Melasma and assessment of the quality of life in Brazilian women*

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DOI: http://dx.doi.org/10.1590/abd1806-4841.20152771

Abstract: BACKGROUND: Melasma is a chronic, acquired hyperpigmentation disease on sun-exposed areas of the skin, which affects patients' quality of life.
OBJECTIVE: To assess the impact on the quality of life of women living in Florianópolis, Brazil, through questionnaire (MelasQol), and investigate the clinical aspects and risk factors for melasma, correlating them with the MelasQol scores.
METHODS: This study was performed on 51 melasma patients cared for at the University Hospital of the Universidade Federal de Santa Catarina. The variables included were: age, gender, age of onset of melasma, Fitzpatrick phototype (I-VI), duration and family history of melasma, onset of melasma during pregnancy, use of hormonal contraceptive, thyroid disorder and distribution of melasma. The MelasQoL questionnaire, validated for Brazilian Portuguese (MelasQoL-BP), was applied.
RESULTS: The mean age was 38.43±6.75 years. All patients were women. The most common Fitzpatrick skin phototypes were III (49.02%) and IV (33.33%). Melasma had a mean age of onset of 29.18±7.05 years and a mean duration of 9.25±6.18 years. The majority of patients did not have familial history of melasma (50.98%). Melasma onset was associated with pregnancy (45.10%). The MelasQoL-BP analysis revealed significant emotional impact on patients, such as feeling bothered (94.11%), frustrated and embarrassed (64.71%), and depressed (52.94%) about their skin appearance, as well as unattractive (78.43%). No social impact was observed (P>0.05).
CONCLUSION: Melasma has a strong emotional impact on quality of life, resulting especially from feelings about skin appearance.
Keywords: Melanosis; Quality of life; Questionnaires

INTRODUCTION

Melasma, one of the most common causes of acquired hyperpigmentation, is characterized by light to dark, irregular macules on sun-exposed areas of face skin, mainly the cheeks, forehead, upper lip, nose, and chin.[1]

Although 90% of melasma patients are women, the clinical and histologic characteristics are the same in both sexes.[2] The precise cause of melasma remains to be clearly defined, but multiple factors are implicated in the pathogenesis of the disease, including ultraviolet (UV) radiation, hormonal therapy, genetic background, pregnancy, thyroid dysfunction, cosmetics, and medications containing phototoxic agents (e.g. antiseizure medications).[3]

Melasma is more common in Hispanic, Asian and Latin American people who live in locations that receive high-intensity UV radiation.[4,5] Melasma occurs in up to 10% of the Latin American population.[6] In pregnant Brazilian women, the prevalence is approximately 10.7%.[7]

The diagnosis of melasma is essentially clinical, and its management is challenging because it is a chronic condition with common recurrences and is often difficult to treat[1], provoking significant emotional and psychological effects in affected patients.[8] Thus, assessing health-related quality of life is increasingly important in patients with skin diseases, including melasma, which has a strong impact on the physical appearance and emotional state of the patient.[9] Ultraviolet B (UVB) is a well-established risk factor for melasma, while Florianópolis, in Santa Catarina, is predominantly Caucasian. Based on these variables,

Received on 28.05.2013.
Approved by the Advisory Board and accepted for publication on 18.02.2014.
* Work performed at the Dermatology Service Hospital Universitário - Universidade Federal de Santa Catarina (UFSC) – Florianopolis (SC), Brazil.
Conflict of interest: None
Financial funding: None

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the purpose of this study was to investigate the clinical factors associated with melasma and assess its impact on the quality of life in Brazilian patients living in the southern region of the country, using the validated Brazilian melasma quality of life questionnaire (MelasQoL-BP). Further, we investigated the clinical aspects and risk factors for melasma, correlating them with MelasQol scores.

MATERIAL AND METHODS

Patients and methods

Study Population

The study population was a convenience sample. This cross-sectional study was performed on 51 consecutive melasma patients cared for in the Dermatology Service at the University Hospital of the *Universidade Federal de Santa Catarina*, Florianópolis, Santa Catarina, Brazil, between January 2011 and December 2011. The nature of the study was carefully explained, and all subjects provided written informed consent prior to their participation. The study was submitted to and approved by the Committee on Ethics in Research in Humans at the *Universidade Federal de Santa Catarina* (protocol number 0584/GR/99), in line with the Helsinki Declaration and Good Clinical Practices guidelines of the World Medical Association (2012).[10]

Sociodemographic data were collected to characterize the study population, investigate risk factors and evaluate whether these variables altered the quality of life of patients with melasma.

