Reliability and validity of the Arabic version of the Melasma Quality of Life questionnaire: (MELASQoL-A) study

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Summary

Background. Melasma has significant emotional and psychological effects. Melasma Quality of Life Scale (MELASQoL) is a specific questionnaire that has been developed to assess the effect of melasma on patient’s quality of life.

Objective. To evaluate the reliability and validity of the Arabic version of the melasma quality of life questionnaire (MELASQoL-A) for Egyptian melasma patients.

Patients and methods. A total of 65 adult Egyptian female patients with melasma aged ≥18 years old with skin phototypes type III-V were enrolled in this study. Wood’s light was used for determination of the type of melasma either epidermal, dermal or mixed. Melasma severity was assessed by using the melasma area and severity index (MASI) score and the new modified score (mMASI). The impact of melasma on quality of life was assessed using the Arabic version of MELASQoL after translation and cultural adaptation according to WHO guidelines.

Results. The internal consistency for the 10-item of the MELASQoL scale (Arabic version) was excellent; Intra-class Correlation Coefficient (ICC) = 0.914 and Cronbach’s alpha coefficient (Cronbach α = 0.944) indicating high reliability of the developed Arabic version. There was positive correlation between the MELASQoL scale and the MASI score (r=0.41), and the mMASI score (r=0.36).

Conclusion. The Arabic version of the MELASQoL scale was found to be a reliable and valid measure for evaluating the quality of life among Egyptian melasma patients, supporting its use.

KEY WORDS: melasma; Quality of Life; MELASQoL-A.

Introduction

Quality of life (QoL) is a term which involves many issues, including social well-being, health, family and psychosocial relationships (1, 2). Most dermatoses may cause a great impact on the emotional condition, social relationships and on the daily activities of patients (3). In addition, it is common for patients and physicians to express different opinions about this influence, interfering directly on the acceptance of the treatment (4). Most questionnaires used to evaluate the QoL were developed for English speaking populations. As a consequence, they are rarely adequate in terms of correct translation or correspondence to the reality of other countries (5, 6). So, these questionnaires have to be translated and culturally adapted in order to be applied to the reality of each specific population.

Melasma (chloasma or mask of pregnancy) is a common cosmetic problem. It is an acquired, chronic, recurrent, symmetrical hypermelanosis, which is characterized by brown patches of variable darkness on sun exposed areas of the body, typically occurs on the face. It is more common in women, accounting for 90% of all cases, and appears in all racial types. It is most prevalent among young to middle-aged women who are Hispanic, Asian or of African or Middle Eastern descent, i.e. found most commonly in women with Fitzpatrick skin phototypes III through V living in areas of intense ultraviolet light exposure (7, 8).

It is often psychologically distressing in affected patients. It can have a significant emotional and psychological effects and a significant negative impact on patients’ quality of life (9). A new health-related quality of life (HRQoL) scale for women with melasma, a melasma-specific scale which is Melasma Quality of Life Scale (MELASQoL) English version has been developed (10). The existing Dermatology Life Quality Index (DLQI) and SKINDEX-16 are general measures of the impact of skin disease on the HRQoL of patients with various skin disorders; they put equal weight on the physical and psychological effects of a dermatological condition. The MELASQoL uses items from the SKINDEX-16 as well as the skin discoloration questionnaire, which focus on items that would be more relevant to melasma-specific HRQoL. All the development stages of this instrument are described with more details in the original study (10). MELASQoL is a 10-question scale, which asks patients to rate how they feel about each issue on a scale of 1 (not bothered at all) to 7 (bothered all the
Patients and methods

A total of 65 adult female Egyptian patients with melasma aged ≥18 years old, with Fitzpatrick skin phototypes III-V were randomly recruited from dermatology outpatient clinic of Assiut University Hospital, Assiut, Egypt. A detailed history regarding age, occupation, marital status, residence, duration of complaints, precipitating, and exacerbating factors, as well as family history were taken. A dermatologic examination was performed to clinically classify the type of melasma into centrofacial, malar, or mandibular patterns. The severity of melasma was determined for each patient using Melasma Area and Severity Index (MASI) score (16) and the modified (mMASI) score (8).

The impact of melasma on quality of life was assessed using the Arabic version of the questionnaire (MELASQoL-A) after translation and cultural adaptation. Development of the Arabic version of the MELASQoL followed the World Health Organization (WHO) guidelines for scale development as follows (5, 6, 11):

1) Forward translation
2) Expert panel back-translation
3) Pre-testing and cognitive interviewing
4) Final version.

