ORIGINAL ARTICLE

Quality of life in Female Users of Antiageing Cosmetic Products/Aesthetic Treatments

Marta Evangelista[1] | **Margarida Vilaça[2]** | **Isabel F. Almeida[3]** | **M. Graça Pereira[1,2]**

[1]School of Psychology, Family & Health Research Group, University of Minho, Braga, Portugal

[2]Research Centre in Psychology (Cipsi), University of Minho, Braga, Portugal

[3]UCIBIO–Applied Molecular Biosciences Unit, MedTech, Laboratory of Pharmaceutical Technology Department of Drug Sciences, Faculty of Pharmacy, University of Porto, Porto, Portugal

Correspondence
M. Graça Pereira, School of Psychology, University of Minho, Campus de Gualtar, Braga 4710-057, Portugal.
Email: gracep@psi.uminho.pt

Funding information
Foundation for Science and Technology (FCT), Grant/Award Number: Ref: UIDB/PSI/01662/2020

Abstract

Background: Ageing is accompanied by physical changes, both at the physiological and appearance levels. The way people perceive these changes have important consequences on general health and quality of life (QoL). This study analysed the relationship between sociodemographic variables, psychological variables, use of antiageing cosmetic products/aesthetic treatments, and QoL.

Methods: This cross-sectional study included a sample of 271 women, aged between 25 and 70 years, users of antiageing cosmetic products and/or aesthetic services. Participants were assessed on psychological morbidity (Hospital Anxiety and Depression Scale), appearance schemes (Appearance Schemas Inventory – Revised), self-esteem (Rosenberg Self-Esteem Scale), perfectionism (Frost Multidimensional Perfectionism Scale), self-perceptions of ageing (Brief Aging Perceptions Questionnaire), and QoL (SF-12v2).

Results: Being older and having a higher household income was associated with better QoL. The use of facial firming products, hair colouring products, and sunscreen was also associated with better QoL. Psychological morbidity and perfectionism contributed negatively to QoL, while household income contributed positively. Ageing perceptions moderated the relationship between self-esteem and QoL.

Conclusion: According to the findings, intervention programs to reduce psychological morbidity, increase self-esteem, promote more adaptive patterns of perfectionism, and recognize the role of age perception are needed to improve women's QoL. The perceived influence of the usage of cosmetic products to prevent/minimize aging signs should be further explored.

KEYWORDS
aesthetic treatments, ageing, cosmetic products, psychological morbidity, quality of life

Résumé

Contexte: Le vieillissement s'accompagne de changements physiques, tant au niveau physiologique qu'au niveau de l'apparence. La façon dont les gens perçoivent ces changements a des conséquences importantes sur la santé générale

et la qualité de vie (QdV). Cette étude a analysé la relation entre les variables sociodémographiques, les variables psychologiques, l'utilisation de produits cosmétiques anti-âge/soins esthétiques et la QdV.

Méthodes: Cette étude transversale a inclus un échantillon de 271 femmes, âgées de 25 à 70 ans, utilisatrices de produits cosmétiques anti-âge et/ou de soins esthétiques. Les participants ont été évalués sur la morbidité psychologique (Hospit Anxiety and Depression Scale), les schémas d'apparence (Appearance Schemas Inventory - Revised), l'estime de soi (Roenberg Self-Esteem Scale), le perfectionnisme (Frost Multidimensional Perfectionism Scale), l'auto-perception du vieillissement (Brief Questionnaire sur les perceptions du vieillissement) et QdV (SF-12v2).

Résultats: Être plus âgé et avoir un revenu du ménage plus élevé était associé à une meilleure qualité de vie. L'utilisation de produits raffermissants pour le visage, de produits de coloration capillaire et de soins solaires était également associée à une meilleure qualité de vie. La morbidité psychologique et le perfectionnisme ont contribué négativement à la qualité de vie, tandis que le revenu du ménage a contribué positivement. Les perceptions du vieillissement ont modéré la relation entre l'estime de soi et la qualité de vie.

Conclusion: Selon les résultats, des programmes d'intervention visant à réduire la morbidité psychologique, à augmenter l'estime de soi, à promouvoir des schémas de perfectionnisme plus adaptatifs et à reconnaître le rôle de la perception de l'âge sont nécessaires pour améliorer la qualité de vie des femmes. L'influence de l'utilisation de produits cosmétiques pour prévenir/minimiser les signes du vieillissement doit être davantage perçue.

INTRODUCTION

Over the last few decades, many European countries, particularly Portugal, have experienced significant demographic changes as a result of declining fertility and increasing longevity. In 2020, Portugal registered 10.297.081 inhabitants, of which 22.3% were 65 years of age or older. For women, life expectancy reached 83.4 years [1]. Growing older is accompanied by many physical changes that may affect physical appearance and aesthetic characteristics [2]. Skin ageing is a complex process that involves multiple mechanisms, resulting, in general, in decreased firmness and elasticity, wrinkles, skin sagging, dryness, and lower rate of cell renewal [3, 4]. With aging, hair becomes light-coloured and suffers texture changes, and hair loss becomes more common.

According to Bedford and Johnson [5], women find themselves under a strong social and internal pressure to attend to their appearance to avoid disapproval from others. In a society where youth, health, aesthetics, and quality of life (QoL) are valued, cosmetic products and beauty treatments have been in great demand, with recent studies supporting that their use results in more investment in appearance, contributing to increased QoL [6].

Individuals' perception of their body image has important consequences on their health and QoL [7]. Body image is associated with many aspects of life, including psychological well-being and QoL, and refers to subjective and perceptual experiences and attitudes about the body, especially regarding physical appearance [8]. An important feature of body image is its cognitive component, namely appearance schemes [8]. People with more investment in their appearance tend to focus intensely on their image and engage in behaviours to maintain or improve it [9], showing higher levels of social anxiety [10], being more susceptible to distress due to their appearance [8], and experiencing a greater impact on body image in QoL [10].

Previous research suggested a strong positive association between body image and self-esteem [11], as well as between self-esteem and psychological well-being [12]. Ingrand et al. [13] found that self-esteem was positively associated with subjective well-being, and negatively

correlated with anxiety and depression. Women who consider their body appearance as a key factor for self-esteem spent more time and money trying to achieve idealized standards [14]. Indeed, women who accepted and were comfortable with their appearance reported higher levels of self-esteem [15]. High levels of self-esteem were also found in women who hid ageing signs through beauty care products [16].

Several studies have revealed associations between body image disturbance and traits of perfectionism [17, 18]. Swami and Mammadova [19] suggested that individuals with body image disturbance were concerned with hiding their perceived body imperfections from others. Thus, dysfunctional cognitive patterns emphasize body imperfections, contributing to a negative body image and dysfunctional appearance schemas [19].