The inclusion criteria were: clinical diagnosis of melasma, sufficient physical and mental capacity, aged at least 18 years and the ability to speak and read Portuguese. The exclusion criteria were: patients aged below 18 years and other dermatological disorders that could interfere with the evaluation of melasma lesions, such as Nevus of Ota and post-inflammatory hyperpigmentation on the face.

Measures

The data collected in this study included demographic and clinical evaluations. The demographic variables recorded were age and gender. The following clinical variables were also collected and scored: age of onset of melasma, Fitzpatrick phototype (I-VI), duration of melasma, family history of melasma, onset of melasma during pregnancy, onset of melasma during the use of hormonal contraceptives, thyroid disorder and distribution of melasma (centro-facial, malar and mandibular).

The MelasQoL is a questionnaire containing 10 questions regarding the impact on the emotional condition, social relationships and daily activities of patients. The patient ranks on a scale of 1 (not bothered at all) to 7 (constantly bothered) how she feels about her skin condition. The total score is calculated by the sum of all scales for each question (total score ranges from 10 to 70). This instrument has been validated and translated into Spanish, Brazilian Portuguese, French and Turkish.[8,11-13]

Statistical Analysis

Continuous data (age) were expressed as the mean ± standard deviation. Clinical and demographic variables were expressed in absolute values and percentages. The Kolmogorov Smirnoff test for normality and homogeneity of data was applied. Significant differences between variables were analyzed using Fisher's exact test. To analyze the associations among risk factors reported in the questionnaire by melasma patients, we used the odds ratios (ORs) with 95% confidence intervals (CIs). In order to identify which factors were associated with the QoL in patients with melasma, we applied Student's T-test and Pearson Test Correlation, using the Statistical Package for the Social Sciences (SPSS 17.0, Chicago, IL, USA). To ensure the internal consistency of the questionnaire, we calculated Cronbach's alpha coefficient for MelasQoL-BP. Statistical significance was set at $P< 0.05$.

RESULTS

A total of 51 patients were selected to participate in the study. The mean age was 38.43 ± 6.75 years. All patients were women. The most common Fitzpatrick skin phototypes were III and IV (49.02% and 33.33%, respectively). The mean age at onset of melasma and duration of disease were 29.18 ± 7.05 and 9.25 ± 6.18 years, respectively. Also, the median duration for melasma was 9.0 years (Table 1).

The majority of patients did not have a familial history of melasma (50.98%). Melasma onset was associated with pregnancy in 45.10% of patients. Further, in 9.80% of patients, melasma was associated with hormonal contraception use. Thyroid disorders were present in 7.84% of patients (Table 1).

The clinical distribution of melasma was 51.0%, 27.0% and 18.0% in the centro-facial, malar and mandibular regions, respectively. We found that 18.0% of these patients had lesions in both centro-facial and malar regions, 2.0% in both malar and mandibular regions, and 2.0% in all three regions.

The mean ± standard deviation and median for the total MelasQoL-BP score were 34.40 ± 13.50 and 34.0, respectively, ranging from 10 to 69. The mean score was used as a cutoff to calculate the associations between MelasQoL-BP and sociodemographic and onset variables.

The MelasQoL-BP analysis showed that 94.11%

Table 1: Descriptive data for the clinical features and risk factors in melasma patients

