. Studies done by Morgaonker et al<sup>1</sup> showed lesser duration of melasma. The delay in approach to hospital could be because of the financial constraints, lack of awareness, use of other modes of therapy, etc.

The skin type of melasma cases was assessed by Fitz Patrick scale and classified from type-I to type-VI<sup>7,8</sup>. In this study almost half of the patients 113 (49.8%) with melasma had skin type-IV; 1/4<sup>th</sup> i.e. 56 (24.7%) had skin type-III and fewer cases were of rest of the skin types (Table I). While study done by Morgaonker et al<sup>1</sup> showed most of the melasma cases with skin type IV-VI.

**TABLE I: THE TABLE REPRESENTING DEMOGRAPHIC CHARACTERISTICS OF MELASMA CASES, FITZ PATRICK SKIN TYPE AND SOCIOECONOMIC IMPLICATIONS OF SELF-MEDICATION (n=227)**

Variables		n (%)
<b>Age (years)</b> mean + SD = 30+5.7 Range = 18-48	<20 years	52(23%)
	20-40 years	145(64%)
	>40 years	30(13%)
<b>Gender</b>	Female	213 (93.8%)
	Male	14(6.2%)
<b>Duration of Melasma(years)</b> Mean + SD = 3.55+3.6 Range = 1 month- 20 years	<1 year	64(28%)
	1-5 years	120(53%)
	> 5 years	43(20%)
<b>Education</b>	Nil	28(12%)
	Primary	28(12%)
	Middle	8(3.5%)
	Matric	42(18.5%)
	Graduate	85(37%)
	Post graduate	28(12%)

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<b>Stages</b>	Deep Superficial Both superficial & deep	64(28%) 156 (68.8%) 7(3%)
<b>Sunblock</b>	Yes No	29(12.8%) 198(87.2%)
<b>Skin type</b>	Type II Type III Type IV Type V Type I&VI	30(13%), 56(24.7%) 113(49.8%) 28 (12.3%) 0(0%)
<b>Associated conditions</b>	Acid peptic disease Family history Pregnancy  Oral contraceptives use None	21(9%) 28(12%) 8(3.7%) of females  21(9%) of females 170(75%)
<b>Money spent (Rupees)</b> Mean + SD = 4160+3473 Range = (0-50,000)	None < 5000 5-10,000 >10,000	14(6%) 154(67.8%) 38(16.7%) 21(9.3%)

The superficial melasma involves superficial layer of skin with brown hyper pigmentation and well-defined borders, deep melasma affects deeper dermal layer of skin and presents as bluish grey patches, and mixed melasma is a combination of both and presents as brown-gray pigment. Current study observed maximum number of superficial melasma cases (68.8%) as compared to deep melasma (28%). Dharni R 2018<sup>22</sup> reported 39(49%) superficial melasma, 36 (45%) deep and 5(6%) mixed melasma cases.

When inquired about routine use of sunblock, only 29 (12.8%) gave history of using sunblock. The UV radiation triggers DNA damage in the nuclei of keratinocytes, this leads to production of melanin by the melanocytes<sup>23</sup>. The UVA and UVB main radiations contribute to melanogenesis; however Infrared radiation and visible light have a low melanogenic potential<sup>24</sup>. The climatic conditions in Pakistan lead to excessive sunlight and hence UV radiation exposure that is a contributory factor for melasma. The use of sun-block is protective for melasma, particularly among people with outdoor activity during day time. Few patients in this study gave history of sun-block usage and this indicates lack of awareness about efficacy of sun-block in prevention of melasma<sup>25</sup>.

Various types of self-medications were observed among melasma cases (Table II). Approx. seven percent cases used oral medications for melasma without consulting the doctor. Most patients reported to take oral corticosteroids, iron supplements and calcium supplements as a self-medication to relieve melasma. Use of homeopathic and hikmat medicines was seen in 1/3<sup>rd</sup> of cases i.e. 70 (31%). Mud

application (Multani mud) was seen in 42 (18%), topical medicine that included steroids, antifungals, etc. was used by 33 (14.5%).