According to a recent study focused on the relationship between perfectionism and life satisfaction as an indicator of QoL [20], maladaptive qualities of perfectionism tend to be negatively correlated with life satisfaction. In fact, maladaptive perfectionists expressed lower overall life satisfaction when compared to adaptive perfectionists [21].

Negative self-evaluation of body image may influence ageing perceptions, which can have an adverse effect on psychological well-being. Thus, the association between ageing and QoL has received increasing importance [22, 23]. Faria et al.'s [24] study regarding QoL in women concluded that active and healthy ageing provided psychosocial well-being and contributed to greater longevity. Carrara et al. [25] showed that younger women had more negative ageing perceptions due to age-related changes in health, which may contribute to negative stereotypes about the ageing process. By contrast, Ingrand et al. [13] found that psychological distress and positive ageing perceptions had a direct strong impact on QoL.

The present study was based on Wilson and Cleary's [26] conceptual model of health-related QoL. This model embraces both biological and psychological elements of health outcomes, in a total of five health concepts, with the biological and physiological variables on one side, and QoL on the opposite side. Between the two extremes, the model includes symptoms, functionality, and general health perception variables. The characteristics of the individual and environment are influencing all levels of the model. The order in which the variables appear indicates causal associations, but, although not evidenced, the model also assumes indirect relationships [27, 28] of mediation [27, 29] and moderation [29, 30]. Taking into account the conceptual approach proposed by Wilson and Cleary's [26], the present study included two health concepts: emotional/cognitive perceptions evaluated through appearance schemes, self-esteem, and psychological morbidity; and general health perceptions measured through ageing perceptions. Individual characteristics included age, traits of perfectionism, and use of antiaging cosmetic products/aesthetic treatments, while environmental characteristics included household income and global QoL. Finally, since the model presupposes moderation relationships between the variables, the moderating role of ageing perceptions (health perception) in the relationship between self-esteem (emotional perception) and QoL was tested considering that the individual's perception of oneself influences self-esteem and, consequently, QoL [29, 30].

Given the above, the present study was conceptualized with three objectives: (i) to analyse the relationship between sociodemographic variables, use of antiageing cosmetic products and aesthetic treatments, psychological variables, and QoL; (ii) to find the variables that contributed to QoL; and (iii) to evaluate the moderating role of ageing perceptions in the relationship between self-esteem and QoL. It is expected that less investment in appearance, more self-esteem, less perfectionism, less psychological morbidity, positive ageing perceptions, and more cosmetic products/aesthetic treatments use will be positively correlated with QoL (H1); the previous variables will contribute to improved QoL (H2); and ageing perceptions will moderate the relationship between self-esteem and QoL (H3).

Methods

Participants

This cross-sectional study includes 271 women recruited in aesthetic clinics in Northern Portugal and through online platforms. All participants met the following inclusion criteria: female sex; being a Portuguese resident; age equal to or greater than 25 years; and using or having used/performed, in the last 12 months, an antiageing cosmetic product/aesthetic treatment that was not prescribed as a disease treatment. Participants' age group (minimum age of 25 years) was chosen according to the period in which the collagen begins to decrease [31].

Instruments

Sociodemographic and cosmetic/aesthetic treatments questionnaire

This questionnaire was created for the purpose of this study by researchers (in psychology and pharmacy) to

collect sociodemographic (e.g. sex, age, marital status, education, profession, weight, and height) and clinical (e.g. experiencing menopause, menopause duration, taking hormone replacement medicine, and existence of diseases associated with the performed treatments) data. The questionnaire also asks women to evaluate the degree of ageing of specific parts of their body (e.g. face, hair, intimate parts), and which antiageing cosmetic products (e.g. body firming cream, anti-wrinkle face cream, hair colour, and moisturizing cream) and/ or aesthetical treatments (e.g. cleaning facial treatment, botox, fat reduction treatments, and anti-flaccidity treatment) they use and how often (never, daily, once a week, two or more times a week, once a month, every three months, every six months, annually).

Appearance schemas inventory – revised (ASI-R)

This instrument assesses the investment on body image, namely certain beliefs about the importance, meaning, and impact appearance has in one's life [9, 32]. ASI-R includes 20 items to evaluate two factors designated as Self-Evaluative Salience of Appearance (12 items; e.g. "I try to be as physically attractive as I can be") and Motivational Salience of Appearance (eight items; e.g. "What I look like is an important part of who I am"). All items are evaluated on a five-point Likert scale that varies from "totally disagreeing" to "strongly agreeing". The global score results from the sum of the 20 items, and higher scores suggest higher schematic investment levels regarding physical appearance. Both the original and the Portuguese ASI-R versions revealed good reliability for the total scale, with alpha values of 0.84 and 0.89 respectively. This study used the total score, with a Cronbach's alpha of 0.85.

Hospital anxiety and depression scale (HADS)

This scale measures psychological morbidity through 14 items divided into two subscales: Anxiety (seven items; e.g. "I get sudden feelings of panic") and Depression (seven items; e.g. "I feel cheerful") [33, 34]. Items are evaluated on a four-point Likert scale, with subscales scores resulting from the sum of the respective items. A global score is obtained through the sum of both subscales scores, and higher results indicate greater psychological morbidity. Roberts and collaborators (2001) found a Cronbach's alpha of 0.89 for the global scale, while the Portuguese version presented a Cronbach's alpha of 0.70. The present study used the HADS global score, obtaining an alpha value of 0.88.

Frost multidimensional perfectionism scale (FMPS)

This scale evaluates perfectionism through 35 items using a five-point Likert scale response, from "strongly disagree" to "strongly agree" [35, 36]. FMPS includes six interpersonal dimensions: Personal Standards (seven items; e.g. "I have extremely high goals"), Concern over Mistakes (nine items; "I hate being less than the best at things"), Parental Expectations (five items; "My parents have expected excellence from me"), Parental Criticism (four items; "My parents never tried to understand my mistakes"), Doubts about Actions (four items; "I usually have doubts about the simple everyday things I do"), and Organization (six items; "I am a neat person"). Scores are obtained through the sum of the items, and higher results indicate higher levels of perfectionism. In this study, only the global scale was used. The original FMPS version showed a Cronbach's alpha of 0.90, while the Portuguese version obtained an alpha of 0.86. In this study, Cronbach's alpha for the total scale was 0.92.

Rosenberg self-esteem scale (RSES)

This instrument evaluates the overall self-esteem through 10 items, five positive (e.g. "I am able to do things as well as most other people") and five negative (e.g. "I feel I do not have much to be proud of") feelings about the self [37, 38]. Items are evaluated on a four-point Likert scale, ranging from "totally disagreeing" to "totally agreeing", and higher results indicate higher self-esteem. The original scale showed a Cronbach's alpha of 0.92, and the Portuguese version revealed an alpha of 0.79. In this study, Cronbach's alpha was 0.88.