Forward translation

Two translators produced independent Arabic-language translations of the English version of MELASQoL questionnaire, the translated version has been reviewed by a committee of experts who developed a unique Arabic-language translation and modified some items to make them more applicable and culturally appropriate. Some changes were made, for example, “melasma” was substituted for “skin condition” because the latter term might be interpreted as meaning another skin disease. Finally, the face validity of the questionnaire was confirmed by its application on a sample of patients using an interview technique. The patients who were interviewed expressed their well-understanding for the each item of the MELASQoL questionnaire.

Expert panel back-translation

A back-translation (from Arabic to English) was performed by other two translators, to verify that the original questionnaire could be reinstated without any major modification and without alteration of the original ideas and items and few changes were made, for example, “Frustration and affection” were back translated to “Disappointment and emotion” respectively. This back-translation was submitted to the developer of the original questionnaire (Balkrishnan R.) (10) for review and comments and he agreed and approved the back translation.

Pre-testing and cognitive interviewing

Qualitative pre-testing of the revised Arabic version of the MELASQoL was carried out with 20 Egyptians female patients with melasma to determine whether each question was correctly understood, patients were asked to justify their answers and explain what the questions meant in their own words.

Final Arabic version

Reliability and construct validity of the final Arabic version (MELASQoL-A) scale have been conducted. Finally, the Arabic version of the MELASQoL questionnaire (as shown in the appendix) was distributed to a total of 65 female patients with melasma. On a 7-point Likert scale: 1 (not bothered at all) to 7 (bothered all the time). Each patient rates how she feels about each item. The total MELASQoL-A score ranges from 10 to 70 with higher score indicating worse quality of life related to melasma.

Statistical analysis

Internal consistency of the scale was assessed using Cronbach’s alpha coefficient. Item analysis was performed, and Cronbach α (17, 18) was calculated for the total MELASQoL-A scale and for separate domains. Confirmatory Factor Analysis (CFA) was conducted to confirm the separate factors within the scale. Each item within a factor was judged to be worthy of retention in a scale according to its power to explain variation between subjects. To study the construct validity of the scale, Spearman’s Rank Correlation coefficient was used to test for any association between MELASQoL-A score, MASI score and mMASI score with age, marital status, occupation, residence and clinical type of melasma. As regards p-value; p<0.05 was considered statistically significant. All analyses were carried out using SPSS/PC (17.0; SPSS, Chicago, IL) (19).

Results

A 65 adult Egyptian female patients with melasma participated in the study. The age of these patients ranged from 20 to 52 years old with a mean ± SD of (35 ± 7.3). The proportion of women ≤ 40 years old was 53 patients (81.5%), and those > 40 years old 12...
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Patients (18.5%). The duration of melasma ranged from 1-10 years with a mean ± SD of (4 ± 2.5). The demographic data of the study is shown in (Table 1).

The distribution of the MELASQoL scale among all patients

The distribution of the MELASQoL-A for the 65 patients is shown in Table 2 and Figure 1. The mean was 61.58 (SD= 10.45), 95% Confidence Interval for Mean (59.0 - 64.17) and ranged from 30 to 70. The spread of scores was not normally distributed (skewness = -1.75 and kurtosis = 2.6).

Scale reliability

The internal consistency for the 10-item of the Arabic version of the questionnaire MELASQoL-A was excellent; Intra-class Correlation Coefficient (ICC) = 0.914 and Cronbach’s alpha coefficient (Cronbach α = 0.944) indicating high reliability of the developed Arabic version. The 10 items of the MELASQoL-A scale showed high item-total correlations (> 0.3) and high Cronbach α (> 0.6). Reliability statistics for the main domains of the 10 items of MELASQoL-A scale were satisfactory, ranging from acceptable (> 0.5) to very good (between 0.8 and 0.9) as expressed by Table 3. For the first scale domain (emotional well-being), that contained 4 items, Cronbach α = 0.930 and ICC = 0.915. While the second domain (social life), that had 3 items, had Cronbach α = 0.971 and ICC = 0.971. The last domain (Recreation & leisure), that contained 3 items had Cronbach α = 0.800 and ICC = 0.834, as shown in Table 4.

The original MELASQoL scale (English version) proposed that melasma affects mainly three domains of quality of life; emotional well-beings, social life and recreation and leisure (10).

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Table 1 - Demographic data of the study.