**TABLE II: THE TABLE REPRESENTING VARIOUS TYPES OF SELF-MEDICATIONS IN MELASMA CASES; REASONS AND COMPLICATIONS OF SELF-MEDICATION (n=227)**

<b>Variables for Self-Medication</b>		<b>n (%)</b>
<b>Oral medications</b>	Yes	15 (6.6%)
	No	212 (93.4%)
<b>Topical medications</b>	Yes	33(14.5%)
	No	194(85.5%)
<b>Hikmat/ Homeopathic</b>	Yes	70 (30.8%)
	No	157 (69%)
<b>Mud application</b>	Yes	42 (18.5%),
	No	185 (81.5%)
<b>Whitening creams</b>	Yes	149 (65.6%)
	No	78 (34.4%)
<b>Therapy by Beautician</b>	Yes	136 (60%)
	No	91 (40%)
<b>Reasons for Self-medication</b>	lack of access to facility	14 (6.2%)
	lack of money	7 (3%)
	lack of trust on doctors	30 (13.2%)
	It's a minor disease	176 (77.5%)
<b>Reasons for consulting dermatologist</b>	No improvement	84 (37%)
	Partial improvement	50 (22%)
	Worsening	93 (41%)
<b>Complications</b>	Acne	91 (40%)
	Skin thinning	14 (6.2%)
	Hirsutism	44 (19.4%)
	Both acne/ &hirsutism	14 (6.2%)
	None	64 (28%)

A significant number of cases 149 (66%) reported the use of over the counter whitening creams. This indicated the social norms and the fairness being projected as the criteria of beauty in this region. The social media and advertisements also play an important role in this. Sixty percent of the cases received various skin procedures and therapies by beauticians to get rid of melasma. The commonly seen procedures that patient adapted in beauty parlors included skin bleach, variety of facials, skin scrubbing, face masks etc.

The reasons for self-medication were inquired from patients and 14 (6%) said they didn't have access to dermatologist and 7 (3%) cases said that financial constraints were the reason. This is quite a low figure indicating that despite of access to facility and financial capability patients didn't approach the proper medical treatment. Also, 30 (13%) cases said they

didn't trust the doctors to treat melasma. Majority of the cases 176 (77%) said that they think melasma is a minor disease to require therapy by a doctor.

When asked the reason to consult dermatologist, patients declared that they had either no improvement 84 (37%) or partial improvement 50 (22%). Approximately half of the cases 93 (41%) observed worsening of melasma by self-medication and hence approached the doctor.

Patients were examined and evaluated by dermatologist for various complications that the patients developed after self-medication. Most of the patients 91 (40%) complained of developing acne, followed by hirsutism 44 (19%) and skin thinning in 14 (6%). The inappropriate use of steroids, heavy metals and unhygienic preparation of certain products may be responsible for these complications.

Melasma has been found to be associated with certain conditions. In our cases, acid peptic disease was found in 21 (9%), 28 (12%) gave family history of melasma. Pregnancy has been frequently associated with melasma; however only 8 (3.7%) of the female cases presenting with melasma were pregnant. The reason could be avoidance of all types of medicines including topical therapy during pregnancy by females. Certain studies have focused on the thyroid disorders, oral contraceptive use, autoimmune diseases, dyslipidemia and diabetes<sup>13,26</sup>.

Jiang J 2017<sup>27</sup> concluded that melasma leads to lower self-esteem and poor quality of life. It causes a cosmetic disfigurement with considerable psychological impact can raise important quality of life issues<sup>28</sup>. Facial melanosis causes cosmetic disfigurement with considerable psychological impact in those who are affected with melasma. In our study graduates are more commonly affected (38%), followed by lesser qualified individuals. This may be because of better awareness and concern in the individuals with higher education. Morgaonker et al<sup>1</sup> reported significant impact on quality of life in patient presenting with melasma from upper socioeconomic class as compared to lower. Mean cost of self-medication per month was approx. five thousand rupees. The maximum expenditure was rupees 50,000/ month.

Though melasma is frequently seen in this region, most of the cases do not approach dermatologist or approach late after self-medicating. There is limited regional data about melasma and no study has yet been conducted addressing self-medication in this context. Data from this study will be helpful to highlight the depth of this issue, the reasons and implications of self-medication.

Certain limitations of study include the lesser number of male subjects, fewer pregnant females and fewer

above 40 years age cases. Also, we excluded the patients with systemic pathological conditions with melasma as a cutaneous manifestation i.e. Addison's disease, thyroid disorders and liver disease. Authors recommend further studies with larger sample size, long term follow up and addressing the obesity, thyroid disorders, liver disease, testosterone stimulators, diabetes mellitus and dyslipidemia in relation to melasma. Identifying the risk factors contributing to delay in melasma treatment would provide new targets for a more efficient treatment of melasma and better prevention of relapse.

## CONCLUSION

Self-medication by whitening creams and therapy by beautician is frequent among melasma cases followed by herbal therapy, mud application, oral and topical medication. Delayed presentation and associated complications of self-medication i.e. acne, hirsutism and thinning of skin were observed. There is lack of awareness about use of sun block and the side effects of self-medication. Authors recommend use of sun-block, early approach to dermatologist and compliance to suggested therapy to prevent complications, recurrence and to improve quality of life in melasma cases. Health care personnel and the social media can play an affective role to create awareness about melasma in community to avoid self-medication.

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