Brief aging perception questionnaire (B-APQ)

B-APQ explores self-perceptions of own ageing through 17 items across five domains: Timeline-Chronic (TCL; e.g. "I always classify myself as old"), three items that evaluate perceptions of the course of ageing as chronic; Positive Consequences (PCONS; e.g. "As I get older I appreciate things more"), three items to assess beliefs about the positive impact of ageing; Negative Consequences and Control (NCC; e.g. "As I get older I can take part on fewer activities"), five reversed items that assess negative beliefs and control a person has over ageing; Positive Control (PCONTR; e.g. "The quality of my social life in later years depend on me") three items that evaluate the positive control about the ageing process; and Emotional Representations (ER; e.g.

"I feel angry when I think about getting older"), three items that assess negative emotional responses to ageing, such as anxiety, depression and worry [39, 40]. All items are evaluated on a five-point Likert-type scale, ranging from "I strongly disagree" to "I strongly agree". Higher scores are indicative of higher levels of negative self-perceptions of ageing for the subscales TLC and ER, while higher scores in the PCONS, NCC and PCONTR subscales correspond to more positive ageing perceptions (beliefs about the positive impact of ageing, beliefs regarding more control over negative aspects of ageing, and beliefs about positive control of ageing, respectively). The original scale presents Cronbach's alphas of 0.76 for TCL, 0.78 for PCONS, 0.81 for NCC, 0.84 for PCONTR, and 0.75 for the ER subscale. The Portuguese version showed the following alphas: 0.66 for TLC, 0.78 for PCONS, 0.70 for NCC, 0.75 for PCONTR, and 0.74 for the ER subscale. In this study, alphas were 0.70 for TLC, 0.81 for PCONS, 0.86 for NCC, 0.74 for PCONTR, and 0.67 for the ER subscale (the latter is considered acceptable since this subscale contains only three items [41]).

Health status questionnaire (SF-12v2)

This questionnaire represents the shortened form of the SF-36 scale, and evaluates QoL considering the individual's perception of health in the last four weeks [42, 43]. It includes 12 questions categorized into two general dimensions: physical health (six items; e.g. "Accomplished less due to physical health") and mental health (six items; e.g. "Felt downhearted and blue"). Higher scores indicate better physical and mental functioning. Scores range from 0 to 100, with 0 corresponding to the worst perception of QoL and 100 corresponding to a good perception of QoL. The Portuguese version presented Cronbach's alphas of 0.89 for the physical component and 0.76 for the mental component. As performed in previous studies [44, 45], this study used total score, obtaining a Cronbach's alpha of 0.86.

Procedure

This research followed a transversal quantitative design and was approved by the Ethics Commission of the University of Minho (Protocol n.° CE.CSH 087/2018). Participants were recruited in aesthetic clinics and via online procedures. In aesthetic clinics, clients were informed about the study and invited to participate by the professional responsible for the aesthetic treatment. If clients accepted to participate, they had to give written permission

to be contacted by researchers by email. In the email, researchers provided the link to access and complete the questionnaires online. Simultaneously, information about the study and invitation to participate was also disclosed through online platforms (*Facebook* and *Instagram*). In addition to information about the study goals, voluntary participation, and confidentiality, the first page of the questionnaires battery contained an informed consent form, and only after agreement participants were able to proceed to the questionnaires. Data collection considered all ethical and deontological assumptions, and no personal identifiable information was gathered. In total, 55 participants were excluded from the original sample since they did not meet the inclusion criteria (participants under 25 years of age, with a non-Portuguese nationality, or using cosmetic products/performing aesthetic treatments for medical reasons).

Data analysis

The data were analysed using SPSS, version 25.0 for Windows (IBM Corp., Armonk, NY, USA). Independent samples Mann–Whitney tests were conducted to assess differences in the study variables according to the two sample recruitment methods. No statistical differences were found between face-to-face invitation ($n = 11$) and invitation through digital platforms ($n = 260$). To characterize the sample, frequencies, means, and standard deviations (*SD*) were calculated. Pearson and Spearman correlations were used to analyse the relationship between the variables under study (H1). According to the Cohen's classification [46], correlations between 0.10 and 0.29 are weak, between 0.30 and 0.40 are moderate, and equal to or higher than 0.50 are strong. A hierarchical multiple regression analysis (enter method) was conducted to determine which variables contributed to QoL (H2). Only variables that correlated significantly with QoL ($p < 0.05$) were introduced in the regression analysis. After confirming the multicollinearity (VIF < 2 and tolerance > 0.1) and normality assumptions, age and household income were entered in the first block. Antiageing cosmetic products were introduced in the second block. Finally, psychological morbidity, perfectionism, self-esteem, and ageing perceptions were added in the third block.

Macro Process command for SPSS [47], version 2.16.1, was used to evaluate the moderating role of ageing perceptions in the relationship between self-esteem and QoL (H3). Johnson-Neyman (JN) technique was further used to probe for interaction and determine the transition point in which ageing perceptions were enough to detect differences in the relation between self-esteem and QoL [47]. To confirm H3, the interaction should be significant

($p < 0.05$), and the 95% bias-corrected confidence interval (95% CI) for the point estimate should not include zero [47].

RESULTS

Sample characteristics

The sample included 271 women, on average, with 35.9 ($SD = 8.67$) years old, 16.7 ($SD = 3.23$) years of education, 63.3 kg ($SD = 11.34$) of weight, and 164.4 cm ($SD = 6.56$) of height.

Most participants lived in an urban environment (81.2%). Regarding household composition, most women had two or less family members (33.6%), followed by three (24.4%), four (23.6%), and five or more family members (18.5%). Most women were professionally active (85.2%), with a monthly household income equivalent to two or three minimum wages (53.9%), while 35.4% had a household income above four or more minimum wages, and 10.7% had a household income lower than two minimum wages. Of the total sample, 44.3% of the participants were single, 33.8% were married, 18.5% were living in a consensual union, and 4.4% were divorced. Most women were not menopausal (93.4%), and more than half had no diseases (52.8%).

Regarding the cosmetic products use, results showed that most products were used on a daily basis. Figure 1 presents the type and frequency of use of cosmetic products by female clients. Cosmetic procedures were performed mostly once a year: skin cleansing was performed annually by 21.8% of the total sample, peeling treatment by 7.4%, hair strengthening treatment by 6.3%, hyaluronic acid treatment by 2.6%, cellulite treatment by 6.3%, weight loss treatment by 3.3%, and flaccidity treatment

by 4.1%. Botox was performed every 3 months by 2.2% of participants.

