

The Facial Clinimetric Evaluation scale underestimates social well-being and synkinesis in overall facial palsy-specific quality of life: A cross-sectional study in 80 patients

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Abstract

Key Points: * The Facial Clinimetric Evaluation (FaCE) scale, consisting of six subscales, measures facial palsy-specific quality of life. * Each subscale's weight in the total FaCE score is based on the number of questions but may not reflect the subscale's true contributions to 'overall' facial-palsy specific quality of life. * In 80 patients, we analyzed the subscales' correlations with a validated Visual Analogue Scale (VAS) score that quantifies overall facial palsy-related burden. * Social function and facial comfort had stronger correlations with overall facial palsy-related quality of life than their weights in the FaCE total score suggests. * Greater importance should be placed on social function and facial comfort when estimating the quality of life of patients with facial palsy.

Key Points :

- The Facial Clinimetric Evaluation (FaCE) scale, consisting of six subscales, measures facial palsy-specific quality of life.
- Each subscale's weight in the total FaCE score is based on the number of questions but may not reflect the subscale's true contributions to 'overall' facial-palsy specific quality of life.
- In 80 patients, we analyzed the subscales' correlations with a validated Visual Analogue Scale (VAS) score that quantifies overall facial palsy-related burden.
- Social function and facial comfort had stronger correlations with overall facial palsy-related quality of life than their weights in the FaCE total score suggests.
- Greater importance should be placed on social function and facial comfort when estimating the quality of life of patients with facial palsy.

Key words:

Facial palsy; Facial Clinimetric Evaluation scale; Quality of life; Social function; Facial comfort; Synkinesis

INTRODUCTION

Patient-reported outcome measures (PROM) are essential for the evaluation of facial palsy. The most commonly used PROM for facial palsy is the Facial Clinimetric Evaluation (FaCE) scale, which consists of 15 questions with a 5-point Likert scale.^{1,2} It consists of six subscales – facial movement, facial comfort, oral function, eye comfort, lacrimal control, and social function – which sum up to a total score representing 'overall' facial palsy-related quality of life. The current importance of each subscale in calculating the total score is determined by the number of questions composing each subscale. It has not been analyzed whether

FaCE subscales' weight in the total score reflects subscales' importance to overall facial palsy-specific quality of life. In this study, we aim to calculate the contribution of the FaCE subscales to overall quality of life.

METHODS

Institutional review board approval was acquired before the start of this study. Facial palsy patients older than 18 years and fluent in Dutch visiting the outpatient clinic of a tertiary plastic surgery center were invited for participation between June and August 2020.

Patients were asked to complete the validated Dutch FaCE questionnaire and to score overall facial palsy-related burden on a Visual Analogue Scale (VAS). As the FaCE scale addresses impairments experienced in the past week, the VAS was also used to score the burden experienced during the previous week.

The reliability and validity of the VAS were tested in a separate group of patients visiting the same outpatient clinic. On two occasions (T1 and T2), 1 week apart, patients were asked to complete both the FaCE scale and the VAS.

Statistical Analysis

Descriptive statistics are presented using numbers and percentages, mean and standard deviation (SD) or median and interquartile range (IQR) when appropriate. Patients with missing or incomplete responses were excluded from all analyses.

The test-retest reliability of the VAS was analyzed with the intraclass correlation coefficient (ICC, two-way random effects model, absolute agreement, single measures). As a measure of validity, the VAS score was correlated to the FaCE total score.

Two multiple linear regression models were examined. First, the FaCE subscale scores were correlated with total FaCE score. The regression coefficient of each subscale represents the size of the subscale's correlation with the total FaCE score, which should exactly reflect the number of questions contained in each subscale.

Second, a linear regression analysis between the FaCE subscales and a transformed VAS score was performed. The original VAS scores were inverted so that a higher score indicated better quality of life, as seen with FaCE scale scores. The sizes of the regression coefficients were examined and compared with those from the first regression analysis.

The presence of multicollinearity in the second analysis was checked for by looking at the correlation, tolerance, and variation inflation factor (VIF) between each variable. A tolerance larger than 0.2 and a VIF less than 10 was considered to indicate the absence of multicollinearity.

All analyses were performed in the Statistical Package for the Social Sciences (SPSS) version 26 (IBM Corporation, NY, USA).