<table>
<thead>
<tr>
<th>Item</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>Mean ± SD 35 ± 7.3, Range 20-52</td>
</tr>
<tr>
<td>Sex:</td>
<td>Female 65 (100%), Male 0 (0 %)</td>
</tr>
<tr>
<td>Marital status:</td>
<td>Married 57 (88%), Unmarried 8 (12%)</td>
</tr>
<tr>
<td>Occupation:</td>
<td>Working 9 (14%), Not working 56 (86%)</td>
</tr>
<tr>
<td>Residence:</td>
<td>Rural 55 (85%), Urban 10 (15%)</td>
</tr>
<tr>
<td>Family history:</td>
<td>Positive 14 (22%), Negative 51 (78%)</td>
</tr>
<tr>
<td>Duration of melasma (years)</td>
<td>Mean ± SD 4 ± 2.5, Range 1-10</td>
</tr>
<tr>
<td>Skin type:</td>
<td>Type III 5 (7.8%), Type IV 58 (89.2%), Type V 2 (3%)</td>
</tr>
<tr>
<td>Clinical type of melasma</td>
<td>Centrofacial melasma 51 (78.5%), Malar 14 (21.5%), Mandibular 0 (0%)</td>
</tr>
</tbody>
</table>

SD = standard deviation
The Arabic version (MELASQoL-A) was similarly found that melasma mostly affected patients’ emotional well-being (Cronbach \( \alpha = 0.930 \)) and social life (Cronbach \( \alpha = 0.971 \)) and to lower extent recreation and leisure (Cronbach \( \alpha = 0.800 \)) as shown in Table 4.

### Factor analysis

Factor analysis was therefore conducted with all 10 items. The first factor (factor I) (4 items, corresponding to emotional well-being) explained 66.4\% of the variance, the second factor (factor II) (3 items, corresponding to social life) explained 14.9\% of the variance, the third factor (factor III) (3 items, corresponding to recreation & leisure) accounted for 7.9\% of the variance (20), as shown in Table 5. The results of Confirmatory Factor Analysis Scree Plot using Principle Component Analysis, confirmed that the main scale domain has a “leveling off” of eigenvalues after the first factor (factor I) Figure 2.

### Construct validity of the MELASQoL scale

The construct validity of the Arabic version of the questionnaire (MELASQoL-A) showed that higher MELASQoL-A scale scores was related to rural residence (correlation coefficient; \( r = -0.32 \)) and those with centrofacial...
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There was positive correlation between the MELASQoL-A scale and the MASI score (r = 0.41), and the mMASI score (r = 0.36), as expressed by Table 6.

Discussion

Melasma is a common persistent disorder of hyperpigmentation affecting millions of people worldwide (7, 8). It may cause significant psychological distress and has a significant impact on the quality of life (13). The current work discussed the Arabic version of the MELASQol scale and evaluated its reliability and validity among Egyptian melasma patients. It was found that it is a reliable and valid measure for evaluating the quality of life among Egyptian melasma patients, supporting its use. The Arabic version of the questionnaire was developed using a sample of patients mostly with skin type IV, so it provides information related mostly to this skin phototype and to lower extent on the other skin phototypes.

The MELASQoL questionnaire was first developed in English (10). The scale was then translated into Spanish (11), Brazilian Portuguese (12, 13), French (14) and Turkish (15) languages. The Arabic version was easily understood and answered by the patients. The mean of MELASQoL-A score in this current study was 61.58 (Standard deviation = 10.45), higher than that measured in an English speaking patients in a previous USA study was 36 (10), Brazilian patients was 37.5 (13), French patients was 20.9 (14) and Turkish patients was 29.9 (15), suggesting that Egyptian patients are at higher risk to suffer from negative emotional well being and impaired social functions because of melasma.

The internal consistency for the 10 items of the developed Arabic version (MELASQoL-A) was excellent (ICC = 0.914 and Cronbach α = 0.944). This reflects its usefulness and its high internal consistency to discriminate different domains of the patient’s quality of life. Our findings with regards to the internal consistency and the scale reliability were approximate to those reported by Cestari et al. (12) (Cronbach α = 0.919) of the Brazilian Portuguese version (12), by Misery et al. (14) (Cronbach α = 0.95) and (ICC= 0.88) of the French Version of MELASQOL (14), and that reported by Dogramaci et al. (15) (Cronbach α = 0.88) of the Turkish version (15).

Our results of the excellent internal consistency for the 10-item of the Arabic version of the questionnaire (MELASQoL-A); (ICC = 0.914 and Cronbach α = 0.944) and the results of Confirmatory Factor Analysis Scree Plot using Principle Component Analysis, confirmed that the main scale domain has a “leveling off” of eigenvalues after the first factor (factor I), suggesting that the questionnaire should be of a single domain instead of the three domains more likely to be af-

Table 5 - Loading from Direct oblimin rotation matrix (N = 65).