Relationship between sociodemographic variables, psychological variables, use of cosmetic products/aesthetic treatments, and QoL

The results showed a weak positive association between age ($r = 0.131$, $p < 0.05$) and QoL, and moderate positive correlation between household income ($r = 0.248$, $p < 0.001$) and QoL. Thus, being older and receiving a higher household income was associated with better QoL. The use of facial firming ($r = 0.121$, $p < 0.05$), hair colouring ($r = 0.122$, $p < 0.05$), and sunscreen ($r = 0.125$, $p < 0.05$) products were positively related to QoL (Table 1), although those correlations were weak. None of the aesthetic treatments correlated significantly with QoL.

Regarding psychological variables, results presented a strong negative association between QoL and psychological morbidity ($r = -0.737$, $p < 0.001$); moderate negative associations between perfectionism ($r = -0.304$, $p < 0.001$), TLC subscale ($r = -0.329$, $p < 0.001$), and QoL; and a weak negative association between QoL and ER subscale ($r = -0.292$, $p < 0.001$). Thus, higher levels of psychological morbidity, more perfectionism, more perceptions of ageing as chronic, and more negative emotional responses to ageing were associated with worse QoL. There was a moderate positive association between QoL and self-esteem ($r = 0.465$, $p < 0.001$), and weak positive associations between QoL and NCC subscale ($r = 0.289$, $p < 0.001$), and PCONS subscale ($r = 0.135$, $p < 0.05$), indicating that more self-esteem, more positive beliefs about the impact of ageing, and more beliefs of control over the negative impact of ageing were associated with better
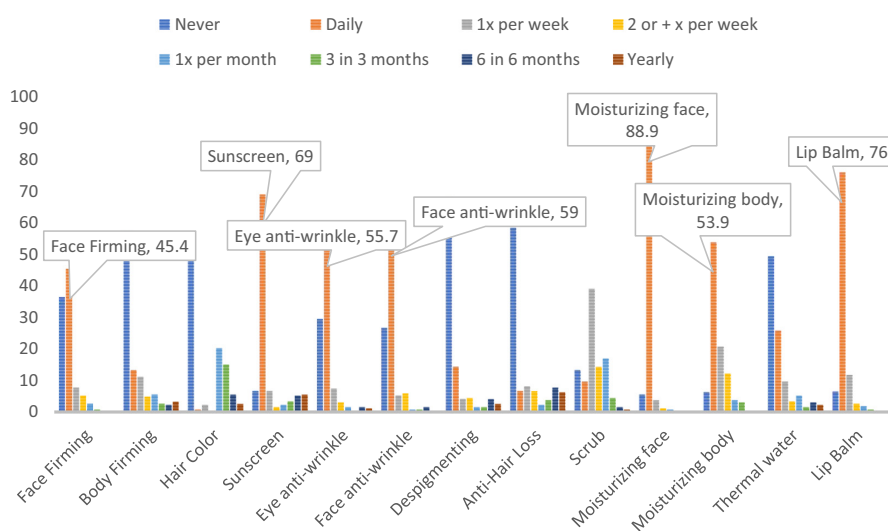

FIGURE 1 Frequency of use of cosmetic products

TABLE 1 Correlation between sociodemographic variables, use of anti-aging products, and QoL

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. QoL	1															
2. Age	0.131*	1														
3. Household income	0.248***	0.271***	1.													
4. Residential area	0.055	−0.025	−0.024	1.												
5. Facial ageing perception	−0.006	0.255***	0.009	−0.009	1.											
6. Hair ageing perception	−0.087	0.225***	0.002	−0.044	0.136*	1.										
7. Body ageing perception	−0.106	0.429***	0.124*	0.001	0.470***	0.329***	1.									
8. Intimate area ageing perception	−0.002	0.417***	0.079	0.031	0.352***	0.329***	0.438***	1.								
9. Face firming	0.121*	0.313***	0.074	−0.074	0.067	0.070	0.189**	0.135*	1.							
10. Hair colour	0.122*	0.497***	0.060	−0.051	0.071	0.273***	0.149*	0.234***	0.220***	1.						
11. Sunscreen	0.145*	−0.042	0.081	−0.061	−0.050	−0.020	−0.105	−0.003	−0.085	−0.019	1.					
12. Face anti-wrinkle	0.038	0.335**	0.087	−0.095	0.275***	0.147*	0.236***	0.145*	0.412***	0.142*	0.074	1				
13. Eyes anti-wrinkle	0.061	0.187**	0.083	0.022	0.117	0.012	0.079	0.100	0.399***	0.133*	−0.010	0.471***	1			
14. Face moisturizer	0.053	0.001	0.052	−0.090	−0.027	−0.030	−0.078	−0.078	0.012	0.064	0.065	0.037	0.126*	1		
15. Body moisturizer	−0.010	−0.022	0.038	−0.070	−0.113	−0.011	−0.001	−0.016	0.082	−0.033	−0.008	−0.052	−0.034	0.470***	1	
16. Lip balm	−0.014	0.038	−0.015	−0.099	0.019	−0.020	−0.043	−0.063	−0.054	0.041	0.107	0.007	0.022	0.324***	0.175**	1

$*p < 0.05$; $**p < 0.01$; $***p < 0.001$.

TABLE 2 Correlations between psychological variables and QoL

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. QoL	1												
2. Appearance schemas	−0.094	1											
3. Psychological morbidity	−0.751***	0.138*	1										
4. Perfectionism	−0.278***	0.241***	0.449***	1									
5. Self-esteem	0.484***	−0.139*	−0.610***	−0.487***	1								
6. Ageing perceptions – TLC	−0.334***	0.200**	0.381***	0.327***	−0.370***	1							
7. Ageing perceptions – PCONS	0.133*	0.010	−0.191**	0.046	0.250***	−0.135*	1						
8. Ageing perceptions – PCONTR	0.022	0.205**	−0.047	0.165	−0.043	0.000	0.361***	1					
9. Ageing perceptions – NCC	0.299***	0.015	−0.326***	−0.307***	0.304***	−0.366***	0.112	0.094	1				
10. Ageing perceptions – ER	−0.344***	0.333***	0.379***	0.323***	−0.331***	0.448***	−0.163**	−0.039	−0.520***	1			
Mean	74.49	3.26	12.20	98.04	21.67	6.88	12.20	12.04	17.74	7.74			
Standard deviation (SD)	15.90	0.57	7.08	18.47	5.49	2.47	2.25	2.42	3.66	2.83			

Abbreviations: TLC, time-line chronic; PCONS, positive consequences; PCONTR, positive control; NCC, negative consequences and control; ER, emotional representations.

*$p < 0.05$.; **$p < 0.01$.; ***$p < 0.001$.

QoL. Appearance schemes and PCONTR subscale did not correlate significantly with QoL (Table 2).