RESULTS

In the VAS validation group, 21 individuals responded, of whom 3 were excluded for not submitting a second VAS score. A slight majority of the 18 participants was female ($n = 10$ [56%]) and median (IQR) age was 71 (55; 76) years. The most common etiology of facial palsy was parotid gland tumor ($n = 8$ [28%]), followed by acoustic neuroma ($n = 2$ [11%]). Median time since diagnosis of facial palsy (IQR) was 1.8 (0.8; 8.7) years. A median time of 7 days elapsed between the responses. Median (IQR) VAS score was 60 (23; 74) at T1 and 61 (17; 73) at T2. There was a moderate, positive correlation between the VAS score and FaCE total score that was statistically significant ($r_s = 0.561$, $p < 0.001$), indicating acceptable validity. Test-retest reliability was high, with an intraclass correlation coefficient of 0.91 (95% CI = 0.78-0.97).

A total of 80 participants were included in the linear regression analysis; of the 130 eligible patients, 14 were not interested in participating, 28 did not respond to the invitation for the following measurement, and eight respondents submitted incomplete responses. Forty-one participants were male (51%), and median (IQR) age was 63 (51; 73) years (Table 1). Median (IQR) duration of facial palsy was 17.1 (9.6; 33.1) years, and

the most common etiology was acoustic neuroma ($n = 22$ [27%]). Median (IQR) FaCE total and VAS scores were 51.7 (38.3; 62.9) and 70 (52; 93), respectively.

The multivariate linear regression analysis of the FaCE subscale scores on the FaCE total score resulted in regression coefficients that were exactly proportional to the number of questions contained in the subscales (Table 2). In the second regression analysis, social function and facial comfort contributed significantly to the VAS score (Table 3). Social function showed a higher regression coefficient than in the first regression analysis ($\beta = 0.456$; $+0.189$ compared to the original coefficient), as did facial comfort ($\beta = 0.334$; $+0.134$ compared to original coefficient). All other subscales were non-significant contributors to the VAS score. The explained variance in the model was 50.4% ($R^2 = 0.504$). The mean (range) values for tolerance and VIF were 0.85 (0.756-0.912) and 1.18 (1.096-1.323) respectively, indicating no multicollinearity.

DISCUSSION

Key findings

The current study aimed to determine the true contribution of FaCE subscales to overall facial palsy-specific quality of life. According to our findings, social well-being and synkinesis are the most relevant components of ‘overall’ facial palsy-related quality of life. Both constructs are currently underestimated in the calculation of the FaCE total score.

Our analysis shows that the social burden patients experience is the most important component of ‘overall’ quality of life and is underestimated in the FaCE total score. Our results suggest that almost half of ‘overall’ facial palsy-related quality of life is socially related. With this, our findings more closely reflect a different facial palsy PROM: the Facial Disability Index (FDI), which consists of 10 questions evenly split between the physical and social domain.

Synkinesis, which is described in the facial comfort subscale, was found to be the second most important component of ‘overall’ facial palsy-related quality of life, and the only other statistically significantly contributing subscale. In a previous study, synkinesis was found to contribute significantly to the prediction of quality of life.³ A high degree of synkinesis was also found to be associated with “non-effective” self-reported emotional expression.⁴ Synkinesis may thus reduce quality of life by both causing physical discomfort and impairing social function, and it should form a larger component of facial palsy-specific quality of life assessment.

Surprisingly, eye comfort and lacrimal control were insignificant predictors of overall quality of life. This is in line with previous research suggesting that periocular muscle function is of low importance in estimating quality of life.⁵ However, this is not in line with our clinical expertise or the findings of other researchers that the treatment of periocular complaints leads to a significant improvement in total FaCE score.⁶ A possible explanation for this could be that most patients in our sample already received periocular treatment, and therefore no longer experience periocular problems. This is especially plausible in our sample of chronic facial palsy patients but requires further investigation.

Limitations

There were various limitations to the current study. First, the sample was selected from a tertiary care setting and had a long median duration of facial palsy. The character of complaints experienced by patients has been reported to evolve over time.⁷ This might mean that the relative importance of each FaCE subscale in acute facial palsy may be different from our findings. Second, the tertiary care setting meant that acoustic neuroma was the most common etiology, instead of Bell’s palsy as is seen in the general facial palsy population. Third, patients at our clinic are generally suffering from severe facial palsy requiring surgery. Mild cases only involving regional paralysis or synkinesis are infrequently seen. Lastly, the sample size to evaluate validity and reliability of the VAS was relatively small.

Implications

Our study suggests that the current weight of the FaCE subscales in calculating the FaCE total score, does not actually reflect the true weight of each component in calculating ‘overall’ facial palsy-related quality

of life. Our findings can be used when developing a revised version of the FaCE scale or a novel facial palsy-specific PROM.

CONCLUSION

Social function is more important in estimating overall facial palsy-specific quality of life than indicated by its weight in the FaCE total score. Additionally, more questions regarding synkinesis are indicated and should be included in, perhaps, a novel questionnaire.

Word count: 1424

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