Subjects (N = 51)	
Age mean (standard deviation)	38.43 y (±6.75)
Age at onset of melasma	
Mean (standard deviation)	29.18 y (±7.05)
Fitzpatrick skin phototype	N (%)
I	0
II	2 (3.92%)
III	25 (49.02%)
IV	17 (33.33%)
V	7 (13.73%)
VI	0 (0%)
Duration of melasma (mean ± standard deviation)	9.25 y (±6.18)
(median)	9.0 y
Familial History	
Yes	25 (49.02%)
No	26 (50.98%)
Onset during pregnancy	
Yes	23 (45.10%)
No	28 (54.90%)
Onset after hormonal contraception	
Yes	5 (9.80%)
No	46 (90.20%)
Thyroid disorder	
Yes	4 (7.84%)
No	47 (92.16%)

of patients felt bothered about their skin appearance, 64.71% were frustrated and embarrassed due to their skin condition, 52.94% were depressed and 78.43% felt unattractive. However, in 68.63% of patients, the skin condition did not affect their relationships with others, and in 70.59%, it did not impact on the desire to contact or communicate with people, or spend time with others. Additionally, 86.27% of patients did not experience difficulty in showing affection, 66.67% did not feel a reduced sense of importance/productivity, and 74.51% did not undergo a restricted sense of freedom (Table 2).

No statistical associations were found between reduction in quality of life and the variables examined: age, skin phototype, duration of melasma, familial history of melasma, onset during pregnancy, onset after hormonal contraception and presence of thyroid disorder (P > 0.05) (Table 3).

Individual analysis of each question revealed a significant association between age and feeling bothered by skin appearance (P = 0.014), as well as unattractive (P = 0.005). The Pearson correlation test showed that this affected younger patients in particular (Table 4).

Since MelasQoL-BP is a multidimensional scale, the frequency of each item score allows for analysis of the main domains in which melasma impairs quality of life. Moreover, hierarchical cluster analysis facili-

Table 2: Percentage of answers for each MelasQol question from melasma patients (N = 51)

	Not bothered at all (%)	Not bothered most of the time (%)	Not bothered or sometimes bothered (%)	No feelings either way(%)	Sometimes bothered (%)	Bothered most of the time (%)	Constantly Bothered (%)	No response (%)
Skin appearance	3.92	1.96	0	0	25.49	11.76	56.86	0
Frustration due to skin condition	31.37	0	0	3.92	17.65	19.61	27.45	0
Embarrassment at skin condition	31.37	0	0	3.92	23.53	15.69	25.49	0
Depressed by skin condition	39.22	0	0	7.84	23.53	17.65	11.76	0
Effects of the skin condition on relations with other people	68.63	0	0	3.92	15.69	7.84	3.92	0
Effects of the skin condition on the desire to be with people	70.59	0	0	7.84	17.65	1.96	1.96	0
Difficulty in showing affection	86.27	0	0	5.88	3.92	1.96	1.96	0
Feeling unattractive due to skin blemishes	19.61	0	0	1.96	29.41	27.45	21.57	0
Reduced sense of importance/ productivity	66.67	0	0	5.88	15.69	3.92	7.84	0
Restricted sense of freedom	74.51	0	0	3.92	11.76	9.80	0	0

MelasQoL-BP = validated Brazilian melasma quality of life questionnaire

Table 3: Association between demographic variables, clinical features and risk factors, drawing on MelasQol (N = 51)

	OR	(95% CI)	P values
Age			
<38 years	0.87	(0.48-1.58)	0.78
>38years	1.13	(0.67-1.90)	
Fitzpatrick Skin phototype			
< 3	1.22	(0.08-1.84)	1.0
>3	0.99	(0.88-1.11)	
Duration of melasma			
< 9 years	0.87	(0.48-1.56)	0.78
> 9 years	1.13	(0.67-1.89)	
Familial history			
Yes	0.96	(0.54-1.68)	1.0
No	1.04	(0.61-1.79)	
Onset during pregnancy			
Yes	0.78	(0.41-1.47)	0.57
No	1.22	(0.74-1.99)	
Onset after hormonal contraception			
Yes	1.83	(0.33-10)	0.65
No	0.94	(0.78-1.13)	
Thyroid disorder			
Yes	1.21	(0.18-7.98)	1.0
No	0.98	(0.83-1.15)	