Variables that contribute to QoL

In the first block, only household income ($\beta = 6.505$, $t = 4.259$, $p < 0.001$) significantly contributed to QoL, with the model including the two variables predicting almost 8% of the total variance ($F_{[2, 268]} = 11.560$, $p < 0.001$) (Model 1). After adding the use of facial firming products, hair colouring products, and sunscreen (Model 2), household income remained the only variable contributing to QoL, and the total variance explained increased 2.7% ($F_{[5, 265]} = 2.686$, $p = 0.047$). After including psychological morbidity, self-esteem, perfectionism, and TLC, PCONS, NCC, ER subscales (Model 3), the model explained 60.5% of the total variance ($F_{[12, 258]} = 46.397$, $p < 0.001$). In addition to household income that remained significant ($\beta = 3.302$, $t = 3.061$, $p = 0.002$), psychological morbidity ($\beta = -1.623$, $t = -13.364$, $p < 0.001$), and perfectionism ($\beta = 0.110$, $t = 2.600$, $p = 0.010$) also contributed to greater QoL (Table 3).

Ageing perceptions as a moderator between self-esteem and QoL

Time-line chronic subscale of ageing perceptions moderated the relationship between self-esteem and QoL, $F_{(3, 267)} = 25.366$, $p < 0.001$, $\beta = 0.176$, 95% CI [0.052, 0.300]; $t = 2.788$, $p = 0.006$, explaining 28.4% of the variance. Thus, there was a positive relationship between self-esteem and QoL when self-perceptions of ageing were perceived as less chronic ($\beta = 0.7256$, 95% CI [0.248, 1.203]; $t = 2.993$, $p = 0.003$) and more chronic ($\beta = 0.1594$, 95% CI [1.126, 2.062]; $t = 6.705$, $p < 0.001$), although more intense in the latter situation. According to the JN technique, self-esteem was significantly correlated with QoL when the standardized value of TLC was −3.42 below the mean ($\beta = 0.5608$, $p = 0.05$), which occurred in 87.1% of the sample (Figure 2).

Emotional representations dimension of ageing perceptions also moderated the relationship between self-esteem and QoL, ($F_{(3, 167)} = 25.994$, $p < 0.001$, $\beta = 0.169$, 95% CI [0.053, 0.285]; $t = 2.8720$, $p = 0.004$), explaining 30.1% of the variance. There was a positive relationship between self-esteem and QoL when self-perceptions of ageing had negative emotional responses ($\beta = 0.647$, 95% CI [0.194, 1.100]; $t = 2.814$, $p = 0.005$). The relationship remained positively significant but more intense when there were more negative emotional responses to ageing ($\beta = 0.602$, 95% CI [1.103, 2.102]; $t = 6.316$, $p < 0.001$).

TABLE 3 Variables that contribute to QoL

Variables	Model 1		Model 2		Model 3	
	B	**t**	**B**	**t**	**B**	**t**
Age	0.111	0.999	−0.018	−0.137	0.062	0.671
Household income	6.505	4.259***	6.445	4.221***	3.302	3.061**
Face firming			3.076	1.527	−0.974	−0.704
Hair colour			2.991	1.394	−0.502	−0.339
Sunscreen			7.243	1.941	3.802	1.489
Psychological morbidity					−1.623	−13.624***
Perfectionism					0.110	2.600*
Self-esteem					0.085	0.529
Ageing perceptions - TLC					−0.122	−0.406
Ageing perceptions - PCONS					−0.276	−0.926
Ageing perceptions - NCC					0.230	1.105
Ageing perceptions - ER					−0.387	−1.374
$R^2 (\triangle R2)$	0.079 (0.079)		0.107 (0.027)		0.605 (0.498)	
F	11.560***		6.326*		32.862***	
$\triangle F$	11.568		2.686		46.397	

$*p < 0.05$; $**p < 0.01$; $***p < 0.001$; TLC: time-line chronic *(negative perception)*; PCONS: positive consequences; *(positive perceptions)* NCC: negative consequences and control *(positive perception)*; ER: emotional representations *(negative perception)*

The JN technique indicated that self-esteem was significantly correlated with QoL when negative emotional responses to the ageing process were −3.61 below the mean ($\beta = 0.516$, $p = 0.050$), which was the case in 87.8% of the sample (Figure 2).

Positive consequences ($\beta = -0.218$, 95% CI [−0.387, 0.049]; $t = -2.544$, $p = 0.012$) and negative consequences and control ($\beta = -0.032$, 95% CI [−0.115, 0.052]; $t = -0.744$, $p = 0.457$) subscales of ageing perceptions did not moderate the relationship between self-esteem and QoL. The moderating effect of positive control dimension was not tested because the required assumptions to perform this analysis were not fulfilled.

DISCUSSION

This study was designed to analyze the contribution of sociodemographic variables, psychological variables, and use of cosmetic products/aesthetical treatments to Portuguese women's QoL. Age and household income were positively correlated with QoL, which is in accordance with previous literature. Generally, ageing has been associated with worse QoL, except for those with economic power since more economic means allow more access to health care, as well as aesthetic clinics and beauty treatments, which promotes greater well-being and QoL [7, 23, 48]. Given that the vast majority of the sample (almost 90%) had a

household income above two or four minimum wages, the positive relationship between age, household, and QoL found in this study is not so surprising.

In this study, the use of face firming, hair colour, and sunscreen products were positively associated with QoL, as suggested by the literature indicating a link between the cosmetic products use and improved QoL [6]. For example, a recent study that tested the impact of facial skin care products on the women's QoL [49], found significant improvements on QoL after the product removal, and two weeks later. Hair colour has also found to contribute to improved QoL and well-being of female users [50]. Aesthetical treatments did not correlate with QoL, contrary to what was expected. In fact, although there is substantial evidence showing that invasive aesthetical treatments improve QoL [51], few data are available regarding the effects of non-invasive treatments, such as the ones evaluated in this study, in women's QoL. Therefore, further research on this topic is needed.