<table>
<thead>
<tr>
<th>Question</th>
<th>Factor*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1- The appearance of your skin condition</td>
<td>0.907</td>
</tr>
<tr>
<td>Q2- Frustration about your skin condition</td>
<td>0.907</td>
</tr>
<tr>
<td>Q3- Embarrassment about your skin condition</td>
<td>0.905</td>
</tr>
<tr>
<td>Q4- Feeling depressed about your skin condition</td>
<td>0.859</td>
</tr>
<tr>
<td>Q5- The effects of your skin condition on your interactions with other people</td>
<td>0.962</td>
</tr>
<tr>
<td>Q6- The effects of your skin condition on your desire to be with people</td>
<td>0.961</td>
</tr>
<tr>
<td>Q7- Your skin condition making it hard to show affection</td>
<td>0.962</td>
</tr>
<tr>
<td>Q8- Skin discoloration making you feel unattractive to others</td>
<td>0.970</td>
</tr>
<tr>
<td>Q9- Skin discoloration making you feel less vital or productive</td>
<td>0.806</td>
</tr>
<tr>
<td>Q10- Skin discoloration affecting your sense of freedom</td>
<td>0.872</td>
</tr>
</tbody>
</table>

% Variance 66.4% 14.9% 7.9%

*Factor loadings < 0.6 is suppressed (Results of Confirmatory Factor Analysis)
There was significant positive correlation between the MELASQoL-A scale and the MASI score (r = 0.41; p = 0.0027) and the (mMASI) score (r = 0.36; p = 0.0032). This may suggest that patients with severe degree of melasma were more likely to have poorer quality of life. This was in contrast to the results of other studies reported that the effect of melasma on quality of life was not correlated with the severity of melasma. The authors explained that even a small amount of pigmentation can cause a significant emotional effect (11-13). In a study of Freitag et al. (13) the Authors did not find correlation between quality of life and melasma severity (r = 0.17; P = 0.109), corroborating the author’s idea that clinical severity is not the sole criterion used by patients to assess the impairment caused by their skin condition. Thus, the physician may erroneously consider a patient as having a mild form of disease, whereas in fact, she is upset, anxious and considers that her lesions cause a significant impact or her life. Another study by Dominguez et al. (11) where the authors evaluated 99 women Hispanic patients living in USA and found that the quality of life and the severity of melasma presented a weak correlation. The difference in the results could be explained by the culture difference, in our community mild melasma and small lesions can be neglected by the patients. In addition, our patients’ skin photo-type was mostly IV where the quality of life is mostly affected if the melasma is severe and obvious.

Table 6 - Spearman’s correlation between MELASQoL-A Score, MASI Score, mMASI Score and Clinical Data.

<table>
<thead>
<tr>
<th></th>
<th>MELASQoL Score</th>
<th>Age (&gt; 0.05)</th>
<th>Marital Status (&lt;= 0.001)</th>
<th>Residence (&gt; 0.05)</th>
<th>Occupation (&lt;= 0.001)</th>
<th>Clinical type of melasma (&lt;= 0.001)</th>
<th>mMASI Score &gt;= 0.01</th>
<th>MASI Score (&lt;= 0.01)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MELASQOL Score</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.13 (&gt; 0.05)</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td>-0.06 (&gt; 0.05)</td>
<td>0.51 (-0.001)</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residence</td>
<td>-0.31 (&lt; 0.01)</td>
<td>0.40 (-0.01)</td>
<td>0.16 (&gt; 0.05)</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td>-0.32 (&lt; 0.01)</td>
<td>0.22 (&gt; 0.05)</td>
<td>0.02 (&gt; 0.05)</td>
<td>0.57 (&lt; 0.001)</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical type of melasma</td>
<td>-0.43 (&lt; 0.001)</td>
<td>0.12 (&gt; 0.05)</td>
<td>-0.03* (&gt; 0.05)</td>
<td>-0.02* (&gt; 0.05)</td>
<td>0.01* (&gt; 0.05)</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mMASI Score</td>
<td>0.36 (&lt; 0.01)</td>
<td>0.09* (&gt; 0.05)</td>
<td>0.02* (&gt; 0.05)</td>
<td>-0.01* (&gt; 0.05)</td>
<td>-0.002* (&gt; 0.05)</td>
<td>-0.045 (&lt; 0.001)</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>MASI Score</td>
<td>0.41 (&lt; 0.01)</td>
<td>0.07 (&gt; 0.05)</td>
<td>-0.01* (&gt; 0.05)</td>
<td>-0.03* (&gt; 0.05)</td>
<td>0.02* (&gt; 0.05)</td>
<td>-0.47 (&lt; 0.001)</td>
<td>0.97</td>
<td></td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed)

Conclusion
The Arabic version of the MELASQoL scale was found to be a reliable and valid measure for evaluating the quality of life for Egyptian melasma patients. The evaluation of the quality of life in melasma patients, by means of a dermatosis specific instrument, could bring a new comprehension of the results of different treatment modalities aimed to improve the severity of melasma and thus improve the patients’ quality of life.

Disclosure
The Authors report no conflicts of interest. The Authors alone are responsible for the content and writing of the paper.

References
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