MelasQoL-BP = validated Brazilian melasma quality of life questionnaire

Table 4: Relationship of each MelasQol question to age and duration

	Age (Pvalues)	Duration (Pvalues)	R
Skin appearance	0.014*	0.283	-0.34
Frustration due to skin condition	0.934	0.161	-0.01
Embarrassment at skin condition	0.197	0.053	-0.18
Depressed by skin condition	0.318	0.717	-0.14
Effects of skin condition on relations with other people	0.598	0.621	0.07
Effects of skin condition on the desire to be with people	0.318	0.827	-0.14
Difficulty in showing affection	0.787	0.973	0.03
Feeling unattractive due to skin blemishes	0.005*	0.010*	-0.38
Reduced sense of importance/ productivity	0.927	0.811	0.01
Restricted sense of freedom	0.408	0.685	-0.11

MelasQoL-BP = validated Brazilian melasma quality of life questionnaire. * = Significance. R = Pearson test correlation

tates identification of dimensions with similar patterns of impairment concerning quality of life. Hence, we calculated Cronbach's alpha of MelasQoL-BP scores, which was 0.85 ($P< 0.001$), indicating the questionnaire's high internal consistency.

DISCUSSION

In this study, we found that the mean age of melasma patients was 38.43 ± 6.75 years, while the mean age at onset was 29.18 ± 7.05 years. The majority of patients presented Fitzpatrick skin types III and IV (82.35%). The epidemiologic characteristics of melasma patients in our study were similar in some respects to those in previous reports.[4,14,15] In a global survey on the roles of ultraviolet radiation and hormonal influences in melasma development, the mean age of patients was 42.90 ± 9.60 years, and 56% had Fitzpatrick skin types III and IV.[4] Ortonne et al. (2009) and Tamega et al. (2012) reported a mean age of 34.0 and 27.5±7.8 years, respectively, at onset of melasma.[4,15] Also, Tamega et al. (2012) showed that 72.80% of melasma patients had Fitzpatrick skin types III and IV.[15] In Brazil, Freitag et al. (2008) observed a mean age of 41.1±6.8 years for melasma patients.[14] The differences in skin phototype between these studies may be attributed to the different study populations. In Brazil, the enhancement of phototype may be related to racial miscegenation.

In our study, 49.02% had a familial history of melasma; 45.1% reported onset during pregnancy, as apposed to 9.8% after hormonal contraception. These results are in accordance with Ortonne et al. (2009) and Tamega et al. (2012), who reported respectively that: 48% and 56.3% of subjects had a familial history of melasma, 26% and 36.4% experienced onset during pregnancy, while 25% and 16.2% showed melasma lesions after hormonal contraception.[4,15] Melasma can strongly affect quality of life.[8,11,12] In our study, the mean total MelasQoL score was 34.40 ± 13.50, whereas other Brazilian studies have reported means of 44.4 ± 14.9 (11), 37.5 ± 15.2 (14) and 27.2 ± 13.4.[14,16] This latter study was performed on pregnant women, which may explain their lower, total average score.[16] In our study, the main domain in which melasma impaired quality of life was emotional well-being: 94.11% patients felt bothered about their skin appearance (56.86% felt constantly bothered), and 78.43% felt unattractive due to skin blemishes. In contrast to a previous study, social relationships were not strongly affected by melasma (74.51% did not experience a restricted sense of freedom, and 68.63% of patients felt that melasma did not affect their relationships with others).[9]

Comparisons of total scores with sociodemographic data and onset variables showed no statistical associations between these variables and a reduction in quality of life ($P> 0.05$). These results can be explained by the fact that MelasQoL comprises various domains of quality of life, such as: work, family relationships, social life, recreation and leisure, physical health and emotional well-being.[9]

Individual analysis of each question revealed that lower ages were more associated with frustration regarding skin appearance and feeling unattractive. Longer duration of melasma was also linked to feeling unattractive. Interestingly, the duration of melasma did not affect other aspects of the emotional domain.

CONCLUSION

We demonstrated that melasma has a strong impact on the emotional domain of quality of life, resulting especially from feelings about skin appearance, but little impact on social relationships. The emotional domain was particularly affected in older individuals experiencing a longer duration of this disease.❑

ACKNOWLEDGMENTS

The authors thank all the students and physicians in the Dermatology Service, Hospital Universitário; Universidade Federal de Santa Catarina, for their technical support.

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How to cite this article: Ikino JK, Nunes DH, da Silva VPM, Sens MM, Fröde TS. Melasma and Measure of the Quality of Life in Brazilian Women. An Bras Dermatol. 2015:90(2):196-200.