As predicted, psychological morbidity was negatively associated with QoL. Since women have a greater propensity to develop both depression and anxiety [52], and their negative impact on QoL is already established through research [7, 53], it makes intuitive sense that less psychological morbidity is not only associated with but also contributes to improved QoL. Surprisingly, appearance schemas did not correlate significantly with QoL. According to Nazaré et al., [9], a greater investment in
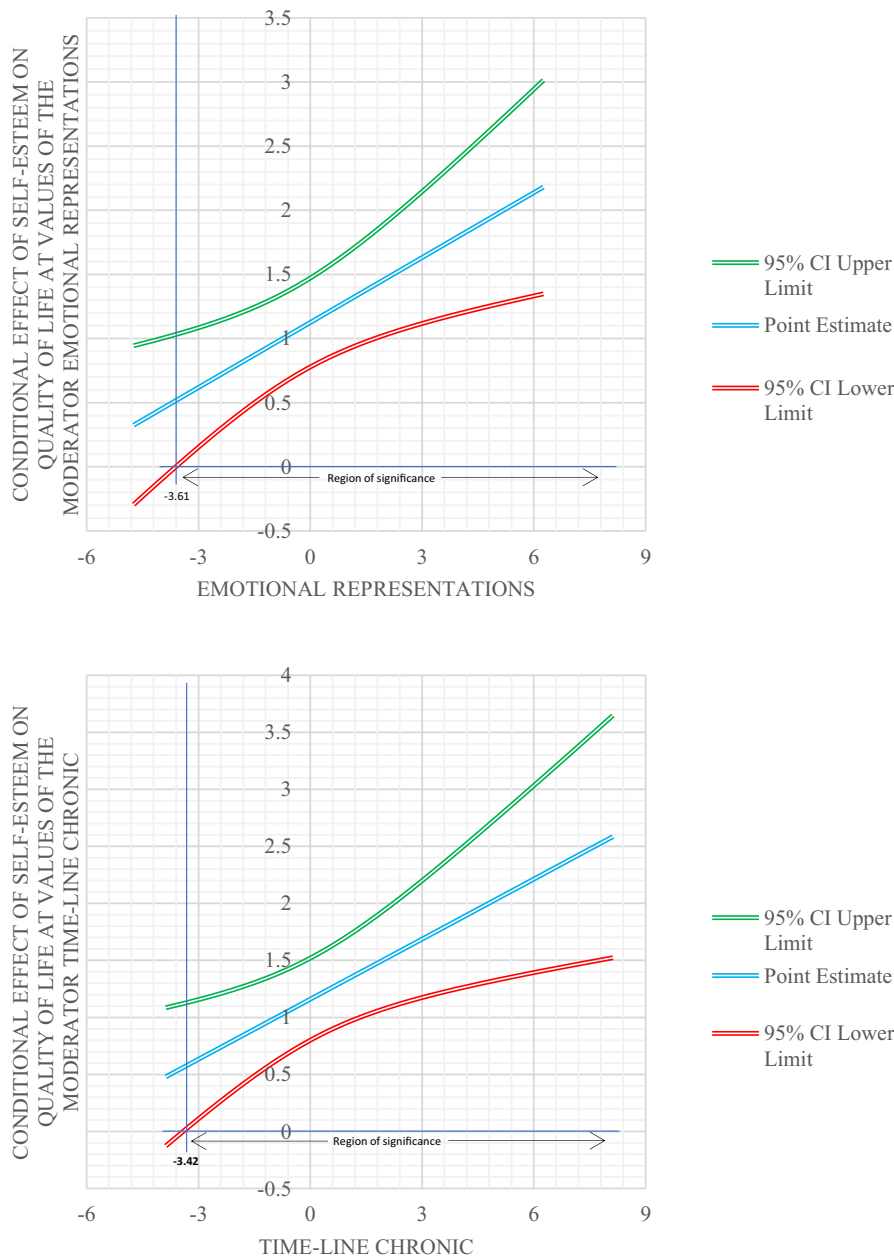
FIGURE 2 Ageing perceptions (emotional representations and time-line chronic) as a moderator between self-esteem and QoL

appearance may contribute to an engagement in health behaviours to maintain or improve appearance but this motivation may not be related to QoL [10].

Consistent with previous literature [e.g. 36, 54], perfectionism was negatively associated with QoL. However, when assessing the contribution of perfectionism together with self-esteem, psychological morbidity, and ageing negative perceptions, perfectionism contributed to greater QoL. Due to the high negative correlation between psychological morbidity and QoL (−0.751), future studies are needed to understand the impact of perfectionism on QoL controlling for psychological morbidity.

Results showed a positive association between self-esteem and QoL, as supported in previous studies conducted with participants from different age groups [11, 12,

55, 56]. Thus, it makes sense that female users of antiageing cosmetic products and procedures with aesthetic motivations report a close relation between more self-esteem and improved QoL.

Ageing perceptions, namely TLC and ER, related negatively to QoL. Considering that TLC involves chronic perceptions of ageing, that is, persistent awareness of ageing (e.g. "I am always aware of my age"), and ER refers to negative emotional responses to ageing (e.g. "I feel angry when I think about getting older"), both dimensions reflect negative experiences of ageing, which naturally is related to worse QoL. In fact, in previous studies, constant awareness of ageing (TLC) was associated with health problems [57], an important aspect of QoL. Likewise, emotional negative representations of

ageing (ER) were related to poor physical and functional health and low life satisfaction in older adults [57]. On the contrary, PCONS and NCC subscales correlated positively with QoL.

Results regarding PCONS, which evaluates beliefs about the positive impact age may have on multiple life domains (e.g. "As I get older I get wiser"), are in line with Barker et al.'s study [57] who also found a significant association with subjective well-being. Since NCC covers beliefs of more control over the negative impact of ageing (e.g. "Getting older restricts the things that I can do") and negative aspects of ageing (e.g. "How mobile I am in later life is not up to me"), a positive relationship with QoL was expected. Thus, the positive association between NCC and QoL may indicate a greater knowledge of ageing and more coping strategies (such as the use of antiageing products and treatments) to deal with its consequences, which may lead to a better adaptation to ageing, and greater QoL [57].

TLC and ER moderated the relationship between self-esteem and QoL. As already stated, self-esteem and QoL are interrelated, and low self-esteem and ageing perceptions [58] have been related to worse QoL. Gu et al [59] found that, as people age and their health declines, patients gradually adopted negative emotional responses regarding ageing, showing less healthy behaviours, including seeking health care for ageing-related conditions and decreased QoL. Furthermore, it makes intuitive sense that recognizing the ageing process as chronic, together with ageing emotional reactions such as anxiety, depression and worries, reinforces the relationship between self-esteem and QoL.

Overall, H1 was partially corroborated since appearance schemas, PCONTRL subscale, and aesthetic treatments did not correlate significantly with QoL, and only three cosmetic products were significantly associated with QoL. Likewise, H2 was partly confirmed given that only household income, psychological morbidity, and perfectionism contributed to QoL. Finally, two of the four tested subscales of ageing perceptions moderated the relationship between self-esteem and QoL, partially confirming H3.

LIMITATIONS AND FUTURE IMPLICATIONS

The present study presents some limitations such as the exclusive use of self-report measures; the cross-sectional design of the study that does not allow to establish cause–effect relationships; and the higher socioeconomic level of the sample which may have influenced the results. Also, the sample only included users of antiageing products/

aesthetic treatments, not allowing the comparison between users and non-users.

Future studies should adopt longitudinal designs to monitor women's QoL over time, as well as include the contribution of women's partners (particularly their ageing perceptions) on women's QoL. Also, the relationship between consumers' lifestyles and usage patterns, should be pursued.

