Utility Outcome Scores for Unilateral Facial Paralysis

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Background: Facial paralysis is a debilitating condition. Dynamic and static facial reanimation remains a challenge for plastic surgeons and requires important resources. Our objective was to quantify the health state utility assessment (ie, utility score outcomes) of living with unilateral facial paralysis.

Methods: Utility assessments using visual analog scale, time trade-off, and standard gamble were used to obtain utility outcome scores for unilateral facial paralysis from a prospective sample of the general population and medical students.

Results: A total number of 123 individuals prospectively participated in the study. All measures (visual analog scale, time trade-off, and standard gamble) for unilateral facial paralysis [0.56 ± 0.18, 0.78 ± 0.21, and 0.79 ± 0.21 respectively] were significantly different ($P < 0.0001$) from the corresponding outcome scores for monocular blindness [0.61 ± 0.21, 0.83 ± 0.21, and 0.85 ± 0.18, respectively] and binocular blindness [0.33 ± 0.18, 0.65 ± 0.28, and 0.65 ± 0.29, respectively]. Linear regression analysis using age, race, income, and education as predictors of each of the utility scores for facial paralysis showed no statistical significance.

Conclusions: In samples of the general population and medical students, all utility score outcome measures for facial paralysis were lower than those for monocular blindness. Our sample population, if faced with unilateral facial paralysis, would theoretically undergo facial reanimation procedures with a willingness to sacrifice 8 years of life and be willing to undergo a procedure with a 21% chance of mortality to attain perfect health, respectively.

Key Words: facial paralysis, utility scores, QALY, facial nerve reconstruction

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Human facial expression is a universal medium that plays a fundamental role in social interactions. Its loss can result in debilitating consequences, both physical and psychological. The inability to produce normal facial expression is associated with decreased quality of life.[1,2] Facial reanimation procedures aim to increase physical function (ie, oral competence) and to improve aesthetic appearance and, consequently, psychosocial function. These procedures must be tailored to the patient's needs and to the etiologies of their facial paralysis. Although great advances have been made in the field of facial paralysis, dynamic and static reanimation remain a challenge for plastic surgeons. Treating patients with facial paralysis requires important resources to support multidisciplinary teams and to propel research.

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Utility outcome scores are derived from the value attributed by individuals to a health state. These scores range from 0 (death) to 1 (perfect health). Utility scores allow a translation of qualitative descriptions of health states into quantitative values which are useful for comparisons in health economics and in determining resource allocation. In this study, utility scores help objectify the health burden of living with unilateral facial paralysis. Several validated tools for determining utility scores exist[3–6]; some of the more commonly used tools include standard gamble (SG),[7] time trade-off (TTO),[8] and visual analog scale (VAS).[9]

Given objective utility measurements, we can compare the health state of a patient with unilateral facial paralysis to other disease states, thereby potentially influencing patient management decision analysis and health resource allocation. Thus, our primary objective was to compare the health state utility assessment of living with facial paralysis in samples of the general population and medical students. We also aimed to determine whether the utility score outcomes of living with unilateral facial paralysis varies with age, race and education.

METHODS

In accordance with the Declaration of Helsinki ethical guidelines for human subject research, the McGill University Research Ethics Board approved this study. All prospective volunteers read a concise online description of our study and signed an electronic consent form. We also obtained written consent from the patient whose photo was used in this study regarding the use of her photograph for publication and research.

A Web site hosted by McGill University was created to support our Internet-based utility questionnaire for unilateral facial paralysis. McGill University medical students (Montreal, Canada) were recruited on a prospective voluntary basis through weekly newsletters. The general population was recruited with the help of 2 online classified advertisement websites (www.craigslist.org and www.kijiji.com). Exclusion criteria were an invalid e-mail address, being less than 18 years old, and rating single-eye blindness with a lower utility score (ie, higher morbidity) than double-eye blindness. This last criterion was used to assess participant comprehension of the survey. Figure 1 shows the framework of our Web site survey.

Every participant was presented with the same clinical description and photograph of a patient with facial paralysis (Fig. 2). In this study, the visual analog scale, time-trade off, and SG were used to determine the utility score of facial paralysis. The use of more than 1 test minimizes the inherent drawbacks of any individual tests. For each of the 3 tools, the participants pictured themselves as the described patient living with unilateral facial paralysis.

In the VAS, participants chose a value for unilateral facial paralysis on a sliding bar scale from 0 (death) to 100 (perfect health). The utility score was calculated from subjects' ratings using the following formula: *utility health state = score ÷ 100*.

For the TTO component, participants chose between living a specified number of years in the described health state (unilateral facial paralysis) and "trading-off" some of those years to live in perfect health (including normal bilateral facial nerve function). A bisecting search routine with a maximum of 6 iterations was used until an indifference point was found.[3,4] The utility value was derived from this