It would also be important to understand if the use of cosmetic products/aesthetic treatments represents a coping strategy and contributes to a better adaptation to the ageing process and, consequently, to a better QoL in both women and their partners.

CONCLUSION

This is the first study conducted in Portugal with female users of antiageing cosmetic products/ aesthetic treatments focused on psychological variables and QoL. This study revealed that almost 60% of the variation in QoL of female's users of cosmetic products/ procedures was explained by psychological variables, specifically, less psychological morbidity, more perfectionism, and a higher household income contributed to improved QoL. Chronic perceptions of ageing and negative ageing representations moderated the relationship between self-esteem and QoL, meaning that negative interpretations of ageing intensify the link between self-esteem and QoL.

According to the findings, psychological interventions should focus on reducing psychological morbidity, increasing self-esteem, and addressing patterns of perfectionism with a focus on women's perceptions of ageing, to promote QoL. For those women struggling with the ageing process, and reporting lower QoL, psychological counselling should be warranted. The positive influence of the usage of antiageing cosmetic products on QoL should be explored in future studies.

CONFLICT OF INTEREST
No potential conflict of interest was reported by the authors.

International Journal of **Cosmetic Science** SOCIÉTÉ FRANÇAISE DE COSMÉTOLOGIE

ORCID

Margarida Vilaça https://orcid.org/0000-0002-4349-8633
Isabel F. Almeida https://orcid.org/0000-0002-1498-048X
M. Graça Pereira https://orcid.org/0000-0001-7987-2562

REFERENCES

1. Poordata (n.d.). Retrieved January 2022, from: https://www.pordata.pt/Portugal/Indicadores+de+envelhecimento+do+-sexo+feminino-3372

2. Sabik NJ, Cole ER. Growing older and staying positive: associations between diverse aging women's perceptions of age and body satisfaction. J Adult Dev. 2017;24(3):177–88.

3. Sveikata K, Balciuniene I, Tutkuviene J. Factors influencing face aging. Literature review. Stomatologija. 2011;13(4):113–5.

4. Cho C, Cho E, Kim N, Shin J, Woo S, Lee E, et al. Age-related biophysical changes of the epidermal and dermal skin in Korean women. Skin Res Technol. 2019;25(4):504–11.

5. Bedford JL, Johnson CS. Societal influences on body image dissatisfaction in younger and older women. J Women Aging. 2005;18(1):41–55.

6. Beresniak A, Auray JP, Duru G, Aractingi S, Krueger GG, Talarico S, et al. Quality of life assessment in cosmetics: specificity and interest of the international BeautyQol instrument. J Cosmet Dermatol. 2015;14(3):260–5.

7. Skopinski F, Resende TDL, Schneider RH. Imagem corporal, humor e qualidade de vida [Body image, mood and quality of life]. Rev Bras Geriatria Gerontol. 2015;18(1):95–105.

8. Cash TF, Fleming EC. The impact of body image experiences: Development of the body image quality of life inventory. Int J Eat Disord. 2002;31(4):455–60.

9. Nazaré B, Moreira H, Canavarro MC. Uma perspetiva cognitivo-comportamental sobre o investimento esquemático na aparência: Estudos psicométricos do Inventário de Esquemas sobre a Aparência – Revisto (ASI-R) [A cognitive-behavioral perspective on schematic investment in appearance: Psychometric studies of the appearance schema inventory-Revised (ASI-R)]. Laboratório de Psicologia. 2013;8(1):21–36.

10. Cash TF, Melnyk SE, Hrabosky JI. The assessment of body image investment: An extensive revision of the appearance schemas inventory. Int J Eat Disord. 2004;35(3):305–16.

11. Olchowska-Kotala A. Body esteem and self-esteem in middle-aged women. J Women Aging. 2017;30(5):417–27.

12. Paradise AW, Kernis MH. Self-esteem and psychological well-being: implications of fragile self-esteem. J Soc Clin Psychol. 2002;21(4):345–61.

13. Ingrand I, Paccalin M, Liuu E, Gil R, Ingrand P. Positive perception of aging is a key predictor of quality-of-life in aging people. PLoS One. 2018;13(10):e0204044.

14. Liechty T. "Yes, I worry about my weight . . . but for the most part I'm content with my body": Older Women's Body Dissatisfaction Alongside Contentment. J Women Aging. 2012;24(1):70–88.

15. Bailey KA, Cline LE, Gammage KL. Exploring the complexities of body image experiences in middle age and older adult women within an exercise context: The simultaneous existence of negative and positive body images. Body Image. 2016;17:88–99.

16. Clarke LH, Repta R, Griffin M. Non-surgical cosmetic procedures: older women's perceptions and experiences. J Women Aging. 2007;19(3–4):69–87.

17. Bardone-Cone A, Joiner T, Crosby R, Crow S, Klein M, Le Grange D, et al. Examining a psychosocial interactive model of binge eating and vomiting in women with bulimia nervosa and subthreshold bulimia nervosa. Behav Res Ther. 2008;46(7):887–94.

18. Hanstock TL, O'Mahony JF. Perfectionism, acne and appearance concerns. Personal Individ Differ. 2002;32(8):1317–25.

19. Swami V, Mammadova A. Associations between consideration of cosmetic surgery, perfectionism dimensions, appearance schemas, relationship satisfaction, excessive reassurance-seeking, and love styles. Individ Differ Res. 2012;10(2):81–94.

20. Fowler SA, Davis LL, Both LE, Best LA. Personality and perfectionism as predictors of life satisfaction: The unique contribution of having high standards for others. FACETS. 2018;3(1):227–41.

21. Rutter-Eley EL, James MK, Jenkins PE. Eating disorders, perfectionism, and quality of life. J Nerv Ment Dis. 2020;208(10):771–6.

22. Sertel M, Arslan SA, Kurtoğlu F, Yıldırım TS. Physical activity, depression and quality of life in aging process. Biomed Res (India). 2017;28(9):4165–70.

23. Villas-Boas S, Oliveira AL, Ramos N, Montero I. Predictors of quality of life in different age groups across adulthood. J Intergener Relatsh. 2018;17(1):42–57.

24. Faria LC, Santos KH, Sousa MS, Anunciação C, Silva AP and Oliveira JF. Envelhecimento, Relações de Gênero e Qualidade de Vida da População Idosa [Aging, Gender Relations and Quality of Life of the Elderly Population] Anais do 16° Congresso Brasileiro de Assistentes. 2019.

25. Carrara FF. Percepção do envelhecimento: mulheres de meia idade e idosas que buscam por procedimentos estéticos [Perception of aging: middle-aged and elderly women seeking aesthetic procedures]. Rev Multidisciplinar Psicol. 2020;14(49):38–50.

26. Wilson IB, Cleary PD. Linking clinical variables with health-related quality of life. A conceptual model of patient outcomes. JAMA. 1995;273(1):59–65.

27. Baker SR, Pankhurst CL, Robinson PG. Testing relationships between clinical and non-clinical variables in xerostomia: A structural equation model of oral health-related quality of life. Qual Life Res. 2006;16(2):297–308.

28. Ojelabi AO, Graham Y, Haighton C, Ling J. A systematic review of the application of Wilson and Cleary health-related quality of life model in chronic diseases. Health Qual Life Outcomes. 2017;15(1):241.

29. Ryu E, West SG, Sousa KH. Mediation and moderation: testing relationships between symptom status, functional health, and quality of life in HIV patients. Multivar Behav Res. 2009;44(2):213–32.

30. Qiu C, Shao D, Yao Y, Zhao Y, Zang X. Self-management and psychological resilience moderate the relationships between symptoms and health-related quality of life among patients with hypertension in China. Qual Life Res. 2019;28(9):2585–95.

31. Kimball A. Mde study white paper. 2015. Available online at https://mms.businesswire.com/media/20151210005712/en/500007/1/Olay_MultiDecade_and_Ethnicity_Study_White_Paper.pdf [Accessed January 2022].

32. Cash TF, Jakatdar TA, Williams EF. The Body Image Quality of Life Inventory: further validation with college men and women. Body Image. 2004;1(3):279–87.

33. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. Acta Psychiatr Scand. 1983;67(6):361–70.

34. Pais-Ribeiro J, Silva I, Ferreira T, Martins A, Meneses R, Baltar M. Validation study of a Portuguese version of the Hospital Anxiety and Depression Scale. Psychol Health Med. 2007;12(2):225–37.

35. Frost RO, Marten P, Lahart C, Rosenblate R. The dimensions of perfectionism. Cognit Ther Res. 1990;14(5):449–68.

36. Amaral APM, Soares MJ, Pereira AT, Bos SC, Marques M, Valente J, et al. Frost multidimensional perfectionism scale: the Portuguese version. Arch Clin Psychiatry (São Paulo). 2013;40(4):144–9.

37. Rosenberg M. Society and the adolescent self-image. Princeton: Princeton University Press; 1965.

38. Pechorro P, Marôco J, Poiares C, Vieira RX. Validação da Escala de Auto- Estima de Rosenberg com Adolescentes Portugueses em Contexto Forense e Escolar [Validation of the Rosenberg Self-Esteem Scale with Portuguese Adolescents in the Forensic and School Context]. Arquivos Med. 2011;25(5–6):174–9.

39. Sexton E, King-Kallimanis BL, Morgan K, McGee H. Development of the Brief Ageing Perceptions Questionnaire (B-APQ): a confirmatory factor analysis approach to item reduction. BMC Geriatr. 2014;14(1):44.

40. Fernandes, S. and Pereira, H. A Validation of the Brief Ageing Perceptions Questionnaire (B-APQ) Among Elderly Portuguese Adults [thesis]. Covilhã: Universidade da Beira Interior. 2019. Available from: https://ubibliorum.ubi.pt/handle/10400.6/10114

41. Taber KS. The use of Cronbach's alpha when developing and reporting research instruments in science education. Res Sci Educ. 2018;48:1273–96.

42. Ware JE, Kosinski M, Keller SD. A 12-item short-form health survey. Med Care. 1996;34(3):220–33.

43. Ferreira PL. Criação da versão Portuguesa do MOS SF-36, Parte II – Testes de Validação [Creation of the Portuguese version of the MOS SF-36, Part II – Validation Tests]. Acta Medica Port. 2000;13(3):119–27.

44. Hagell P, Westergren A. Measurement properties of the SF-12 health survey in Parkinson's disease. J Parkinsons Dis. 2011;1:185–96.

45. Hagell P, Westergren A, Årestedt K. Beware of the origin of numbers: Standard scoring of the SF-12 and SF-36 summary measures distorts measurement and score interpretations. Res Nurs Health. 2017;40:378–86.

46. Cohen JW. Statistical power analysis for the behavioral sciences. 2nd ed. New York: Erlbaum; 1983.

47. Hayes AF. Introduction to mediation, moderation, and conditional process analysis, first edition: a regression-based approach. New York: The Guilford Press; 2013.

48. Wong JS, Penner AM. Gender and the returns to attractiveness. Res Soc Stratification Mobil. 2016;44:113–23.

49. Zhang L, Adique A, Sarkar P, Shenai V, Sampath M, Lai R, et al. The impact of routine skin care on the quality of life. Cosmetics. 2020;7(3):59.

50. Beresniak A, Auray J-P, Duru G, Krueger GG, Talarico S, Aractingi S, et al. Assessing the hair colourings impact on quality of life. J Cosmetol Trichol. 2015;1:1000103.

51. Rudolph C, Hladik C, Stroup DF, Frank K, Gotkin RH, Dayan SH, et al. Are cosmetic procedures comparable to antidepressive medication for quality-of-life improvements? A systematic review and controlled meta-analysis. Facial Plast Surg. 2019;35(5):549–58.

52. World Health Organization. Gender disparities in mental health. Geneva: World Health Organization; 2013.

53. Hohls JK, König HH, Quirke E, Hajek A. Anxiety, depression and quality of life-a systematic review of evidence from longitudinal observational studies. Int J Environ Res Public Health. 2021;18(22):12022.

54. Gnilka PB, Ashby JS, Noble CM. Adaptive and maladaptive perfectionism as mediators of adult attachment styles and depression, hopelessness, and life satisfaction. J Couns Dev. 2013;91(1):78–86.

55. Moksnes UK, Espnes GA. Self-esteem and life satisfaction in adolescents—gender and age as potential moderators. Qual Life Res. 2013;22(10):2921–8.

56. Szcześniak M, Mazur P, Rodzeń W, Szpunar K. Influence of life satisfaction on self-esteem among young adults: the mediating role of self-presentation. Psychol Res Behav Manag. 2021;14:1473–82.

57. Barker M, O'Hanlon A, McGee HM, Hickey A, Conroy RM. Cross-sectional validation of the Aging Perceptions Questionnaire: a multidimensional instrument for assessing self-perceptions of aging. BMC Geriatr. 2007;7(1):9.

58. Kiarsipour N, Borhani F, Esmaeili R, Zayeri F. The correlation of aging perceptions and life satisfaction in Iranian older adults. Ann Trop Med Public Health. 2017;10(4):861–8.

59. Gu R, Zhang D, Jin X, Wu W, Hou Y, Wu Q, et al. The self-perceptions of aging were an important factor associated with the quality of life in Chinese elderly with hypertension. Psychogeriatrics. 2019;19(4):391–8.